Book reviews

GRAPHIC HANDBOOK OF CHEMISTRY AND METALLURGY. P. Y. Loung. Pp. 79 + Ill. (1965). *Chemical Publishing Company, New York.* $10.00.

The elements as arranged in the periodic table are the fundamental building stones of the material world. Although the study of these elements usually belongs to chemistry, the resulting data are essential to every branch of natural science. These have been plotted into graphs and the book contains 100 graphs of which 60 are periodic binary alloying graphs. In order to compare one graph with another conveniently split pages combined with a ring binder are used. The graphs of the important chemical, physical, mechanical, and metallurgical properties of the elements are presented. This book should prove to be most useful to scientists and many others through placing these well-organized graphs of the periodic properties of the elements at their fingertips. A. H.

ADVANCES IN BIOLOGY OF SKIN. Vol. VII CARCINOGENESIS. Editors: W. Montagna and R. L. Dobson. Pp. xiii + 358 + Ill. (1966). *Pergamon Press, Oxford.* 110s.

This is the seventh volume in the excellently produced and authoritative series of "Advances in Biology of Skin". Each of these provides a truly solid foundation of up-to-date thinking on the fundamental problems of skin physiology, the latest addition being no exception. It reprints the proceedings of a Symposium organized by the University of Oregon Medical School in April 1965 and has a number of distinguished contributors who are dealing with their own special fields of interest in considerable detail and with a wealth of practical research experience.

Bearing in mind the long-term frequent usage of cosmetics and toiletries, it behoves the cosmetic chemist to treat the subject of carcinogenesis with due respect even though there are no known cases of malignancy arising from the use of our products. It is therefore desirable at least to become acquainted with the principles of cell biology and to appreciate the possible implications of molecular biology. As far as carcinogenesis is concerned, one of the most puzzling issues is the problem of tissue homeostasis or, to put it crudely, what is the normal mechanism for controlling the size of any organ in the human body. Professor Bullough and Dr. Edna Laurence have studied this problem for many years and have worked out a fascinating series of hypotheses which are summarized in Chapter 1.

The kinetics of epidermal reaction to carcinogens and other skin irritants (O. H. Iversen) has obvious implications for the cosmetic scientist and so has Bingham and Horton's contribution dealing with experimental observations related to occupational

cancer. There are two invaluable chapters dealing with uv radiation in relation to carcinogenesis; these would seem to be of special interest indicating, as they do, not the harm that cosmetics might theoretically produce, but an important sphere in which they might have a beneficial effect.

There is inevitably a fairly large content of material in this book which would hardly be intelligible to the reader lacking a biological training, but nevertheless the subject-matter is on the whole dealt with lucidly; it is certainly well-illustrated, well-documented and, in fact, technically impeccable in the publishing sense. I hope that it will be studied by cosmetic scientists with the avidity that it deserves.

N. J. VAN ABBÉ

EXTRA PHARMACOPOEIA MARTINDALE. 25th Edn. Editor: R. G. Todd. Pp. xxviii + 1804 (1967). *Pharmaceutical Press, London.* 150s.

"Martindale" has a special place in the hearts and minds of British chemists; not only pharmacists have found it invaluable, but many, many others who occasionally find themselves dealing with a problem on the boundaries of pharmacy. Indeed, some of us have often been mildly amused to find that our non-pharmaceutical colleagues have mistakenly elevated "Martindale" to the dignity of the B.P. without any notion of the statutory differences. Now we have the first new edition since 1958 and a fairly radical change in style and make-up of the publication; the editorial staff have obviously been re-thinking the entire concept and the reader is naturally inspired to examine the outcome critically.

Briefly, the Extra Pharmacopoeia sets out to provide up-to-date information on all substances, official, unofficial, and proprietary, that are currently used in medicine and pharmacy. This is clearly a most formidable undertaking with the present growth-rate of the medicinal sciences. Much of the information is, of course, available elsewhere (in the BP and BPC, for example) but many readers seem to like the idea of a single ready-reference handbook. No such book can hope to remain up-to-date for long, but the basic principle seems to be unassailable. The main question is therefore how well it has been carried out.

