zinc analysis by TCA precipitation accurate for samples of leukocytes, erythrocytes and plasma containing as little as 1 microgram of zinc.

P.F.W.


A method of partial purification of plasminogen is described and the suggestion is made that human serum contains only one proteolytic enzyme that is activated by streptokinase.

P.F.W.

**BOOK REVIEWS**


This is a valuable contribution to the obscure subject of the agglutinogen O of the ABO blood groups. The author shows that immunization of chickens with smooth Shiga bacilli results in the production of agglutinins acting most strongly on human cells containing the antigen O. This observation is based on the work of Eisler (1930) who produced such anti-O sera by injecting Shiga bacilli into goats. These antisera and also selected normal eel sera, as suggested by Jonsson (1944), were used in the present study. Furuhata and Sugishita, in 1935, has shown that certain Japanese eel sera agglutinated all group O cells and some A, B, and AB cells strongly, due to a factor which they designated as E. It seems almost certain, however, that factors E and O are identical. In analyzing the differences in content of agglutinogen O in the various ABO blood groups and subgroups, Grubb used a quantitative (titration) technic. He failed to point out, however, that differences of one or even two or three tubes in titrations are not necessarily significant, due to the crudeness of the technic. Despite this, his findings support the theory proposed by the reviewer (1944) that anti-O sera react with a property shared by the agglutinogens O and A, and determined by genes I and I respectively. This is lacking from the products of genes I and I. Grubb refers to the observations of Morgan on his so-called H substance. The present reviewer has never been able to understand the essential differences, if any, between the H and O substances. Anti-O sera, like anti-Rh and other antisera, contain antibodies which may be either univalent or bivalent. Differences between the behavior of univalent and bivalent anti-O sera may have been mistaken by Morgan and perhaps by Grubb for differences in specificity.

Despite Dr. Grubb's excellent study, the subject of the agglutinogen O remains as obscure as ever. The main difficulty to the present time has been the inability to obtain anti-O sera of high titer and specificity. Unless a consistent method is evolved for obtaining such potent and highly specific anti-O sera, the chances for resolving the problem satisfactorily are slim.

A. S. Wiener


*Haematologische Tafeln, Sandoz.* Basel, Switzerland, A. G. Sandoz, 1949. 228 illustrations, 38 plates in color. (In German or French text.)

Before me are three recent atlases dealing with the blood and bone-marrow. Others have been reviewed in previous issues and still others occupy more or less prominent places on my bookshelves. I must confess an attachment to the most famous of all hematologic atlases, that of Doctor Karl Schleip. It was beauti-
fully revised before the War, in 1936, by Alder.* Made up of single microscopic fields on individual plates, the paintings and lithography are completely true to life and a joy to behold. Some of the Japanese atlases, of which I have two or three, contain some of the most beautiful and vivid lithographs one can find. For delicacy of coloration, however, and for pure artistic achievement, the paintings of blood cells, particularly of hemohistioblasts, in Ferrata’s book cannot be excelled.

The atlas of Merklen and Waits of Strasbourg is in the best European tradition. There are fifty-eight pages of colored plates on glossy paper, one-half the page being occupied by a microscopic field at a magnification of about 1500. The other half represents a black and white duplication of the colored field with numbers for identification of cells. The cells are meticulously drawn, true to life, and the lithography is clean and vivid. The cellular descriptions are detailed and accurate and in addition the actual blood counts are given for each microscopic field. A few bone marrow plates are presented, together with an appendix consisting of details of all the cases presented. This is a beautiful piece of work, of great educational value, and is certainly to be recommended for the aspiring student of the blood and marrow, who wishes to correlate the blood and marrow findings with the clinical facts of a case at hand.

Custer’s atlas is made up of photomicrographs of blood and marrow, in black and white and in color, and from sections as well as smears. It is up to the minute as far as new material goes, the author having had the opportunity during his late Army service to study all the material on blood and marrow at the Army Medical Museum. The large black and white photomicrographs of sections and of blood smears are superb, but unfortunately, the same cannot be said for the kodachrome photomicrographs of the bone marrow aspiration smears. These are often at very high magnification (1280X) and perhaps because of this not infrequently appear blurred and ill-defined. Despite this, the book should be in every hematologist’s library. Because of the wealth of material, and the large number of photomicrographs of marrow sections, it will be of great value for teaching purposes. The photomicrographs in color, although somewhat fuzzy, are however accurate and do not mislead by a possibly “romantic” treatment on the part of the artist. The book is completed by a chapter on technic, containing a truly original handling of how not to make bone-marrow smears.

It has remained for a pharmaceutical house (Sandoz) to publish the most comprehensive of the present group of Atlases. Presented in loose leaf format and in large folio size, there are 38 plates made up of 399 figures. The latter are in turn made up of 509 individual photomicrographs in color; these are in general excellently done, the colors are true, and there is no fuzziness.

The bone-marrow and blood films of such abnormalities as pernicious anemia, the various types of leukemia, etc., are conveniently grouped together on the same plate. Facing this are careful descriptions of the individual cells.

In addition there are sections on terminology, derivation of the blood cells, an excellent chapter on staining technics, including some of the newer histochemical methods, a section on normal blood and bone marrow values as well as forms for listing blood and marrow cells. The platelets, cell descriptions, and introductory matter, are accompanied by 93 pages of text and a good index.

This monumental work is a credit to the pharmaceutical house which initiated it and to the many physicians who collaborated in its development. In these days of rapidly mounting printing costs, particularly for colored lithographs, this Swiss-made, commercially financed Atlas should remain a standard reference work for some time to come. Its loose-leaf arrangement will doubtless allow for changes.

* A new edition, just published, will be reviewed in a later issue.