

alcohol on *o*- and *p*-nitrophenol, respectively. This synthesis may prove useful for other carbinols.

6. The zinc thiocyanate method of Jamieson has been found satisfactory for determining the mercury in these aromatic mercury compounds.

7. *p*-Hydroxy-*m*-nitrophenyl carbinol heated on the steam-bath with mercuric acetate reacts with the formation of a monomeric mercury compound. The mercury is present as the free base in non-ionic form and probably attached to the ring *para* to the nitro group.

8. The mercury compound of *p*-hydroxy-*m*-nitrophenyl carbinol forms salts with the mineral acids. The chloride, sulfate, bromide and the iodide were insoluble. The nitrate is soluble. It also forms soluble sodium, potassium and ammonium salts. It forms a mono-acetate when crystallized from acetic anhydride.

9. These organic mercury compounds have been found to be useful antiseptics.

MINNEAPOLIS, MINN.

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### NEW BOOKS.

**Die Leichtflüchtigen Bestandteile im Magma.** By PAUL NIGGLI. B. G. Teubner, Leipzig, 1920. viii + 272 pp., 20 x 28 cm., 132 figs. Price, M. 22.

The greater part of the experimental work hitherto carried out on silicate melts has been concerned almost entirely with mixtures of the involatile oxides which go to make up the rocks as they now exist. For this the main reason is that one must first investigate thoroughly the simpler systems before proceeding to the more complex, particularly as the difficulty of carrying out the experiments and of interpreting the results is enormously enhanced when one of the components is volatile within the temperature range in question. A subsidiary reason is that until recently it was not well recognized that the presence of a volatile component in a cooling melt could cause such marked differences as it does in fact; petrologists had, it is true, attributed certain things which they could not explain on the basis of the older chemistry to what they termed "mineralizers,"—somewhat mysterious, presumably volatile substances which had disappeared from the system after doing their work. But with careful investigation of such heterogeneous equilibria, from the theoretical perhaps more than from the experimental standpoint, it became apparent that the presence of a volatile component is competent to account for many phenomena, and that progress along many lines of petrological and volcanological research will be greatly accelerated by extension of accurate knowledge of the sequence of events to be expected when a silicate melt containing a component such as water, cools rapidly or slowly, in a confined space or otherwise.

In this monograph, which was awarded the prize offered by the Fürst-

lich Jablonowskische Gesellschaft in Leipzig for the best essay on this general topic, Niggli reviews our present knowledge of equilibrium in systems containing a volatile component, and discusses its implications and applications to a large number of geologic instances. Much is still somewhat conjectural and will remain so for some time, as experimental work on this type of system yields results very slowly. But we have attained to a definite point of view which correlates, or promises to correlate, phenomena hitherto apparently diverse; and are enabled to reach certain specific conclusions, such as that the magma, or any system comprising volatile components, may on cooling and crystallizing develop high pressure by reason of the fact that the volatile components are very much less soluble in the solid than in the melt.

The book is written from the standpoint of a petrologist, and is addressed primarily to petrologists; but the author presumes on the part of the reader an acquaintance with the interpretation of equilibrium diagrams which is far from common among chemists and quite exceptional among petrologists. Indeed no one will find this easy reading; but facts are stubborn, and important factors may not be neglected merely because they render the treatment complex and hard to grasp. The first hundred pages bring together material important to any one who may be concerned with a system of this type; many of these are technically important though still inadequately understood, *e. g.*, the solubility of gases in a metal or glass and the influence of temperature upon this equilibrium. This part may be commended to any chemist who wishes to get the available scientific information on this type of system, most of which has been developed within the last few years but has not been readily accessible. In the remainder of the book the general principles derived from the study of systems with volatile components are applied to specific geologic instances, drawn from many sources.

JOHN JOHNSTON

*La Materialisation de L'Energie, Essai sur La Theorie de La Relativite et sur La Theorie des Quanta.* By LOUIS ROUGIER. Paris, 1919.

This is a very attractive description of the results of the newer theories of physical science. It describes in a non-mathematical form the results which are obtained from Einstein's theory of the relativity of motion in free space, from Einstein's theory of the relativity of motion in space containing gravitation fields, and the results of the quantum theory.

The book is written in very clear and delightful French, and can be highly recommended to the reader who wishes to get a qualitative idea of the new things which are brewing.

RICHARD C. TOLMAN

*Legal Chemistry and Scientific Criminal Investigation.* By A. LUCAS. Director Government Analytical Laboratory and Assay Office, Cairo. Edward Arnold, London, 1920. pp. viii + 181. 14.5 × 22 cm. Price, \$3.40 net.

