a bass-reflex. (The directions are for those who wish to know *why* as well as *how*.) Chapter 10 deals with architectural acoustics, with emphasis on wave acoustics and sound insulation. Chapter 11, which deals with noise control, will be found extremely useful for the reduction of industrial noise. Chapter 12 is a good summary of acoustical measurements, especially those essential for noise surveys. The concluding chapter contains an up-to-date account of hearing, speech intelligibility, and pertinent psychoacoustic criterions. These criterions are as yet tentative but they will be welcome and useful to the acoustical engineer and to all those who are concerned with noise control.

The mks system of units is used throughout the book. Although many physicists and engineers may believe that this choice is not justified in view of the widespread use of cgs units, it is apparent, especially in Chapters 3 and 10, that simplicity results from the choice of the mks system. But for one who has been steeped for two score years and more in cgs units, the mks ones are distasteful pills for a mild disease. Beranek has sugar-coated most of these pills by adding in parentheses the more familiar cgs units.

The drawings and illustrations are well chosen and executed and supplement the text admirably. Throughout the book typical examples involving practical design are worked out in detail, and these are often followed by other useful examples and problems that the student is expected to solve. Acoustical engineers, as well as students and others interested in acoustics, will be greatly indebted to Beranek for this useful and well-written book.

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Chemical Constitution. An introduction to the theory of the chemical bond. J. A. A. Ketelaar. Trans. by L. C. Jackson. Elsevier, Houston, Engl. ed. 1, 1953. 398 pp. Illus. $6.50.

The purpose of this book, according to the author, is to so complement the standard textbooks of organic and inorganic chemistry that it will enable students to convert the large volume of chemical information into a single, coherent body. In this he has completely succeeded and thus has contributed a significant advance to the integration of chemistry on a graduate level.

The first chapter serves to set forth the four types of chemical affinity (ionic, atomic, metallic, and Van der Waals) upon which the division of subject matter is based. In the next chapter the concept of the ionic bond, developed on the basis of electrostatic attractive forces between charged spheres, is applied to ionic complexes as well as to simple salts. The third and longest chapter is a wave-mechanical development of the covalent bond, with many examples and applications to complex compounds, conjugation, and the theory of color. The interatomic attractive forces and various properties of metals are developed in the following chapter with the analogy of the electron in a box and the concept of Brillouin Zones. In the fifth and last chapter Van der Waals binding, explained as a combination of Keesom orientation energy, Debye inductive effects, and London dispersion forces, is applied to volatility, solubility, and hydrogen bonding.

This book has many excellent examples and correlations of theory and fact. Many of the relationships described, particularly in connection with ionic and metallic binding, are too frequently omitted from textbooks in this country. The author points out the importance of Coulomb forces, rather than electron pairing, as the source of exchange energy, and emphasizes this point by substituting a newly coined term, *atomic bond,* for the more familiar *covalent bond.*

It is unfortunate that such a useful book is marred by many errors. The English expression is so awkward that the meaning is sometimes obscured. In some cases lack of clarity is due to the omission of details and explanations required in the coverage of such a broad subject in a relatively small number of pages. Many authors are referred to without specific literature references. One might disagree with the classification of the hydrogen bond as a Van der Waals, rather than an ionic, type of bond. One might also wish that more space had been devoted to molecular refraction and polarizability, acids and bases, electrophyllic and nucleophyllic properties, and the role of *d*-orbitals in the formation of coordination compounds.

The main usefulness of this book lies in its value as a survey and integration of chemical theory and fact. In my opinion, it cannot be used by students without previous courses in organic, inorganic, and quantum chemistry, unless extensive simultaneous use is made of standard references in these fields.

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The Kidney. A Ciba Foundation Symposium arranged jointly with the Renal Association. A. A. G. Lewis and G. E. W. Wolstenholme, Eds. Little, Brown, Boston, 1954. xvi + 333 pp. Illus. + plates. $6.

This is a verbatim account of the proceedings of an international symposium held in London in July 1953. Not since 1935, when the Minneapolis symposium of a lustrum earlier became *The Kidney in Health and Disease,* has any volume appeared of substance and merit comparable to Ciba's *The Kidney.* Interestingly, there was no individual who contributed to both of these symposiums.

Twenty papers are allocated in five parts: I, "Structural and functional relationships in the kidney" (Oliver, Raaschou, Darmady, Wirz); II, "Tubular functions other than the regulation of acid-base balance" (Bradley, Taggart, Lambert, Reubi); III, "Renal share in the regulation of acid-base balance" (Robinson, Pitts, Berliner, Sanderson); IV, "General problems of electrolyte excretion" (Merrill, Le

Quesne, Milne, Alwall, Dent); V, "Renal share in volume control of body fluid" (Borst, Hamburger, Black).

