

The larval period extend upto 5 days. The full fed larvae either come out of the host pupae and pupate outside, or may pupate within the host puparium itself. The pupa is oval shaped, dorsally convex and with hard and dark brown casement. The pupal period varies from 7 to 11 days. The adult emerges out by breaking the dorsal part of the puparium.

The parasitic nature of many species of *Megaselia* is still a matter of controversy. Evidently the line between their scavengerous and parasitic habit is not distinct. The larval and pupal stages of *Megaselia* sp. got from the field-collected host material, during the rainy season can also indicate the possibility of their scavengerous nature. However, the adults emerged in the laboratory, oviposited on and near the host pupa and their larvae attacked fresh *N. serinopa* pupae. Even in cases, where the eggs were laid distantly, the larvae when hatched, managed to reach the host and feed on it. These facts clearly suggest their potential parasitic habit.

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REVIEWS

Unsolvable Classes of Quantificational Formulas. By Harry R. Lewis. (Addison-Wesley Publishing Company, Inc., Advanced Book Program, Reading, Massachusetts 01867, U.S.A.), September 1979. Pp. xv + 198. Price: U.S. \$13.50 (Paperbound).

This book is addressed to logicians, theoretical computer scientists interested in the theory of computation and combinatorial mathematicians. It deals with the recursive unsolvability of decision problems for automata, tiling problems, linear sampling problems and first-order logic. The first part presents unsolvable problems in combinatorial systems and these are used in the second part to present the strongest known results on unsolvable classes of first-order formulas.

Turing machines are defined and the halting problem is used as the basis for the rest of the unsolvability proofs. Then the 'origin-constrained tiling problem' namely, the problem of determining whether the first quadrant of the plane can be tiled with copies of square tiles drawn from a given finite set of prototypes subject to restrictions about which tiles may abut each other on the four sides, and which may appear at the origin, is presented. The Turing

machine halting problem can be reduced to this problem. Then two different versions of the linear sampling problem are dealt with and the results are extended to the unsolvability of two unconstrained tiling problems. One of these is without the origin constraint and the other uses hexagonal tiles instead of square ones. Finally, the Post Correspondance problem and the halting problem for two-counter machines are presented. These are utilized in Part II.

The second part deals with decision problems of first-order logic. The basic definitions of the theory of Herbrand expansions are introduced first. Then the unsolvability of the decision problem for formulas having only one predicate letter, which is dyadic is dealt with. Stronger versions of this result are proved next. Then formulas restricted according to the possible sequences of arguments an atomic subformula may have, are considered. Next, Krom and Horn formulas which are special kinds of formulas in conjunctive normal form are dealt with. Finally, it is proved that formulas with four atomic subformulas form an unsolvable class. The strengthening of this theorem to the class of three atomic formula is an open problem.

The book is fairly self-contained and the presentation is lucid and simple. It will be of interest to any one who has mathematical maturity and a flair for abstract thinking.

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UREA-Formaldehyde Resins. By Beat Meyer. (Addison-Wesley Publishing Company, Inc., Advanced Book Program, Reading, Massachusetts 01867, U.S.A.), November 1979. Pp. xii + 423. Price: US \$ 29.50 (Hardbound).

The book *Urea-Formaldehyde Resins* by Beat Meyer contains eleven chapters and runs to xi + 423 pages. Chapter 1 is an excellent introduction to the advanced monograph whereas Chapter 2 describes the history of Urea-Formaldehyde resins in chronological order emphasizing the important development and modifications of Urea-Formaldehyde resins that took place from time to time. Chapters 3 and 4 deal with the basic chemistry and the basic principles for the production of Urea-Formaldehyde and modified Urea-Formaldehyde resins including their raw materials formaldehyde and urea. The important chemical reactions of the above materials are also discussed. Various types of NH compounds, aldehydes, ketones and numerous types of additives required for the production of these resins have been dealt elaborately. The wealth of knowledge cited particularly on various types of additives in this monograph to modify the Urea-Formaldehyde resins and their properties and the practical examples given in appendix for preparing typical Urea-Formaldehyde resins are of great importance to practical Urea-Formaldehyde resin chemists and Urea-Formaldehyde resin manufacturers. Chapter 5 has been devoted for chemical analysis of Urea-Formaldehyde resins and their raw materials, viz., urea and formaldehyde. Sampling techniques of formaldehyde have been described and a comparison of various methods of formaldehyde determination has been given by the author. Chapters 6 to 8 mainly concern with the industrial applications of Urea-Formaldehyde resins specially in the manufacture of wood bonded laminations, plywood, particle board, fibre board, adhesives for wood, etc. Similarly their applications in the manufacture of Urea-Formaldehyde foams, insulating materials, medical and agricultural products have been reviewed. In addition to the above uses, its applications in textile, coatings, paper, construction materials, as binders for metal castings and in the manufacture of molding powders, etc., have been described. Chapter 9 deals with the physical properties and performance of the Urea-

Formaldehyde bonded resin products. Various U.S. standards for Urea-Formaldehyde wood adhesives have also been described. The problem of formaldehyde release in Urea-Formaldehyde bonded products and various methods to reduce the odour of formaldehyde in Urea-Formaldehyde bonded materials have also been discussed. Chapter 10 deals with the environmental effect of Urea-Formaldehyde resin on health including the toxicity of resin's raw materials urea and formaldehyde. The effect of acute exposure and the chronic exposure has also been discussed. The various regulations and recommended limits in this regard have also been cited. And the last chapter briefly discusses the future trends of Urea-Formaldehyde resin production and possible future uses. The author has expressed his views on the future health regulations and standards that are likely to come into force.

