Letter to the Editor

PREPARATION OF 2-(4'-HYDROXYBENZENEAZO)-BENZOIC ACID

This dye is usually very expensive. It is easy to make up by the following method, and the product is indistinguishable from that sold as a reagent for albumin.

Dissolve 13.7 g (0.1 Mole) anthranilic acid in 140 ml of dilute hydrochloric acid (1 vol concentrated acid and 4 vol water). Place the solution in the deep-freeze with an immersed thermometer until the temperature falls below -5°C and the contents are a semisolid mush (solution A).

Dissolve 7 g (0.1 Mole) sodium nitrite in about 25 ml water. Cool in the deep-freeze but do not allow to become solid (solution B).

Remove solution A from the deep-freeze and break up the semisolid mush. Add solution B, 1 to 2 ml at a time, shaking gently after each addition. If the temperature rises above -2°C return to the deep-freeze until the temperature has fallen below -5°C , then continue the addition. Test mixture with starch-iodine paper when nearly all solution B has been added. If iodine is liberated, enough nitrite has been added. If not, continue to add nitrite, about 1 ml at a time, until the test becomes positive. Cool again to below -5°C . Add, 1 ml at a time, 5% ammonium sulphamate; if the foaming is excessive, add a drop of caprylic alcohol. Continue the addition until foaming ceases. The starchiodine test should now be negative. Return to the deep-freeze until the temperature falls below -5°C .

Solution C is made up by dissolving 9.4 g (0.1 Mole) phenol in 40 ml 20% caustic soda. Add solution C to the diazo solution in 1 to 5 ml quantities, returning the flask to the deep freeze whenever the temperature rises to -2°C .

Do not use a mouth pipette. Use a Pasteur pipette or a Pumpette.

When all the phenol has been added, wash the last traces in with a few millilitres more water. Cool again to -5°C or below. Add 10 ml 40% caustic soda, mix well and test with indicator paper. If not strongly alkaline, add more caustic soda until it becomes so. The solution goes deep brown and clears. Add 70 g sodium chloride and agitate until dissolved. When solution is complete add hydrochloric acid (1 in 5) until strongly acid, while stirring or shaking vigorously. A yellow precipitate appears. Filter off the precipitate in a sintered glass Buchner funnel (porosity 0, 1, or 2) and wash twice with water on the funnel, breaking up the cake each time. Suck and press dry. Transfer to an unglazed plate and dry overnight in the oven at 105°C to remove the last traces of phenol. Grind to a convenient powder in a mortar. Yield is about 15 g.

The absorption spectra show flat maxima at 360 nm in acid and between 450 and 360 nm in alkaline solution. The difference spectrum shows that with the acid solution in the reference cell there is a maximum at 410 to 420 nm, peak at 412 nm, whereas with alkali in the reference cell the maximum is at 335 to 342 nm. This suggests that for the estimation of albumin by the AutoAnalyzer method, the 420 or 480 nm filters might be more suitable than the 505 nm filter usually recommended, and indeed, excellent results have been obtained at 480 nm. GEORGE DISCOMBE

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Book reviews

HANDBOOK OF DIAGNOSTIC CYTOLOGY By H. E. Hughes and T. C. Dodds. (Pp. 247. £5.) London and Edinburgh: E. and S. Livingstone Ltd. 1968.

Cytological diagnosis is passed on by oral tradition and textbooks only play a minor part in teaching. However, an all-colour atlas as good as this provides a valuable store for reference and comparison. Some may quarrel with the choice of colour values (which are artificial anyway), but the photographs show exactly what the authors intended. Almost all of the 168 figures are multiple, and most fields are shown at two magnifications.

The emphasis is on gynaecological cytology, and the sections on the respiratory, gastrointestinal and urinary tracts, and on the breast and 'body fluids' progressively fall off in completeness and in usefulness. The style is rightly didactic, but tends to oversimplify; for instance, malignant cells have to be differentiated or undifferentiated, with no half measures, and Ruth Graham's rather eccentric classification of differentiated squamous carcinoma cells is followed. There are one or two identifications which in my opinion are wrong. Figure 97 shows Charcot-Leyden crystals and not anucleate squames. All the cells in Fig. 102 meant to be oat cells look like lymphocytes; if they fail to convince a brother cytologist then they ought not to be used to convince a trainee.

This beautiful book is not overexpensive, and it is to be hoped that a future edition may be expanded into two volumes, the second one being an improved non-gynaecological section.

A. I. SPRIGGS

PATHOLOGY OF LEUKEMIA By George D. Amromin. (Pp. 460; 365 illustrations. \$26.50.) New York: Hoeber Medical Division, Harper and Row. 1968.

The changing pattern of the pathology of leukaemia is ably reflected in this volume. Based on over 600 personal necropsies and many specimens otherwise obtained are lucid descriptions of pathological changes characteristic of leukaemia. Leukaemic pathology and iatrogenic disorders associated with modern chemotherapy and antibiotics are compared with those of the preceding era. Particular emphasis is laid on the many tissue and physio-pathological changes due to chemotherapy. Colleagues of the author contribute fascinating chapters on selected developments disclosed by new techniques. These include the electron microscopical features of normal and leukaemic formed blood elements, cytogenetics, and the application of enzymatic histochemical techniques to normal and leukaemic cells. Useful observations on differential diagnosis and preleukaemic states are contributed by the author, who also clearly differentiates leukaemia from the other proliferative disorders of the haemopoietic system. While the text does not review current concepts of the pathogenesis of leukaemia, nor does it dwell unduly upon analytical criteria for therapeutic effectiveness, it certainly familiarizes the practising pathologist with the protean manifestations of

leukaemia and with those which are attributable to therapy.

