



Fig. 3—Comparison of theoretical and experimental dissolution rate ratios assuming $D' = 1.27 \times 10^{-6}$ cm.²/sec., calculated from Eq. 4. Key: static, O; 100 r.p.m., Δ; theoretical ratios predicted by Danckwerts' theory, ---; rotating disk theory, —; diffusion layer theory, - - -.

ment between theory and experimental data as Fig. 2.

Despite this good agreement, one must be cautious when using this approach because of the assumption that the micellar diffusion coefficient remains constant with increasing surfactant concentration. Changes in viscosity, micelle interactions, micelle type, etc., could significantly alter the micelle diffusion coefficient as surfactant concentration is changed. For these reasons, we feel that the approach utilized in our study should be used to clearly elucidate the specific dissolution mechanism operative under a given set of conditions, i.e., the correlation of the relative dissolution rates with the corresponding effective diffusion coefficients, which are independently determined.

It also should be noted that the hydrodynamics associated with a rotating disk is such that the diffusion layer model *per se* is not applicable and the Levich equation must be used. The rotating disk model represents one of the few instances of an exact mathematical solution to a classical hydrodynamic problem, while the diffusion layer model assumes a uniform one-dimensional diffusion layer. Therefore, this diffusion layer model cannot be applied to the diffusional flux from a rotating disk, which is influenced by both a centrifugal force and a concentration gradient. In view of this and the reasonable agreement of the Danckwerts' prediction to their static data, this analysis confirms our conclusions. Since they used a completely different drug-surfactant system from that used in our study, it appears that our conclusions are generally applicable to micellar transport systems.

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- (2) Singh, P., Desai, S. J., Flanagan, D. R., Simonelli, A. P., and Higuchi, W. I., *ibid.*, **57**, 959 (1968).
- (3) Levich, V. G., "Physicochemical Hydrodynamics," Prentice-Hall, Inc., Englewood Cliffs, N. J., 1962.

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Keyphrases

Dissolution study—rotating disk method
Stirred conditions—diffusion layer model
Static conditions—Danckwerts' model

REVIEWS

Rogers' Inorganic Pharmaceutical Chemistry. Eighth Edition. By TAITO O. SOINE and CHARLES O. WILSON. Lea & Febiger, 600 S. Washington Square, Philadelphia, PA 19106, 1967. xii + 704 pp. 15 × 23 cm. Price \$12.00.

Readers familiar with previous editions of this well-known textbook will note that the most significant difference is in the discussion of the pharmacological action of the ions of each element con-

sidered. This portion of the text material has been extensively rewritten and expanded to include recent observations, to which literature references are supplied. Among these may be mentioned: lithium salts in the treatment of mania; the therapy of osteoporosis with sodium fluoride; hypopotassemia as a possible consequence of the administration of the thiazide diuretics; the internal and external action of the copper ion; silver nitrate in burn therapy; zinc compounds in wound healing and in atherosclerosis; and the mucosal block, active transport, and iron-chelate hypotheses for the absorption of

Books

iron. The chapter on radioactivity and the radioactive elements has been completely rewritten and updated by Dr. Herbert Jonas, College of Pharmacy, University of Minnesota.

As in the previous editions the text material includes sections on the history, occurrence, physical properties, chemical properties (including a brief explanation of the assay), tests for identity, commercial manufacture, pharmacological action, and uses of the elements and their inorganic compounds and preparations of pharmaceutical importance.

The material has been revised to conform with the seventeenth revision of the "United States Pharmacopeia" and the twelfth edition of the "National Formulary." Monographs have been added for povidone-iodine, ferrous fumarate, iron dextran injection, and magnesium stearate. Discussions of the nonofficial drugs dextriferron, iron sorbitex, and ferrocholate have been added.

In numerous instances data on the melting point, boiling point, and density of elements have been revised. Certain literature references cited in the seventh edition have been deleted from the eighth edition.

The order of presentation of the text material is identical with that of the seventh edition, beginning with a chapter on atomic structure and chemical bonding, followed by chapters on the elements and their inorganic compounds and preparations. Oxygen, hydrogen, and nitrogen are considered first, followed by the halogens, the inorganic acids, and a chapter on solutions and solubility phenomena. All other elements are discussed in the order of their occurrence in the periodic table, Groups I through VIII, followed by the inert gases and the chapter on radioactivity. The monographs on the official compounds of each element are arranged alphabetically after the discussion of the parent element. Other compounds of pharmaceutical interest, particularly those recently dismissed from the official compendia, are considered more briefly at the end of each chapter.

