

PROCEEDINGS OF THE CARDIAC SOCIETY OF GREAT BRITAIN AND IRELAND

The SIXTH ANNUAL GENERAL MEETING of the Cardiac Society of Great Britain and Ireland was held in the School of Mineralogy Lecture Theatre, at Cambridge, on Friday, April 10, 1942.

CHAIRMAN : L. B. COLE

44 Members, 4 Temporary Members, and 8 Visitors were present.
The Chairman took the chair at 10.15 a.m.

PRIVATE BUSINESS

1. The minutes of the last meeting having been printed in the Journal were confirmed and signed.
2. The accounts, audited by Bramwell and Gibson, were presented by the Council and approved, the balance being £61 1s. 11d.
3. The following two new Members were elected :—
 E. J. Wayne, Sheffield, (Ordinary Member).
 Morgan Jones, Manchester, (Associate Member).
 Ten of the present Associate Members were re-elected for a further period of three years.
4. Terence East and William Evans were elected Members of the Council for the years 1942–46. Gilchrist was appointed to act as a Substitute Member on the Council, so long as Hill (1940–44) was abroad on service.
5. William Evans was appointed to act as Assistant Secretary for the year, and Shirley Smith was thanked for his services during the previous three years.
6. The Society decided that as a war measure the Council should have the power to invite certain members of the Empire Forces or other visitors interested in cardiology to become temporary members for the year, such members being supernumerary to the numbers allowed by the rules and not to pay any subscription.
7. The Secretary reported that :—
 - (a) since the last meeting he had learnt with regret of the death of Graham Steell, another of the Honorary Members, and that Bramwell had written a notice for the British Heart Journal.
 - (b) the Committee appointed last year to consider the appointment of members from other parts of the British Empire, had reported that owing to war-time difficulties it was not thought a good time to have any fresh developments in this direction, but that the present situation would best be met by the appointment of temporary members as had now been decided.
 - (c) the position of the British Heart Journal was satisfactory and the circulation well maintained; and the printers had managed to produce the April 1941 number almost at the right date, in spite of the serious damage done at their works shortly before, and were meeting all the difficulties caused by the war most satisfactorily.

DISCUSSION ON CARDIAC DEFECTS FOUND AT RECRUITING MEDICAL BOARDS
(Morning Session)

STARLING gave his experiences as Chairman of a Medical Board. He spoke on the difficulty in the diagnosis of early endocardial lesions, especially by medical officers who were not primarily interested in cardiology. The presence of the functional systolic murmur which disappeared on full inspiration and often with a change of posture still occasioned much doubt in the minds of some members of the board. During two and a half years he had supervised the rejection of about 50 cardiac cases from the Services and 24 of these were cases of early mitral stenosis or aortic regurgitation. None of them had any symptoms nor did a number of them give a story of a past rheumatic infection. STARLING also called attention to the confusion that existed at Medical Boards and also in the profession regarding the estimation of blood pressure and the interpretation of a raised one, and he particularly emphasized the need to take three readings before labelling a recruit as showing a raised blood pressure.

SHORT COMMUNICATIONS

CARDIAC DIAGNOSIS IN RECRUITS

JOHN PARKINSON presented some observations arising from routine examination of 500 candidates referred by recruiting medical boards for a cardiological examination because of suspected cardiac defects. Experience of diagnosis in civil life was gained mostly on developed disease with symptoms, whereas wartime provided a distinct opportunity for studying and codifying the first signs of early and symptomless cardiac disease. There was a wealth of borderline cases. Textbooks gave the characteristic rather than the earliest diagnostic signs, and comprehensive diagnosis might better be provided as (a) early diagnosis, (b) established diagnosis, and (c) differential diagnosis.