One obvious change in the new edition is with respect to overall size. Previous editions have adopted a small page-size, although the thickness of the volumes would hardly justify any suggestion that they were "pocketable". The 1967 Martindale is considerably larger in both respects. The merits or demerits of this change would not seem to be of great consequence; what is perhaps of greater moment is whether the new rougher-textured paper will withstand wear-and-tear as well as its predecessor.

A major change is the eclipse of Vol. II or, at least, of most of it. The great bulk of the analytical chemistry and biochemistry, etc. has totally disappeared. I imagine that most people who needed such information were in a position to consult textbooks on the specific subjects and, with the increasing complexity of all such technical fields, it would probably have been a hopeless task to continue the old arrangement. We therefore say goodbye to this nostalgically but without any tears.

In a spirit of constructive criticism, I would nevertheless draw attention to various weaknesses:–

1. Location of individual drugs is no easier than hitherto (if anything a little worse

owing to the double column printing and the rather small typeface used for drug titles).

2. Toxic effects are still described in generalities; one might have hoped to see actual data for animal toxicity.
3. There are still a host of clinical references which cannot possibly remain up-to-date for long and one wonders if they serve any useful purpose at all.
4. There is still a list of "counter" remedy formulas, despite the fact that Stamp Duty was abolished over 25 years ago and label declarations have been mandatory ever since.

There is undoubtedly a continuing place for "Martindale", since none of the official pharmacopoeial works can hope to cover the whole field adequately nowadays; I am not entirely convinced that the editing policy for the new edition is wholly right but experience in using it will allow a more balanced judgement of this in the course of time. N. J. VAN ABBÉ

THE DRUGS YOU TAKE. S. Bradshaw. Pp. 224. (1966). *Hutchinson, London.* 30s.

This is a chatty, informal yet informative – and frequently forthright – account of the ingredients of currently available patent medicines, assessing their imputed efficacy, indicating where appropriate the hazards of self-medication and yet scrupulously avoiding identifying any particular proprietary brand. Attention in book and article, both popular and professional, has often been given to the so-called "ethical" drugs; but a much greater proportion of the population take patent medicines in some form or other and no recent assessment has been made. This book is explicitly aimed at the layman and could be regarded as an essay in health education. In this reviewer's opinion it should be prescribed as compulsory reading for every non-medical person: perhaps the National Health Service should supply a soft-cover edition to every household.

Dr. Bradshaw – who has experience of military and civil general practice, as a medical adviser in the pharmaceutical industry and latterly a consultant to various food and pharmaceutical manufacturers – begins with a somewhat novelesque treatment of the broad spectrum of proprietary medicine manufacturers. He rightly emphasises the professional advice that a retail pharmacist may give regarding both the presence of generic substance in proprietaries, and the availability of non-branded equivalents. He is not concerned – other than incidentally – with the ingredients of drugs obtained upon medical prescription, but rather with the abundance of patent medicines that the public-at-large apply to their bodies or pour down their expectant throats.

He stresses how remarkable a drug is aspirin: the relief of inflammation, fever and many kinds of minor pains – and yet not euphoric and therefore not liable to addiction. Relatively few people are allergic to it or may suffer nausea, and the more widespread risk of slight stomach wall bleeding (whatever the formulation of the aspirin) can usually be avoided by suspending it in a beverage. The author would encourage self medication only within strict limits and then coupled with sound advice on treatment by activity. He explodes a number of therapeutic myths, e.g. the efficacy of bismuth antacids, or phenol down household drains; and comments on the

foolish inclusion of ingredients, such as pancreatin (which will be metabolised in the stomach) in antacids.

