

## *Book Reviews*

**W. Bruce Fye**, *Caring for the Heart: Mayo Clinic and the Rise of Specialization* (New York: Oxford University Press, 2015), pp. xxiv, 672, \$39.95, hardback, ISBN: 978-0-19-998238-6.

*Caring for the Heart* is a history of the diagnosis and treatment of a wide variety of diseases of the heart in the United States in the twentieth century. The scope and wealth of detail of the book and its national and occasional international coverage qualify it as a major reference work on the subject.

Fye describes both the major innovations and the contributions of individuals and institutions in the United States and Europe. He uses the Mayo Clinic in Rochester, Minnesota as a reference point because of its direct involvement in many diagnostic and surgical innovations. This review will describe only the actual innovations.

The heart is susceptible to a variety of disorders that are difficult to diagnose and must usually be treated surgically. The earliest major diagnostic innovation was the electrocardiograph, which was first used widely in the 1910s and 1920s. The only available long-term treatments for heart disease at that time were rest and activity restriction. Physicians had little incentive to specialise in heart diseases and most early cardiologists were general internists. Fye describes the treatment limitations using the medical condition in 1944 of President Franklin D. Roosevelt, who suffered from severe hypertension and congestive heart failure.

Cardiac catheterisation was a key innovation in the care of heart disease patients because it contributed to both diagnosis and treatment. It was initially used in the 1940s to measure blood pressure in the heart and collect blood samples to measure their oxygen content. This helped diagnose septal defects, valve problems and other conditions, primarily in infants and children.

The first treatments for heart problems were surgical procedures performed in the 1940s by thoracic surgeons who opened the chest but did not open the heart. These were primarily for mitral stenosis and congenital defects in children, including the famous ‘blue baby’ operation.

The next step was to operate inside the heart, which required a method of diverting the blood that flowed through the heart. This led in the 1950s to a pump-oxygenator machine that enabled flowing blood to bypass the heart and receive oxygen. The first operations occurred in the mid-1950s, primarily on children with congenital heart defects, often holes in the septum. Shortly thereafter cardiac surgery was expanded to repair damaged or diseased heart valves. Fye states: ‘Death was a constant companion of the surgical pioneers who hoped to save lives by inventing or performing new operations on patients with serious heart disease’ (p. 193).

Surgery inside the heart created a need for improved diagnosis. This produced an expanded role for catheterisation in the form of angiocardiology, which introduced a contrast medium inside the heart whose chambers could then be viewed with a fluoroscope.

The diagnosis of diseased and blocked heart valves led to new methods of treatment that included artificial heart valves in the 1950s. Diseased heart valves in adults occur much more frequently than congenital heart disease in children, which greatly expanded the use

of open heart surgery. The rapid adoption of open heart surgery is indicated by the 8792 operations in 290 hospitals in 1961 in the United States.

The presence of many heart disease patients in hospitals led in the 1960s to the establishment of coronary care units, which were based on intensive care units. These required electronic monitoring equipment, highly skilled nurses, and cardiac arrest teams.

Coronary angiography in the 1960s used catheters to introduce a contrast medium in the coronary arteries that enabled x-rays to show blockages of the arteries. This led to operations to remove the obstruction, at first using coronary artery bypass graft surgery (CABG) that became popular in the 1970s. The versatility of the coronary catheter was demonstrated when a balloon was placed in its tip and expanded at the site of a coronary artery blockage to restore blood flow. Angioplasty was widely adopted in the 1980s and was also used to open obstructed heart valves. The subsequent reocclusion of arteries led to the use of catheters to place metal mesh stents inside the arteries. In the 1980s, drugs became available that dissolved clots that occluded arteries and they became very popular.

Computers permitted a better understanding of heart rhythm disorders and transistors enabled the development of devices that provided various types of electrical stimulation to the heart to restore normal rhythms. Implantable pacemakers were developed in the 1970s, and followed by implantable automatic defibrillators in the 1980s.

The invasive nature of diagnostic catheterisation and angiography led to use of less invasive techniques beginning in the 1980s. Electrocardiography showed cross-sectional slices of the heart. Other methods included radioisotopes, computerised tomography scans and magnetic resonance imaging.

Heart transplants were a method of treating heart disease first used in the 1970s, but they were uncommon because of the high cost and low success rate.

The prevention of heart diseases became a concern about mid-century, but Fye states that 'heart specialists devoted little time or energy to prevention' (p. 473) because they were too busy with diagnosis and treatment. Drug treatment became available to treat hypertension. Concern with cholesterol in the blood led to programs to reduce dietary cholesterol and later to the statin drugs. Attention was given to the dangers of cigarette smoking and the importance of physical activity.

This book contains detailed and readable descriptions of the development and utilisation of many methods of diagnosis and treatment of heart diseases in the United States. Technical terms are explained and topics are described individually to permit selective reading. The focus is primarily on the introduction of the methods rather than their general adoption and associated problems. The book includes considerable discussion of internal organisational and personnel matters at the Mayo Clinic.

*Caring for the Heart* is an extraordinary achievement that is an essential source of information about heart diseases, which were the primary causes of adult deaths in advanced countries in the twentieth century. It deserves the highest praise.

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**Anne Hardy**, *Salmonella Infections, Networks of Knowledge and Public Health in Britain 1880–1975* (Oxford: Oxford University Press, 2015), pp. x+249, £60, hardback, ISBN: 978-0-19-870497-3.

In *Salmonella Infections, Networks of Knowledge and Public Health in Britain 1880–1975*, Anne Hardy provides an overview of how salmonella infections were understood