A 55 year old woman with no known heart disease was admitted to the hospital because of a supraventricular tachycardia. She was given six grains of quinidine sulfate every two hours and when this failed to stop the tachycardia she was digitalized. The quinidine was continued. Her pulse rate then became slower but irregular and the electrocardiogram shown below was recorded at that time.

**Interpretation**

Lead V₁ (Figure 1) illustrates the problem most clearly. There is a regular auricular rate of 120 per minute. The first two P waves are superimposed upon the preceding T waves; they are conducted by the A-V bundle and the right bundle branch but not by the left bundle branch. The third P wave is not conducted by the A-V bundle; the fourth P wave therefore falls after the A-V bundle has had a long rest period and is conducted normally—the PR interval is short. The
fifth, sixth, seventh, and eighth P waves are all conducted by the A-V bundle but the PR interval becomes progressively prolonged; following the ninth P wave the impulse is blocked. The QRS complexes following the fifth through the eighth P waves are of the right bundle branch block form. The 10th P wave follows the prolonged rest period offered by blocking of the previous beat and once again normal rapid conduction occurs in the A-V bundle (the PR interval is short).

Thus the tracing shows repeated examples of the block in the right bundle branch, of block in the left bundle branch, and of block in both bundle branches simultaneously (or in the A-V bundle itself). This condition was presumably due to the effects of digitalis and quinidine. When all drugs were discontinued the tracing returned to normal and she has had no further difficulties.

Vectorcardiograms were made (Figure 2) when conduction was normal, when the right bundle branch was blocked, and when the left bundle branch was blocked. The tetrahedron, cube and Frank frames of reference were employed. Two degrees of left bundle branch block were recorded when the horizontal loop of the cube was being examined.

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FIGURE 2