interesting facts and reflections, and, unlike English Socialists, the author sees clearly that the unchecked increase of population is the most fatal obstacle to social amelioration.

W. R. INGE.

X-rays in Medical Practice.

General Practice and X-rays. By Alice V. Knox. With chapters on the production of X-rays and instrumentation by Dr. R. Knox. (The Edinburgh Medical Series.) Pp. xiv + 214 + xxxii plates. (London: A. and C. Black, Ltd., 1921.) 15*s.* net.

IN view of the great advance which has occurred in radiography and radiotherapy during the past ten years, the author is justified in her contention that the time has come to present to medical practitioners a general survey of the subject in order to enable them to gain a full appreciation of the value of X-rays in diagnosis and treatment. The author divides medical practitioners into three groups: (1) Those who look upon X-rays as something of a scientific plaything; (2) those who rely upon radiology to establish a diagnosis instead of making a careful physical examination; (3) those who recognise in the new science a powerful help in the daily fight against disease, to be applied after a thorough physical examination has been made, when it may be of the greatest use in establishing a diagnosis or in treatment.

When X-rays were first discovered, certain applications to medical diagnosis were at once obvious. These included the discovery and location of metallic foreign bodies, and the diagnosis of fractures and other injuries of the bones. As a natural corollary came the use of X-rays in the study of disease of the bones and joints. With improvement in the construction of apparatus, and with advance in technique, it was found possible to extend the uses of X-rays to the diagnosis of certain internal disorders, such as calculi in the kidneys, and disease of the lungs, heart, and aorta.

The most noteworthy advance of all dates from the discovery that insoluble opaque salts can be administered to patients in sufficient amount to fill the gullet, the stomach, and the intestines, and so enable these hollow organs to be studied. Not only are their size, shape, and position revealed by the opaque meal, but also their contractile activities can be studied. In this way many valuable additions have been made to our knowledge of the physiology and pathology of the organs of digestion. With this far-reaching addition to the uses of X-rays there remain few organs or parts of the body which are not accessible to investigation by them, with good prospect of settling a doubtful diagnosis. If this were all, it would be clear that no medical man could afford to dispense with the services of radiology in the practice of his profession; but X-rays have done a great deal more than this. They have revealed the fact—previously suspected by few—that all disorders of the digestive tract are interdependent: that the stomach, for instance, does not become the subject of a gastric ulcer if all other parts of the digestive tract are healthy, and that the appendix does not become diseased so long as it is in a healthy environment.

Text-books on medicine arrange all diseases under the headings of the various organs of the body. Each organ has a chapter to itself, and each disorder of this organ occupies a "watertight compartment." For teaching purposes this arrangement, no doubt, has advantages, but it also has the great disadvantage of perpetuating the notion that a chronic disease can arise in an organ of a patient who is otherwise in perfect health. X-ray investigation of the digestive system has demonstrated the fallacy of this conception of disease; it has led to a wide recognition of the importance of "chronic intestinal stasis," a condition due to abnormal delay of the intestinal contents, setting up bacterial decomposition and leading to contamination of the blood-stream. The result of this "toxæmia" is that every tissue of the body receives vitiated blood and becomes depreciated, so that it loses some of its power of repelling the invasion of microbes. Many chronic ailments, such as rheumatism, arise in this way and resist all efforts to cure until the contamination of the intestinal contents has been rectified. The stretching of ligaments, which gives rise to spinal curvature, flat foot, etc., is likewise due to the toxæmia of chronic intestinal stasis. The far-reaching importance of this new conception is clear, for in prescribing remedial exercises to strengthen the muscles of the back, or those of the foot and leg, it is important to attend to the general nutrition of the patient and to the efficient drainage of the intestinal canal, for muscles that are depreciated by contaminated blood cannot respond to attempts to strengthen them by exercises, massage, or electrical treatment, although such treatment would certainly strengthen healthy muscles.

These are only a few instances of the way in which the radiological study of the digestive tract is modifying our entire conception of the causes and treatment of disease.