

ductules, lymph vessels and nerves which grow out together from a small triangular portal field. A concentric zonal relationship is established between these acinar cells and their blood supply. A most interesting interpretation of classical histopathology can be made in terms of the acinar concept.

A. Fischer contributes a comprehensive account of the dynamics of the liver circulation. He raises the question of the purpose of the large portal venous flow in relation to hepatic requirements. He suggests that the large portal circulation is not primarily concerned with the needs of the liver, but that the liver merely acts as a thoroughfare for blood from the splanchnic area.

Hepatic metabolism is covered fairly fully. Amino-acids and proteins are described by H. Tarver, lipids by P. Farager, carbohydrates by L. A. Pesch and Y. J. Topper, biliary excretion by Burton Combes, steroid metabolism by C. B. Cameron, vitamins by A. Wiss and F. Weber, and liver and blood coagulation by C. A. Bouvier and P. A. Maurice. The chapter on liver function tests by G. Milhaud is interesting but patchy. Tests, such as formal gel, sia and cadmium, are included which are quite out of vogue to-day and which have been replaced by more specific indications of hepatic function. On the other hand, the chapter includes a fascinating account of how human liver biopsy material may be incubated in various media so that defects in hepatic metabolism may be understood. This represents an important, advancing field.

Cancer of the liver in man is discussed by H. Elias and its relation to experimental dietary liver disease by E. B. Taft. Unfortunately, no mention is made of the place of contamination of foodstuffs by moulds which can produce the carcinogen, aflatoxin. This important subject will have to wait for the second edition.

These volumes are well produced and profusely illustrated. They provide a comprehensive source of literature. The references include titles of papers and number some 1,200—about one-fifth of the two volumes. The author index is careful and complete. The chief criticism lies in the lack of correlation between one chapter and the next, which is the common fault of the multi-author book. The chapters are of a variable length which does not always depend on the importance of the subject in relation to the whole work. Liver sinusoids, for example, are covered in 76 pages, whereas the basic anatomy of the liver occupies only 19. The practice of numbering the figures chapter by chapter instead of serially throughout the book enhances the isolation of one section from the next. The postulates of one author are often ignored or denied by the next. The volumes must therefore be regarded as a series of monographs rather than as a complete coverage of the subject. A good basic knowledge of the liver is demanded of the reader.

The volumes provide a stimulating, up-to-date account of the morphology, biochemistry and physiology of the liver. They deserve a wide success and should be found in every medical library.

SHEILA SHERLOCK

BLOOD ENZYMES

Enzymes in Blood Plasma

By Benno Hess. Translated from the German by Keith S. Henley. Pp. xii+167. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1963.) 64s.

THE recent progress in the use of enzyme assays for clinical diagnosis has been reflected in some excellent text-books which deal with the theory of enzyme action and the techniques used in the clinical laboratory. *Enzymes in Blood Plasma*, by Benno Hess, does not concern itself with details of the tests as they are used at the bench, and refers in each case to the relevant original

literature. There is a section on methods which describes the general principles of measurement of enzyme activity, reaction velocities, the role of temperature and the advantages of substrate excess.

The main parts of the book are devoted to the biochemistry of enzymes and to their "pathology and clinic". The title of the book does not prevent Prof. Hess from discussing enzymes in urine, cerebrospinal fluid, and faeces. One table lists, with full references for further reading, 47 plasma enzymes. Five are named plasma-specific because they appear regularly in the plasma at a higher level of activity than in the tissues from which they are derived: caruloplasmin, pseudocholinesterase, the lipase for lipoprotein, and the enzymes which convert, respectively, plasminogen into plasmin, and prothrombin into thrombin. The other 42 are the excretory enzymes such as the phosphatases, and the numerous cellular enzymes, representing virtually all levels of intra-cellular activity.

There is a discussion on the identification of enzymes. This may be done, for example, by determining their primary, secondary, tertiary or even quaternary structure, or by investigating function, be it activity, kinetics, thermodynamics, or biological parameters such as genetic determination and immunological properties. The clinical section discusses the diagnostic value of enzyme estimation for a growing list of diseases of different organs. They include: heart, liver, pancreas, muscle, blood, kidney, bones and the nervous system. Special applications are described for diseases of children and for gynaecological problems. One is surprised to find in a work with such emphasis on theory so many sound rules of thumb and practical guidance for the clinician.

Though the author has attempted to be selective with his quotations of literature, there are 587 references in a book with 141 pages of text. Inevitably there cannot be much detailed discussion and evaluation. Nevertheless, this is a stimulating monograph which brings a new approach to a rapidly expanding section of clinical biochemistry.

H. LEHMANN

PATHS OF INFLUENCE IN MEDICAL THOUGHT

The Growth of Medical Thought

By Lester S. King. Pp. xi+254. (Chicago and London: University of Chicago Press, 1963.) 5.50 dollars; 41s.

THERE are many ways of writing medical history. For example, the approach may be chronological or biographical, that is, illustrative by the lives of pioneers like Harvey, Simpson, Lister, Ehrlich and Fleming who have advanced knowledge and therapy by their work and discoveries.

The method of approach selected by Dr. King is that of the concepts and ideas that have influenced medicine. In the course of this investigation he also makes use of the chronological and biographical methods, although, as he explains, his particular selection of eras and authors is purely arbitrary. Above all, he urges his readers to remember, first, that these scientists of the past were of equal intelligence to those of to-day, and, secondly, that their doctrines and explanations, however erroneous, must be evaluated in the light of knowledge then available.

The book begins with the religious aspect, instancing the epidemic among the Greek forces besieging Troy which was ascribed to the arrows of Apollo in the *Iliad*. A similar explanation was given to outbreaks of pestilence among the Anglo-Saxons as due to elf-shots, arrows from malignant elves. Indeed the belief that diseases generally are a punishment for sin is held by many up to the present day.