endeavoured to devise similar schemes for *S. paratyphi B* and *S. typhimurium*. As these three serotypes between them account for most salmonellosis (assuming that it is permissible to regard the enteric fevers as salmonelloses) efficient phage-typing schemes for all of them offer opportunities of solving epidemiological problems that may otherwise be impossible even to define. Experience during the past 20 years has broadly justified the early hopes placed in the phage-typing method and schemes have been developed for other salmonellas, for some shigellas, for strains of *E. coli* causing infantile enteritis, and for *Proteus hauseri*.

The chapter on phage typing is large and its author describes in great detail the Vi-phage typing method for *S. typhi*. Certain Vi-phage types of the typhoid bacillus (particularly types A and El) are so common in many regions as to reduce the epidemiological value of their recognition, and the author discusses ancillary schemes that have been developed for the subdivision of these types. Stress is laid on the advantages of international cooperation in this field and a table is given of the order of frequency of the commonest Vi-phage types in many countries.

The phage typing of *S. paratyphi B* is examined in similar detail and a somewhat briefer description is given of schemes for the phage typing of the other Enterobacteriaceae mentioned above.

The final chapter gives practical details of the preparation of the numerous media employed in the recognition and differentiation of various groups of the Enterobacteriaceae. It ends with a brief description of the preparation of diagnostic antigens and sera.

This book fills many needs. It supplies clinical, public health, and veterinary bacteriologists with much practical information on the isolation and identification of Enterobacteriaceae and, because it discusses in detail almost every aspect of 'enterobacteriology', is equally useful to the clinician, the epidemiologist, and the research worker. Because of the volume of its documentation it is a valuable source of reference. It is naturally inevitable to find lacunae in a book of such wide scope, but these are relatively few, and the reviewer hopes that they will be filled in a later edition. The index could also be expanded with advantage. In general, however, the authors are to be congratulated on their comprehensive treatment of their subjects.

E. S. ANDERSON

WHOLE-BODY COUNTING A Symposium. (Pp. 535; illustrated. 60*s*.) Vienna: International Atomic Energy Agency. 1962.

One of the more remarkable consequences of the rapid development in scintillation counting devices over the past 10 years has been the proliferation throughout the world of equipment capable of measuring extremely low levels of radioactivity in the human being. The determination of body burdens of naturally occurring potassium-40 and of the caesium-137 produced in nuclear test explosions is fast becoming commonplace. This symposium, organized by the International Atomic Energy Agency in 1961, provided a unique opportunity for over 100 workers from more than 20 countries to exchange experiences in this field. The published proceedings are divided into an introduction, by Professor F. W. Spiers, of the University of Leeds, and six other sections, covering the properties of radiation detectors; calibration techniques; typical whole-body counting facilities; studies of natural and contamination burdens of radioactivity; data-processing techniques; and clinical applications of whole-body counting. Discussions are fully reported; indeed, there is one notable example of a discussion almost three times as long, in print, as the paper considered. Clinical applications of whole-body counting are concerned chiefly with studies of the retention of administered radionuclides and the possible replacement of troublesome cumulative excreta collection by direct periodic measurements on the patient concerned; work reported here includes long-term exchangeable sodium studies, measurements of total body potassium in patients with muscular dystrophy, and miscellaneous clinical investigations, as for example measurements of the absorption of iron from the gastro-intestinal tract, using test doses of iron 59, studies of protein turnover using iodine 131-labelled human serum albumin, and metabolic studies with 'bone-seeking' radionuclides such as calcium 47 and strontium 85. The equipment described ranges from elaborate systems involving 8 ft. × 8 ft. × 8 ft. rooms shielded by 6 in. thick steel plates, housing four 5 in. diameter × 4 in. thick crystals, to apparatus consisting only of eight Geiger-Müller counters, mounted directly over a patient's bed. Many of the papers are noteworthy for the amount of detailed information and analysis they contain, and there were particularly interesting discussions on calibration problems. The papers concerned with clinical applications gave most emphasis to the techniques employed, and there was little discussion of the clinical implications of some of the data presented.

The volume is very well produced, and was published with commendable speed. It can be strongly recommended to anyone concerned with the installation or use of whole-body counting equipment, in relation to clinical medicine, as well as to those concerned with problems of radioactive contamination of human beings.

N. G. TROTT

THE BORDERLAND OF EMBRYOLOGY AND PATHOLOGY, 2nd ed. By R. A. Willis. (Pp. xi + 641; 226 figures. 90*s*.) London: Butterworth. 1962.

When it was first published in 1958 The Borderland of Embryology and Pathology was rightly acclaimed as a major contribution to medical literature. In this new edition the format of the book, the chapter headings, and all the illustrations remain the same; the number of pages has been increased by 14 and over 300 new references have been added to the bibliography. The first three chapters give basic information concerning experimental embryology, the early development of the human embryo, and the structure and function of embryonic and foetal tissues. Malformations and their causes are covered in the next three chapters. In chapter 5, the paragraphs on the genetic determination of sex, human intersexes, and sex-chromosomal abnormalities have