Two chapters exhaustively examine the need for a variety of lubricants and laxatives, mild and drastic; regarding the malfunction of the lower bowel, he demolishes many long-cherished lay beliefs – the results of which in some instances have literally been absorbed with mother's milk! On the subject of ineffective "cold-cures", he notes that the infected sleeper awakes with a dry crusted nose and yet within 10 minutes of rising has cascading nostrils: perhaps if science knew the reason an effective cold cure might be found at last? Apropos of the virtuous feeling of restricting infection by enduring the cold in bed, he produces the delightful metaphor "gilding the lily of repose with the lacquer of virtue"; but overlooking thereby the original reference to "painting the lily". He regards as inconclusive the small amount of evidence that massive doses of vitamin C may have curative or prophylactic effect on the infection. In contrast to their literally vital importance in medically prescribed quantities, he stresses the risk of hypervitaminosis from overzealous unsupervised taking of the other vitamins, whether by fallacious association with vitality, alleged curative functions or an excess in infant diet additives. In this and many other contexts he hammers home the hazard of false causal relationships, wherein the correct proprietary treatment of symptoms of one condition may be useless or even harmful for apparently similar symptoms of a different disease. In passing one notes that it is chemically incorrect (although no doubt clinically desirable) to write baldly (p.121) that "nicotinic acid has nothing whatever to do with nicotine". There is an exposé of extravagant claims, e.g. those for tonics and tonic wines, and the use, abuse and plain misconceptions of the taking of alcohol and tobacco are considered and contrasted with the stimulant effect of tea and coffee.

In assessing the beneficial use of patent medicines as a whole, there is a confusing use of the terms "guilty" and "not guilty"; the definition on p.156 is presumably back-to-front. Reviewing the specific groups of patent medicines that he has examined Dr. Bradshaw classifies them as 'dangerous', 'harmless' or 'mildly useful'. In a further series of chapters he then considers the reasons for the "old fashioned stupid look to many patent medicines" (sic). In part he blames the ambivalent attitude of medical practitioners, who may object to lay diagnosis of mild symptoms, yet would be incapable of dealing with the vast volume of trivial short-term physical and nervous disorders. The legacy from half a century ago, when the doctor's nostrums competed with those of the local patent medicine manufacturer and with old wives' remedies, has no relevance today. Dr. Bradshaw concludes that the medical profession has a double responsibility – "to educate and guide the general public" and "to advise and push the manufacturers". He considers that the admittedly overworked Dunlop Committee on the Safety of Drugs should take a retrospective look at existing patent medicines and perhaps ensure that advertisements correspond with the submitted claims; but this would surely need a significant enlargement of the, at present, very much hard pressed secretariat. Other potentially controllable aspects that Dr. Bradshaw touches upon include manufacturing conditions, quality control, the mystique of labelling in pharmaceutical Latin, the restriction of the sale of medicines to pharmacies and, very topically, the dichotomy between a pharmacist's professional and commercial activity. He also objects to expression of composition by percentage but one would expect the non-mathematical layman to be just as confused by an absolute weight in strange units per arbitrary dose, quite apart from the question of which ingredients are "active". Astringent attention is given to the astronomic sums

spent on, and more or less extravagant claims of, proprietary advertising. An account is given of the rather numerous voluntary committees that seek to restrict the greater excesses, without showing overt application of sanctions against the transgressors. It is much more difficult to prove that the advertising codes have been infringed in spirit rather than the letter: the former breaches seem less offensive to the author on the rather dubious analogy of parking offences; he lists five species of contraventions: popular misconceptions, a grain of truth, false superiority over others, imputed need, pseudoclinical reports. The most serious result is that patent medicines may thereby be taken for ailments that are non-existent or require different treatment. Some teeth might be given to control of advertising, the author suggests, by a body the counterpart of Dunlop, with sanctions to prohibit further advertising for up to, say, a year from an offence.

What is the alternative? Scrap the lot? Could GPs cope with a load that would probably be double the present number of patients? – Dr. Bradshaw thinks not. He dismisses too readily the prospect of professional advice from retail pharmacists (in contrast to suggestions for health education made by W. Duffy at a recent Pharmaceutical Society branch meeting). His revolutionary proposal is that the patent medicine advertiser should be required to devote some space (or time) to approved health education relevant to his product. Otherwise the author foresees little major change: his main purpose is enlightenment. G. F. PHILLIPS.