The author frankly states in the opening of the preface that the book

makes "no pretensions to be a complete treatise on Legal Chemistry, but consists essentially of a collection of notes." Surely no treatise would be complete in the space of this small volume. As a collection of notes based on the author's experience in Egypt the subject matter is interesting, though perhaps not particularly instructive to one engaged in analytical chemical work or in investigations for the law officers in the administration of justice.

The custom in England and her colonies is somewhat different from that in this country where the authorities are more apt, or perhaps more often compelled, to seek help from the scientist connected with some institution. For this reason the director of an English Government Laboratory may be called upon for a wide variety of work such as is represented in this work. Many of the subjects unfortunately are treated very superficially and the knowledge of chemistry necessary is often nil. Though the title specifically states Scientific Criminal Investigation there appears to be no reason why the information is not equally applicable to other actions in law, such as civil cases. Much of the knowledge called for is not so much scientific as it is common knowledge accurately and carefully applied with due attention to detail, which the highly trained layman is so often able to do.

As a narrative of conditions commonly met with in Egyptian jurisprudence there is an evening's pleasant reading awaiting the interested expert.

R. L. EMERSON

**Solubilities of Inorganic and Organic Compounds.** By ATHERTON SEIDELL. Second edition, enlarged and revised, D. Van Nostrand Company, New York. pp. xxii + 843. Price, \$7.50.

The second edition of this book represents a decided advance over the first edition both in the variety of material and completeness of presentation. The earlier edition has been of inestimable value to chemists; the present is even better. In spite of the care of the author, a few errors appear. This is not surprising and as a whole the book is an admirable and accurate compilation of data. A compilation, however, cannot make good deficiencies of the original reports of measurements, as for example, on p. 121 the statement "100 cc. HBr dissolve 0.04 g. BaSO<sub>4</sub> at the boiling point" is indefinite, since the strength of acid is not stated. Possibly this is better than no information. On the other hand, on p. 131 appears "The solubility of *o*, *m* and *p*-nitrobenzene." This is a quotation from the original article and doubtless means dinitrobenzene. It is certainly not good use in nomenclature. The descriptive matter accompanying the tables is distinctly valuable and possibly could be enlarged with benefit, particularly in regard to the source and purity of materials. But in this respect also, investigators are notably lax in furnishing adequate informa-

tion, and the compiler is helpless. The author is to be commended for emphasizing the identity of solubility- and freezing-point data, a fact known to all but not universally appreciated. Many references and tables relative to freezing points of mixtures are included. The author has, so far as possible, recorded the original experimental values. In the hands of anyone but an expert this is probably the best procedure. However, when treated by a competent critic such data are better plotted graphically, preferably the logarithms if temperature is the variable, and the solubilities at round concentrations or temperatures read from the plot. This not only yields results easier to tabulate and use but also furnishes a great deal of information concerning the precision and reliability of the measurements.

It would be a gigantic task to treat the material in this book in such a fashion, but would render it much more serviceable. Dr. Seidell, who, by the way, did all of this work including copying and proof reading practically unassisted, has already paid his full measure of service in this field and deserves assistance. It seems to the reviewer that the National Research Council or other organization for the advancement of science should place a sufficient number of assistants at the disposal of Dr. Seidell so that he might make his material even more useful than he has already done.

The book concludes with a brief resumé of experimental methods for the determination of solubility.

E. K. STRACHAN

**Everyday Chemistry.** By ALFRED VIVIAN, Dean of the College of Agriculture of the Ohio State University. American Book Co., New York, 1920. 560 pages, 245 figures. 13 x 19 cm.

This is one of a series of text-books based on the idea that all school children should know the chemical, physical and biological forces with which they will have to work and the laws which govern them, and acquire some skill in handling them. The book covers "the science and art of chemistry as applied to everyday life, with special emphasis on household economics, soil fertility, and the relation of chemistry to plant and animal production." In preparing it the author has given, first, a brief study of the elements and their important compounds and reactions; this is followed in Part II by organic chemistry, 54 pages, and applied chemistry, 122 pages. Under this last caption are treated chemistry of plant growth, enzymes, digestion, fermentation, principles of nutrition, feeding farm animals, human foods, milk and its products, testing milk, leavening agents, food preservation and disinfectants, textiles, dyeing and bleaching, paints and varnishes, cleaning materials and insecticides and fungicides. Part III, 140 pages, treats of soils and fertilizers.

The book seems to have been carefully compiled; the statements of fact

are accurate and the language is simple and clear. No further incursion into the realm of theory has been attempted than was necessary. The desirability of using the experimental method wherever possible is constantly enforced. The mechanical preparation of the book is excellent in every respect.

EDWARD HART