indexes. The treatise concludes with a 20-page summary of uses—from floating airships and balloons with helium to treating cancer with radon.

Mention that orange radiation from krypton 86 has supplied a new primary standard of length (internationally adopted in October 1960), calculation of atomic weights and isotopic masses on the scale carbon $12 = 12$ (internationally adopted in 1961), and description of a helium-neon laser (invented in 1961), are examples of the all-inclusiveness and up-to-dateness of this treatise.

Someone has said that any new book is likely to contain at least eight errors; this reviewer reports on finding only one so far—on page 239: refractivity is represented as $(1-n)$ instead of $(n-1)$! It is obvious that these books are well organized, professionally written, effectively edited, carefully proofread, and neatly printed. This authoritative treatise on inert gases will be extremely useful to students as well as to specialists in research and industry.

Absorption Spectra in the Ultraviolet and Visible Region. A Theoretical and Technical Introduction. Vol. 1, 413 pp.; Vol. 2, 408 pp. L. Láng, J. Szőke, G. Varsányi, M. Vizesy, eds. Academic Press Inc., New York, 1961. $18.00 each. *Reviewed by Nicholas Chako, Queens College.*

THE enormous amount of experimental work on absorption spectra of chemical compounds, scattered in dozens of journals published in many countries, has led to a great deal of duplication and some confusion, owing to differences in the presentation of material and use of scales (units).

A systematic and coherent compilation of such data and recordings would be of great value to scientific workers in this and related fields. With this purpose in mind, the authors are bringing out several volumes of data and graphs of absorption spectra of a large number of chemical compounds adapted to a uniform scale.

Most of the material included in the two volumes is new. It has been collected for the most part from studies carried out under the auspices of the Hungarian Academy of Sciences and to a lesser degree by the Polish counterpart. The present work supplements collections in other handbooks. The principal data given in the tables for each compound are: the optical density in log scale over a broad range of wave lengths, varying from approximately $200 m\mu$ to $600 m\mu$, for different solvents in various concentrations; the cell thickness; and the type of recording apparatus. Accompanying the data are graphs of absorption spectra indicating the variation of log ϵ (ϵ = extinction coefficient) versus λ, which in most cases ranges from 200 to $600 m\mu$. A few compounds in the vapor state also have been included, showing the band structure and the relative intensities of vibration bands. The data list the background absorption close to the band, its maximum value, and the ratio of intensities of the background to the band maximum of loglog scale against wave number.

To facilitate the interpretation of the data, the authors have included: a short discussion of the theory of absorption spectra (molecular spectra); lists of the names of the compounds and their chemical formulas; a double entry of author and graph index; a list of journals in which the original work appeared; and the institutes taking part in this extensive project.

On the basis of its coverage, this collection is indeed an important contribution to this branch of spectroscopy.

States of Matter. By E. A. Moelwyn-Hughes. 100 pp. (Oliver and Boyd, Edinburgh) Interscience Publishers, Inc., New York, 1961. $3.50. *Reviewed by D. J. Montgomery, Michigan State University.*

ZEALOTS are hard to like, but I'll have to take my chances: *States of Matter* shall be my paradigm. All this is a little more dramatic than either author or reviewer intended. What I am driving at is a conviction, shared with many, that communication of the workings of science is imperative, and a conviction, shared with not so many, that it is possible and worthwhile. Moelwyn-Hughes (and more culpably his publishers) does not attain the ideal, and in fact falls far short of the goal; yet what counts is that a large proportion of the *physics* of matter in the aggregate is brought out succinctly and lucidly for nonspecialists, without cheapness or degradation.

A brief account of current ideas on the somewhat arbitrarily chosen principal states of matter is presented in terms of intermolecular forces. Interactions developed as ion-ion, ion-dipole, dipole-dipole, et cætera, are treated in a catalog hardly unique; but the interactions come to life, with functional laws and appropriate numerical values placed side by side. The subject is developed, naturally and simply, with powerful insight. A sample: all physicists know that one of early triumphs of quantum theory was Einstein's theory of specific heats of solids; but how many know that the same model gives an excellent prediction of the dependence of vapor pressure on temperature for monatomic solids (p. 19)?

There are many shortcomings in *States of Matter*, some grievous, some venial. As is usual in a book covering many topics, the treatment seems brilliant until a topic comes up in which the reader himself has worked; then the inadequacies appear. Although the grammar and typography surpass usual American standards, they fall considerably below traditional British ones. Occasionally statements are misleading, even naive. The publisher's blurb is ungrammatical, insipid, and inaccurate. The price is defensible in view of the hard binding, but so high that a large portion of the potential and much-needed audience will never be reached.

Let me return to my ax-grinding. Moelwyn-Hughes has addressed the general scientist interested in the