the case. The advent of the longitudinal recoil is therefore slightly delayed, and the dicrotic wave, due to the oncome of a diminution in the longitudinal capacity of the first part of the aorta, is superposed on the main wave early in its descent.

The mode of production of this ballistic wave can easily be imitated with a model consisting of rubber tubes and pump representing the circulatory system. If, when the pump is squeezed, it be also pulled to stretch the tube into which its contents flow, and, after squeezing, allowed to yield to the stretched tube in its recoil, one wave is generated by the pump and a second smaller one by the tube in its longitudinal recoil. The whole, properly recorded, exactly resembles the main features of a normal pulse tracing, with the dicrotic wave small or large according to the rapidity of recoil allowed.

A confirmatory experiment I performed on a large dog. After anaesthetizing it, the chest wall and pericardium were opened. A tube introduced into a main artery of the leg allowed the pulse tracings to be recorded graphically. The aortic walls close to the heart were then seized and held by two pairs of forceps, and prevented as far as possible from making any movement in a longitudinal direction. The dicrotic wave, which before was conspicuous, immediately disappeared, and reappeared at once on the tracings when the aorta was set free to perform its longitudinal movements.

I have since had no doubt that the dicrotic wave is to the longitudinal recoil of the first part of the aorta what the main pulse wave is to its circular recoil.

A NOTE ON BLOOD-PRESSURE READINGS IN CASES OF AURICULAR FIBRILLATION.*

BY

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IN examining a radial pulse tracing taken from a case of auricular fibrillation one of the most noticeable characteristics is the inequality of the heights of the systolic primary waves—forcible beats and feeble beats occur in no definite order.

This suggests that the systolic arterial blood pressure is also a varying factor in these cases, and that to assign a single value for the blood-pressure readings in such patients is scarcely justifiable.

A simple method for ascertaining the systolic pressure reading for the various beats is as follows: The armlet band of a blood-pressure apparatus is adjusted on one arm—the right is the more convenient. A wrist splint of a Mackenzie ink polygraph is strapped on over the right radial artery, and another over the left radial, and the corresponding wrist tambours are connected by rubber tubing to the receiving tambours of the polygraph. In this way the two radial tracings are recorded on the one strip of paper. The apparatus is adjusted till the best radial impulse in each is obtained, and so that the swings of the writing pens are approximately equal. The paper is allowed to run through, and the pressure in the armlet band is increased by 5 to 10 mm. at a time, and that pressure noted at which the various beats fail to affect the recording apparatus. Sooner or later, as the armlet pressure is raised, the smallest beats of the pulse on the corresponding arm are lost. The reading of the manometer, at which this occurs, gives the minimal systolic pressure. When all the beats are obstructed, the maximal systolic pressure

has been obtained. It is found that with highly irregular hearts there may be a difference in the maximal and minimal readings of 60 mm. Hg. With less irregular hearts—that is, those in which the rate is slower—the difference is not so marked, and in those that are only slightly irregular—as, for example, where the ventricular rate has been markedly retarded by digitalis—the difference may not amount to more than 5 to 10 mm. Hg.

Janeway¹ has previously called attention to the difference in the systolic blood pressure readings in cases of arrhythmia.

The readings taken from 8 patients, all of whom were typical examples of cardiac irregularity due to auricular fibrillation, are given in the following table:

Case.	Blood Pressure Reading of Smallest Beats.	Maximum Blood Pressure Recorded.	Difference in mm. Hg.	Pulse Rate per Minute.
1	150	210	60	56
2	80	100	20	72
3	100	130	30	92
4	95	140	45	74
5	130	140	10	44*
6	115	140	25	84
7	120	140	20	72
8	160	200	40	76

* On digitalis.

This table clearly shows the wide range of blood pressure which an individual case of auricular fibrillation may possess. This variation is of importance, because in the cases in which it occurs single observations of blood pressure, taken in the ordinary manner, possess only a restricted value as an index; the error introduced in continued and comparative observations, where each

Fig. 1. A, B, and C.—Three strips of tracing (right and left radial) taken from the same patient.

A. Before brachial compression; all the beats come through.

B. The smallest beats $\times \times$ disappear at a pressure between 90 and 100 mm. Hg.

C. The largest beats fail to record at a pressure of 140 mm. Hg.

observation is confined to a reading of the most forcible beats, is also very considerable.

REFERENCE.

¹ T. C. Janeway, *The Clinical Study of Blood Pressure*, p. 205.

* From the Cardiographic Department, University College Hospital Medical School.

A BEQUEST of £300 has been left to the East Sussex Hospital, Hastings, under the will of the late Mary Jane Day of Bexhill.