Aortic Incompetence was twice as common as mitral stenosis in these recruits. The apex-beat was affected in force or position in only half of the 50 clear cases, and then it rarely reached the sixth interspace. In half there was a mitral systolic murmur, which too often satisfied an examiner as being primarily mitral, but should certainly raise the possibility of a causative aortic incompetence. A loud aortic second sound might obscure the diastolic murmur. The blood pressure was valueless in the slighter cases. Left axis deviation was commonly absent, though T_2 and T_3 inversion was recorded with it in three cases, and T_1 inversion in none. Cardioscopy (X-ray screening of the heart) showed increased convexity of the left ventricle in most, and this was nicely confirmed in the left oblique position. Hearing the aortic diastolic murmur and seeing the enlarged left ventricle were the foundations of an early diagnosis, and attention should be concentrated on these.

Mitral Stenosis was studied in 25 early cases. There was no thrill, though the apex beat might be sudden in quality. A short presystolic murmur was heard in 15, but in 9 of these only immediately on lying on the left side after exertion. This invaluable technique was a bequest from the last world war. A sharp loud first sound at the apex is in itself insufficient, but a long loud and constant mitral systolic murmur needs only radiological support to establish the diagnosis. In the anterior view there may be a slight extension outwards of the left border of the heart in the conus region, not so much as a convexity—merely a broadening of the heart at the conus level. With this or without, in the right oblique view the left auricle (atrium) is seen to be enlarged because the opacified œsophagus *changes direction* backwards at a high level—at the top of the auricle. This early sign may precede any obvious increase in the

convexity of the auricle as a whole. Right axis deviation or P wave changes in the electrocardiogram are seldom of assistance in early diagnosis, both being absent in the majority.

Early High Blood Pressure. There were 18 cases with a blood pressure above 160/90, and an average of 175/100. Eight were aged 20–30 years, ten were aged 31–40. The apex beat was displaced or forcible (or both) in half the cases, and a mitral systolic murmur was noticeable also in half. Cardioscopic support was obtained in more than half the cases, the left ventricle being enlarged and unduly convex. Electrocardiographic evidence was almost valueless.

Various Cardiac Defects. There were 20, i.e. 4 per cent, with congenital lesions. In 30 healthy cases, it was simply the well-known apparent displacement of the apex-beat from slight scoliosis that led the medical board to suspect enlargement. Nervous tachycardia was the feature in 30 cases. There were 8 cases with slight thyroid enlargement, mostly without tachycardia. Coronary thrombosis had occurred in three recruits aged 31, 32, and 35 respectively.

In conclusion, attention was directed to :—

- (1) The need for routine radioscopy by the cardiologist, and its usefulness in early diagnosis.
- (2) The restricted value of the electrocardiograph for this purpose; only in doubtful arrhythmia or precocious anginal pain was it applicable to recruiting medical problems.
- (3) A duty of the Cardiac Society to take a leading part after the war in pressing for national research on rheumatic fever in childhood.

THE ELECTROCARDIOGRAM IN FRIEDREICH DISEASE

WILLIAM EVANS

(Published in full; p. 91)

FAINING AND FITS IN CARDIAC INFARCTION

HAROLD COOKSON

Apart from pain of great intensity, cerebral vascular complications, and sudden death, which might be regarded as the extreme form of syncopal attack, disturbances of consciousness had been noted in a small proportion of cases of acute cardiac infarction. The chief clinical features of 13 such cases were given. Faintness or loss of consciousness had occurred as the initial symptom in 9 and early examination had shown the picture of peripheral circulatory failure combined with bradycardia in most. Of 4 cases with disturbance of consciousness after the onset, three had Stokes-Adams attacks, on the first, fifth, and tenth days respectively; in the fourth there was fainting on the third day associated with sinus tachycardia and short runs of auricular premature beats.

Cardiograms taken at the time of the attacks or at varying intervals thereafter had shown a disturbance of rhythm in the majority. All the common varieties of abnormal rhythm had been recorded. The site of infarction was nearly always posterior. Pain might be completely absent. Eight of the 13 patients had died within six weeks.