Almost every paper is a valuable summary of an active area of modern renal physiology, pathology, or morphology. While much of the material stands in the literature, it is served here in a series of thumbnail sketches that are commendable for brevity, lucidity, and documentation. In format, each presentation is followed by a typographically distinct section containing the discussion.

The general excellence of the whole makes it invidious to draw attention to selected, unfavorable aspects. It is with no intent, therefore, to plant a seed of disaffection that we dispute the treatment accorded to renal volume control. The renaissance of interest in the kidney as a regulator of body fluid volumes is reflected in its coverage, at least nominally, to the extent of 20 percent of the symposium. However, the fundamental biology of volume regulation such as outlined by Henderson and others is nowhere acknowledged, much less clarified; and no one comes to grips with this slippery problem. The papers and discussions are agreeable enough in summarizing facts but do not go far toward an understanding of the subject. It might have been more enlightening if, for example, Heller's censure of the term *volume receptor,* instead of being allowed to evaporate, had been examined critically in discussion.

The Kidney is an attractive book, printed on good paper, carefully edited, properly indexed, and fairly priced.

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The Moon Puzzle. A revived classical theory correlating the origin of the moon with many problems in natural science. N. O. Bergquist. Grafisk Forlag, Copenhagen, 1954. xiii + 378 pp.

The author gives a comprehensive survey of what he considers to be the consequences of the following theory. The origin of the moon was caused by a cosmic collision; the birth of the moon occurred at the end of Lower Cretaceous time and caused the great break in continuity at this time observed by both geologists and paleontologists.

The story unfolded by Bergquist is fascinating but often gives the impression of science fiction rather than of science. There is a practically complete lack of quantitative mathematical argument (frankly admitted by the author). And the multitude of effects that he attempts to explain leads one to think of the quotation "Methinks he doth protest too much."

A few detailed criticisms—which are invited by the author explicitly—may follow here. Page 39: It is nowadays generally believed that the development of spiral nebulae is one toward and not away from orderliness (see, for example, von Weizsacker, *Z. Astrop.* 1948). Page 69: East Indies is an obsolete term and the correct term is Indonesia. Page 366: If the moon originated in the way proposed by the author, the calculations of Jeffreys (*The Earth*), of the moon's age, are relevant and they lead to an age of at least 2000 million years in contradiction to the age inherent in the proposed theory.

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An International Bibliography on Atomic Energy. vol. 2: *Scientific Aspects.* Suppl. No. 2. United Nations, New York, 1953 (U.S. Distr.: Columbia Univ. Press, New York). vii + 320 pp. $3.50.

This is a classified listing of 7997 periodical articles that appeared during 1951–52 on fundamental nuclear science, physics and engineering of nuclear energy, biological and medical effects of high-energy radiation, isotopes in biology and medicine, and applications of nuclear physics in nonbiological sciences and technology. An author index is appended.

Gmelins Handbuch der Anorganischen Chemie: Selen (Selenium), System No. 10, pt. A, sec. 3, 1953. xviii + 184 pp. Illus. Paper, $26.64.

Gmelins Handbuch der Anorganischen Chemie: Bor (Boron), System No. 13, supp. vol., 1954. vii + 253 pp. Illus. Paper, $33.60; cloth, $34.80.

Gmelins Handbuch der Anorganischen Chemie: Gold, System No. 62, pt. 2, 1954. v + 306 pp. Illus. Paper, $40.32

Gmelins Handbuch der Anorganischen Chemie: Gold, System No. 62, pt. 3, 1954. xxi + 558 pp. Illus. Paper, $74.88. Edited by Gmelin Institute. Verlag Chemie, Weinheim, W. Germany, ed. 8. (U.S. Distrib.: Walter J. Johnson, New York, and Stechert-Hafner, New York.)

In rapid succession the various sections of Gmelin have been making their appearance, bringing up to date this classic handbook of inorganic chemistry. The sections here considered total approximately 1300 pages and reflect credit on those responsible for these revisions.

Section A3 on selenium is devoted to the selenium rectifier and the selenium photocell, subjects that have increased in interest in the past 15 years. The literature in this section is covered to 1953.

The present volume on boron is the first complete and modern monograph of this element and its compounds. It is a supplementary volume to that on boron published in Gmelin's handbook in 1926 and covers the literature for the years 1925–1950. Its subject index contains references to both these volumes. A feature of the new volume is the inclusion of the advances that have been made on borane and its related compounds, such as the borazoles, borazens, borazanes and their alkyl derivatives, alkyl boron compounds, alkyl boric acids, the boroxoles, boric acid