Very occasional typographical errors and minor disagreement with some statements do not detract significantly from its value. While the standard of the black and white illustrations is very high, colour would have been advantageous. However, the cost of the latter in such a lavishly illustrated volume may have completely precluded its publication, and this would have been a pity. The book should be available to all pathologists interested in leukaemia, while there is much of interest to the clinical haematologist.

E. K. BLACKBURN

PERSPECTIVES IN LEUKEMIA Edited by William Dameshek and Ray M. Dutcher. (Pp. vi + 302; illustrated. \$12.50.) New York and London: Grune and Stratton. 1968.

This volume represents the first of a series of symposia organized by the Leukemia Society of America and held in December 1966. The object of the symposium, namely, to present a picture of the whole gamut of leukaemia ranging from incidence and aetiology to physiopathology and therapy, has been achieved by a variety of distinguished authors. Welcoming remarks and summary are provided by Dameshek in his inimitably stimulating manner.

Clemmesen, reviewing the epidemiological situation on the basis of experimental, clinical, and statistical evidence, also makes valuable suggestions for future work. Dutcher's review of viruses as aetiological factors is followed by Dmochowski's account of ultrastructural studies using the electron microscope. The observations on a murine sarcoma-leukaemia virus complex by O'Connor deal with possible methods by which viruses might act at cellular and molecular levels to induce leukaemia. Sachs further discusses the mechanism of leukemogenesis, while Huebner's work suggests that secondary viruses may be necessary to help the primary virus to develop leukaemia. His presentation, together with that of Bryan, underline the complexity of the situation. Cytogenetic considerations of Hirschhorn are followed by an intriguing immunological presentation by Armstrong and his colleagues. The kinetics of leukaemic cell proliferation are ably presented by Cronkite, and succeeded by Skipper's work on 'curability' of experimental leukaemias. Then follow chapters on progress in the treatment of leukaemia, immunotherapy, and curability of lymphoblastic leukaemia by Holland, Southam, and Mathé and his colleagues respectively. Last, but by no means least are Hilleman's thoughts on the prophylactic approach. Useful references and discussion follow the main presentations.

This book should be on the shelves of all those interested in research into leukaemia. Even at its relatively high price, it is good value for money.

E. K. BLACKBURN

THE PERIPHERAL BLOOD FILM By Trevor A. Harper. (Pp. 127. 28s.) London: Butterworths. 1968.

This small pocket book is very elementary in its approach. It sets out the normal blood cells which are so well known

and then shows some abnormalities. It is always irritating to see pictures of red cells with such enormous variation in magnification, even on the same page. This makes it difficult for the beginner, for whom this book is presumably written, to comprehend the difference between macrocytes shown under a low magnification (Fig. 18) and microcytes under a higher magnification (Fig. 10), as the relative sizes are reversed!

The later chapters are potted haematology which are not recommended for pathologists although there is quite a lot of baldly stated information gathered into them.

A. GORDON SIGNY

HORMONES IN BLOOD 2nd ed., vol. 2. Edited by C. H. Gray and A. L. Bacharach. (Pp. xvii + 686; illustrated. 150s.) London and New York: Academic Press. 1967.

The growth of endocrinology since 1960 has led to this second edition becoming two volumes. As before, each chapter, by a different author, deals with a different hormone. This volume corresponds to chapter 11 onwards of the first edition (and so is mainly steroids) with six additional chapters—three on methods, the others on aldosterone, renin and angiotensin, parathyroid hormone and calcitonin. All but one chapter (oestrogens) are by new authors so this is virtually a new book.

The chapters on spectrometry, GLC, and TLC concentrate upon the advantage and limitations of these methods and include enough about instrumentation technique to serve as an introduction to practical manuals or to the original literature.

An extensive background is given to each hormone chemistry, biosynthesis and catabolism, control mechanisms, and in some cases detailed discussion of the dynamic aspects of the plasma concentration. Further, some of the authors have interpreted the measurement of blood concentrations in a very liberal manner: cortisol and aldosterone secretion rates slip in as 'indirect methods'. In short, the theme of hormones in blood has been used as a peg on which to hang some good reviews of contemporary problems in steroid endocrinology and the result, either by design or happy accident, is a textbook which admirably complements other recent publications in the steroid field. Separate bibliographies for each chapter are extensive, but do not give titles. They are, however, remarkably up to date for such a large volume.

Multiple authorship brings hazards which this book does not entirely avoid. Inevitably each chapter is dealt with in isolation. Yet there are many problems of endocrine physiology in which lessons from one hormone can be applied to others. Thus the book would be improved by a general account of the relationship of blood analyses to other methods. Two characteristics of hormone are important to the clinical pathologist: the concentration at the tissue receptors and the production rate. Concentration in blood and the rate of excretion of urinary metabolite are, respectively, approximations to these.

This consideration makes it important to define 'endocrine function' when one sets up blood analyses as 'better' than urine analyses.