Several errors which occurred in the seventh edition have been corrected. However, the statement on page 99 that "... elemental iodine is officially recognized in a variety of preparations including ... Iodine Ointment, ... Phenolated Iodine Solution (Boulton's Solution) and Strong Iodine Tincture" needs revision. Errors by the printer were noted on page 404 in a phrase which should read "... the poisonous barium sulfide or barium sulfite.", on pages 615 and 616 where ferrous gluconate is incorrectly designated as being official in the USP XII instead of NF XII and on page 669 where *nucleus* is misspelled.

This well-established and authoritative book should continue to enjoy widespread use as a classroom textbook and reference work for students and practicing pharmacists.

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NOTICES

Febrile Convulsions. By J. GORDON MILLICAP.
The Macmillan Company, 866 Third Ave., New

York, NY 10022, 1968. xv + 222 pp. 14 × 21.5 cm. Price \$7.95.

Handbook of Preventive Medicine and Public Health. By MURRAY GRANT. Lea & Febiger, 600 Washington Square, Philadelphia, PA 19106, 1967. ix + 242 pp. 13.5 × 20 cm. Price \$6.25.

Dispensatorium Hafniense 1658. (Dispensatory of Copenhagen, a facsimile edition.) By THOMAS BARTHOLINUS. Dansk Farmacihistorisk Selskab, Copenhagen, Denmark, 1966. 288 pp. Price \$15.00.

Apothecaries: A History of the Worshipful Society of Apothecaries of London, 1617-1967. By W. S. C. COPEMAN. Pergamon Press, Inc., 44-01 21st St., Long Island City, New York, NY 11101, 1967. xiii + 112 pp. 17 × 24 cm. Price \$10.00.

Russian Chemico-Pharmaceutical Journal. No. 1, January 1967. Translation Editor I. J. MACDONALD. Euromed Publications, 97 Moore Park Road, London, S.W. 6, England. 44 pp. 17 × 23.5 cm. Subscription: single monthly issues \$5.00; half-yearly for any 6 consecutive issues \$78.00; full annual subscription (12 issues) \$144.00.

Russian Pharmacology and Toxicology. No. 3, Vol. 30, May-June 1967. Edited by G. N. PERSHIN. Euromed Publications, 97 Moore Park Road, London, S.W. 6, England. 16.5 × 23.5 cm. Annual subscription: \$25.00 per volume of 6 bimonthly issues. Paperbound.

Prescribed and Nonprescribed Medicines, Type and Use of Medicines, United States, July 1964-June 1965. (PHS Publication No. 1000, Series 10, No. 39.) Available from the Supt. of Documents, U. S. Government Printing Office, Washington, DC 20402. 41 pp. 20 × 26 cm. Price 30 cents. Paperbound.

Hagers Handbuch Der Pharmazeutischen Praxis. Fur Apotheker, Arzneimittelhersteller, Arzte und Medizinalbeamte. By H. J. ROTH und W. SCHMID. Von P. H. LIST und L. HÖRHAMMER. Erster Band, Allgemeiner Teil, Wirkstoffgruppen I. Springer-Verlag, 1 Berlin 31 (Wilmersdorf) Heidelberger Platz 3/Berlin-West, Germany, 1967. xxxi + 1270 pp. 17 × 25 cm. Price: Gebunden DM 180,-; U. S. \$45.00/Subscription Price: Geb. DM 144,-; U. S. \$36.00.

Biochemical Preparations. Vol. 12. W. E. M. LANDS, Editor-in-Chief. John Wiley & Sons, Inc., 605 Third Ave., New York, NY 10016, 1968. ix + 152 pp. 15 × 23 cm. Price \$8.50.

Les Hétérosides Cardiotoniques de la Digitale des Leurs Dérivés Semi-Synthétiques. By A. GEORGES. Editions Arscia S.A., 60 rue de l'Etuve, Bruxelles, Belgium, 1967. 303 pp. 15.5 × 23.5 cm. Price 600 F.B., approx. \$12.00 U. S.