The author has incorporated numerous tables, charts, drawings, graphs and excellent photographs in this monograph which enables the reader to understand the subject more clearly. The high quality of the paper and printing is also worth mentioning.

This book contains glossary as well as bibliography of about 700 books and journal references in addition to about 600 patent references which are very nicely indexed in the author, patent and subject index. The book is very useful to resin chemists, resin manufacturers, government and universities who work with Urea-Formaldehyde resins.

The monograph is written by the specialist in the subject and is a welcome addition to the field of Urea-Formaldehyde as much of the knowledge in this field exists as proprietary and as trade secrets.

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Data Handbook for Clay Materials and Other Non-metallic Minerals. Edited by H. Van Olphen and J. J. Fripiat. (Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England), 1979. Pp. xiv + 346. Price: \$ 66.00, £ 33.00.

This handbook is a much-needed reference book essential for all workers involved in research and development on clay materials. Those working on ceramics, soils, paper, cosmetics, geology and petroleum exploration will welcome this hand-book.

The book contains a large collection of chemical, physical and mineralogical data on carefully selected typical clay materials and a few other minerals. The book provides authoritative data on various properties of these reference materials.

Another welcome feature of the book is the discussion of methodology by experts, for each property measured and tabulated. The discussions also often provide advice on the method of selection, experimental details and direct the user to the appropriate literature.

The book is in two parts. Part one is like a ready reconnaissance, where the data on clay minerals are summarised. The summarised data include thermal data like TG, DTG, DTA, mineralogical composition, cation exchange capacity, surface area, morphology, infrared spectra.

In part two detailed data are presented on: Clinical analysis, trace-element analysis by XRF, X-ray diffraction, cation exchange capacity, surface area, electron microscopy, thermal analysis (TG, DTA), and infra-red spectra.

The book will be a valuable addition to any research library.

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Annual Review of Medicine: Selected Topics in the Clinical Sciences, Volume 30. Editor: William P. Creger, Associate Editors: C. H. Coggins and E. W. Hancock. (Annual Reviews, Inc., 4139 El Camino Way, Palo Alto, California 94306, U.S.A.), 1979. Pp. 514. Price: \$17.00 in U.S.A.; \$17.50 elsewhere.

This volume 30, for the year 1979, is already available. This will be of great help to the clinicians and research workers in medicine and allied subjects. The work is a collection of 36 titles covering 514 pages. The book comprises of cumulative index of contributing authors and cumulative index of chapter titles. The reader will appreciate the enormous and up-to-date work

that has been going on all over the world in these fields of medicine. The complicated experiments and observations are written in simple and easily understandable language. While going through the volume the reader will appreciate the new thoughts and approaches arising in the horizons of medicine. All the chapters have uniform and excellent standard.

The book comprises many interesting chapters on various subjects. The chapters on arterial wall and atherosclerosis and on hair cell leukaemia are very lucidly written. The chapter on angiographic management of g.I. tract bleeding is illuminating. The information with regard to medical management of peptic ulcer is up-to-date and helpful to a practising physician. There is an extensive coverage of literature on sick sinus syndrome and also about its pathophysiology. The coverage on prolonged O-T interval has taken into account ECG as a useful predictor of the likelihood of sudden death. The indispensability of CT scanning as a diagnostic modality in the abdominal and neurologic diagnosis has been rightly stressed. The chapter on localisation and antibiotic management of urinary tract infection forms a good guide to the treatment of urinary infection. The authors have reviewed extensive literature to substantiate the fact that urinary tract infection does not play a primary role in the pathogenesis of chronic renal failure. Chapters on management of insomnia and diabetic acidosis have comprehensive and practical informations. The book fittingly ends with the topic on the efficacy of biofeedback therapy.

The volume is a highly commendable piece of work with extensive coverage of up-to-date literature and is useful both to the research worker and medical men. The book makes ideal reading material for post-graduate medical students and consulting physicians.

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The Cancer Research Institute will be conducting a course on "Use of Tissue Culture in Investigations of Human Cancer" to be commenced from November 12 to December 2, 1980. This Course is being sponsored by the International Cell Research Organization, Cancer Research Institute and the Indian National Science Academy. It is a laboratory course for

medical and basic scientists having interest in tissue culture in the study of human tumours. Applications superscribing "INTERNATIONAL TRAINING COURSE-NOVEMBER-DECEMBER 1980" should be submitted before July 1, 1980 to Dr. M. G. Deo, Cancer Research Institute, Tata Memorial Centre, Bombay 400 012, India.