Appendix B: Electrocardiograms and Phonocardiograms Recorded by Dr Thomas Lewis, 1909-1913

Original recordings made by Dr Thomas Lewis in the Cardiographic Department of University College Hospital Medical School London between 1909 and 1913. They are mounted on cards. The recordings may be divided into four main groups.

1. Electrocardiograms made with the Edelmann apparatus between December 12 1909 and December 23 1911. This was Lewis's first electrocardiograph apparatus and it signalled the start of his extensive research with the electrocardiogram. There are 12 electrocardiograms from patients with, for example, mitral stenosis, paroxysmal tachycardia and heart block. One was reproduced in Heart volume 2. This was the apparatus that Dr Alfred E Cohn of New York had used with Lewis earlier in 1909. Cohn took one to the Mount Sinai hospital New York when he returned to the USA on board the SS Adriatic in the autumn of 1909. It was the first electrocardiograph in North America.

2. Electrocardiograms made with the newly designed Cambridge Instrument Company apparatus between November 19 1911 and August 29 1913. Of the 39 electrocardiograms, several have jugular venous and arterial pulses recorded with the ECG tracing. Four are annotated for publication. One normal tracing is from his father Henry Lewis. The abnormal electrocardiograms show a variety of arrhythmias. These include atrial flutter which had been first recorded only two years earlier, heart block, and atrial and ventricular tachycardia. One recording of atrial fibrillation uses a chest lead, possibly the first use of such a lead, to show the f waves more clearly.

3. Twelve electrocardiograms are from normal infants, one is labelled " 12 hours after birth". There are five tracings on one infant, Billy Sampson, taken over a period of three months and showing resolution of physiological right ventricular hypertrophy of the newborn. These were published in his 1913 book "Clinical Electrocardiography", where he used the phrase "preponderance of the right ventricular muscle" which is probably a better title.

4. Phonocardiograms were recorded simultaneously with the electrocardiogram using, in 1913, the newly developed twin string galvanometer of the Cambridge Company. There are nine recordings showing mitral incompetence, mitral stenosis, aortic incompetence and normal heart sounds. Lewis used a simple method of cutting out low frequency vibrations and as a result the high frequency aortic incompetence murmur is very well displayed. Phonocardiograms had been recorded in 1907 by Willem Einthoven in Leiden and Lewis used his model of a carbon microphone.