INFRA-RED INSTRUMENTATION AND TECHNIQUES.

A. E. Martin. Pp. x + 180 + Ill. (1966). *Elsevier Publishing Co., Amsterdam-London-New York.* 65s.

In a very brief preliminary historical survey the reader is reminded that short-range research single-beam spectrometers were well known in 1900 and he is then equally briefly introduced to the key stages in the development of the wide range of double-beam recording ir spectrophotometers that are available today. The first half of the book is divided into short sections in which are described the basic components: source, slit condensing system, monochromator, detector, amplifier and spectrum presentation. Five individual sources are critically assessed, with very brief notes on power stability. Reference is made to a variety of detector types and the corresponding optical systems. For monochromators, the design and operation of prism and grating are contrasted: the section on prism- and filter-controlled gratings is particularly instructive and includes descriptions of the means used to achieve linear scales for either wavelength or wavenumber and a clear comparison of the relative advantages of the two presentations. There is also a very helpful discussion of slit inequality difficulties. The optics of single, and a variety of double, beam operating conditions are examined and their relative merits contrasted.

Following this general exposition, some commercial spectrometers are described: only UK and the better known American instruments are included. It is very helpful to find some indication of the refinement that may be expected for finite price ranges. There is a useful account of the design features of spectrometers for very long (beyond 15μ) wavelengths, with commercial examples of the complexities to which the designers are driven.

The remainder of the book is concerned with specialist instruments, accessories and techniques. Chapter 3 includes the low resolution grating "Spectrosorter"; the well known and versatile "IRGA" for the rapid determination of specific gases; radiation thermometers; and an automatic milk analyser. A particularly praiseworthy feature is a whole chapter devoted to the novel development of interferometric spectrometry: the conversion of the complex waveform to a suitable spectrum of a sample is usually achieved with the aid of paper tape fed to a high speed digital computer. Two commercial instruments, based on Michelson principles, are described but unfortunately there is no discussion of the practical difficulties that have slowed their development and the reader is referred elsewhere for reviews of fundamental work. In chapter 5 Dr. Martin recognises the manufacturers' obligation to anticipate the analyst's need for a wealth of accessories to cater for diversity of samples yet still furnish good quality spectra. He describes the principles and construction of many types of absorption cells – including micro and variable path – that are intended for a variety of operating conditions. Brief (half page) accounts are given of devices suitable for checking transmittance linearity; provision for focusing with an external sample site or a reflecting microscope; reflectance attachments; reference beam attenuation; electrical conversion of wavelength to wavenumber baseline, and transmittance to linear absorbance ordinate; optical polarisation spectra; long path multi-reflection cells for gases and low pressure vapours; and desiccant systems.

In a final chapter dealing with experimental methods and techniques, Dr. Martin briefly recommends special handling for organic, and especially aqueous, solutions and solids – using disc, mull, melt and film – and provides a slightly less sparse treatment of theroetical principles and commercial practice for Attenuated Total Reflectance spectra. Attention also is given to difference and derivative absorbance presentations.

There is a non-critical list of the better known collections of reference spectra, a short appendix describing three crystal materials, a bibliography of 86 references cited in the text and a short but mostly adequate index.

The book is couched in a condensed, almost telegraphic, style which conveys the impression of lecture notes; but in a monograph of this type, such an approach is not unwelcome. Regarding instrument design there are frequent references to original papers and current manufacturers and there are many neat optical and mechanical diagrams illustrating features of principle or construction. In several important instances Dr. Martin provides a simple mathematical treatment: the physics of emission and detection of radiation,the optics of dispersion through prisms and gratings and the effect on transmittance of multiple reflections at interfaces, and the theoretical correlation between the Fourier transform of the interference pattern complex waveform and a transmittance ratio spectrum for sample and reference beams.

Altogether an interesting and authoritative monograph from an author much of whose professional life – in an earlier decade at the Government Laboratory and since 1946 with a leading instrument manufacturer – has been devoted to the development of ir spectrophotometry. G. F. PHILLIPS.