To account for the picture of peripheral circulatory failure combined with bradycardia seen in those with syncopal symptoms at the onset it was suggested that the factors were: (1) reflex vaso-motor depression and vagal stimulation; (2) a direct mechanical effect of the infarct on cardiac output; and (3) possibly ischæmia of the auricles; The last would fit in with the observation that the infarct was usually of the posterior type and also with the occurrence of rhythms depending on depression of the pacemaker and of auricular flutter and fibrillation.

(Published in full; p. 163)

INVERSION OF T WAVES AFTER ATTACKS OF ANGINA PECTORIS

DONALD HALL AND KEMBALL PRICE (*introduced*)

KEMBALL PRICE described a case in which inversion of the T wave in leads I and IV followed an attack of angina pectoris but only persisted for twelve days. The T wave in lead IV again became inverted after a further anginal attack and was directed upwards following amyl nitrate inhalation. Two months later the cardiographic changes remained permanent after prolonged pain; at necropsy cardiac infarction was found present. He suggested that during the first two attacks there might have been an interference with the blood supply to a portion of a muscle bundle, but short of infarction from occlusion of a main coronary artery.

After luncheon a demonstration was given on HYPERTENSION OF RENAL ORIGIN by E. B. VERNEY, F. J. LOCKETT, and W. J. O'CONNOR (*all introduced*). Several dogs were shown in different stages where operations had been performed so that the blood-pressure could be measured in arterial loops and the blood supply to the kidney clamped in an accurate manner.

DISCUSSION ON THE IMPORTANCE OF THE CARDIOVASCULAR SYSTEM IN AVIATION MEDICINE

ROOK said that in *The Medical Examination of Candidates for Flying Training* too much stress can be placed on tests of cardiovascular efficiency. So long as there is no organic lesion of heart or vessels and the pulse rate and blood pressure readings are within fairly wide limits, most candidates can be accepted, whatever their reactions to the various tests, for it has been shown that proper training will soon bring their physical efficiency to a high level. Of all the factors necessary to make a war-time pilot, temperament is the most important; physical efficiency can be improved, temperament is largely unalterable, at any rate within a short period.

Operational Flying throws a strain on the cardiovascular system chiefly in two ways, firstly owing to the effect of altitude and secondly as the result of variations in speed. *Anoxia* begins to show its effect fairly early in an ascent causing, at first, increase in the pulse rate and in the pulse pressure. The severity of the effects depends on certain variable factors: (1) the altitude to which the ascent is made; (2) the duration of stay at altitude; and (3) the rate of ascent. In pilots acclimatization to altitude such as occurs in mountaineers is almost unknown and permanent changes in the size of the heart or in the blood are rarely seen. Actually deterioration is more likely to occur than acclimatization. The normal cardiovascular system can withstand anoxia better than most of the other systems of the body, and the circulation may still be going on when respiration and all reflexes have ceased. With the damaged heart anoxia is a potent factor in producing symptoms and may lead to failure.

The effects of *Acceleration and Deceleration* are especially of importance to the war-time pilot. These effects are met with chiefly while caterpulting or during turns at high speeds. The resultant forces may cause symptoms by their action on the more fluid parts of the body, principally the blood. On the arterial side these forces interfere with the flow of the blood, while on the venous side they prevent return to the auricles and lead to inadequate filling of the ventricles. In most instances the forces act from the head towards the legs (positive accelerations) producing an anæmia of the brain and causing symptoms that include temporary blindness and possibly actual loss of consciousness. If the forces act from the legs towards the head (negative accelerations) intense engorgement of the cerebral vessels and severe symptoms may result. Transverse accelerations, which act across the long axis of the body, affect the cardiovascular system least. It is possible by bracing the abdominal muscles and bending

forward so that the forces act partly transversely to counteract the effect of positive accelerations to some extent.

SQUADRON LEADER W. K. STEWART, A.F.C. (*introduced*), from the Royal Air Force Physiological Laboratory, demonstrated a film showing the effect of positive acceleration occurring during actual flight.

HEMIPLEGIA IN CYANOTIC CONGENITAL HEART DISEASE

BRUCE PERRY

(Published in full; p. 121)

SYPHILITIC ANGINA PECTORIS

EVAN BEDFORD AND EVAN JONES

(To be published in full)

LIGATURE OF SIX CASES OF INFECTED DUCTUS ARTERIOSUS

BOURNE reported six cases (the first already reported in this Journal, Vol. 3, 228, 1941), all of whom survived the operation by six weeks or more, and five of whom completely recovered; one case with a mycotic aneurysm died showing a continuation of the infection. One was alive 27 months and another 17 months after the operation. Four were back at full work. Chemotherapy was used as an adjunct to ligature, but that ligation was the effective factor was proved by the fact that it produced cure when chemotherapy failed or when chemotherapy was withheld. In all cases the diastolic pressure increased greatly after the operation but became lowered to the normal after a period of six weeks or so. The systolic pressure was increased to a lesser extent. The heart in the only case in which accurate pre-operative measurement on cardioscopy was possible was found to be 2 cm. less in its transverse diameter 17 months after the operation; the previously enlarged pulmonary conus had disappeared. In this case and in one other the typical systolic-diastolic murmur returned after an interval and the cause of this was obscure because the blood pressure and heart outline continued to be normal.

CHEST LEAD, CR₇, IN POSTERIOR CARDIAC INFARCTION

A. HUNTER (*introduced*) AND WILLIAM EVANS mentioned the difficulties in diagnosis between inversion of the T wave in lead III in posterior cardiac infarction and in other conditions, either in health or disease. He showed the results obtained from the use of a chest lead (CR₇) in which an exploring electrode was placed in the left posterior axillary line and paired with one on the right arm. Changes towards inversion of the T wave in this lead appeared in the majority of cases of cardiac infarction although it was shown as well in the limb leads, but its importance was found in confirming the physiological nature of inversion of the T₃ in health for the CR₇ was always upright in this circumstance. Apart from assisting in the diagnosis of physiological inversion of the T₃ from the inverted T₃ of cardiac infarction, the chest lead CR₇ was also found to aid the recognition of the cardiogram of pericardial disease which might suggest posterior cardiac infarction.

(To be published in full.)

THE RETURN OF NORMAL RHYTHM AFTER TOTAL THYROIDECTOMY FOR MITRAL STENOSIS AND AURICULAR FIBRILLATION

COOKSON said that occasional cases had been reported, suggesting that the secretion of the normal thyroid gland might lead to the development of auricular fibrillation in non-goitrous heart disease. In two cases seen by Cookson, in which toxic goitre, mitral stenosis, and auricular fibrillation had been combined, total thyroidectomy had been carried out, and in each case the rhythm had returned to normal spontaneously. An account was given of the clinical condition and autopsy findings in a woman with mitral stenosis, auricular fibrillation, and recurrent failure. Her whole thyroid had been removed, and three or four months after the operation, when signs of myxœdema were obvious, normal rhythm was found to have returned. There were then no signs of failure and her effort tolerance had improved. The radiogram, however, showed considerable increase in the cardiac silhouette and resembled in shape that of pericardial effusion. The patient remained well for four months. Symptoms and signs of failure then appeared but the pulse remained regular. She died after a week's illness; necropsy showed advanced mitral stenosis and the pericardium contained 24 oz. of clear yellow fluid. It was considered probable that severe myxœdema had played a part in the final breakdown, particularly through the effect of a large pericardial effusion.

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The dinner was held at Caius by kind permission of the Bursar. EMMANUEL proposed the health of the Society.

BRAMWELL proposed the health of the guests, including the Master and the President of the College of Physicians. The Master replied on behalf of the guests.