for if we inspect the subtitle, we find "Reprints of selected papers 1912–1925." And I would recommend that all who have not read them do so. First, they describe various phases of the geomorphology of an area that few of us are fortunate enough to see. Second, they are the building up of the ideas that Cotton's students have carried beyond the borders of New Zealand and applied in other regions with considerable ability. Third, they are good reading.

Sixteen papers are reprinted, and I can see no good being served in listing the 16 titles with their sources. I compliment the Victoria University College in bringing together these 16 excellent papers in one volume and wonder if it was a birthday surprise for Cotton for his 70th year. I am sorry, though, that the original paging is lost.

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Physical Chemistry. Farrington Daniels and Robert A. Alberty. Wiley, New York; Chapman & Hall, London, 1955. vii + 671 pp. Illus. $6.50.

This new textbook is a successor to the long series of previous editions that were initiated by Frederick H. Getman in 1913 and continued by Farrington Daniels. Some new subject matter and new exercises and problems are introduced, and, in some instances, the order in which topics within a chapter are presented has been changed. The sequence and titles of the 20 chapters are essentially the same as in the last edition of Daniels' book. The text follows its predecessors' excellent example in that it has a number of exercises throughout each chapter that illustrate the more important principles in detail. References to original work and to more recent reference works have been brought up to date and many new citations are included.

Although adding new figures to the chapter on crystals, for instance a Fourier plot for maleic acid, is highly desirable, it apparently necessitated omitting other figures that were quite useful for class purposes, such as those illustrating interplanar distances. The addition of some figures and some rearrangement of topics, such as placing Onsager's conductance theory in the chapter on electrolytic conductance rather than in the chapter on ionic equilibria, make the teaching of the subject matter of these chapters somewhat more orderly. A brief discussion of the application of light scattering and the more extended discussions of diffusion and other physicochemical principles in the chapter on colloids are significant improvements.

The inclusion of the chemical potential and free-energy functions is a welcome addition, although use of the former may well have been illustrated in connection with the chapters on equilibrium. Tables of heats of formation, bond energies, standard entropies, standard electrode potentials, and so forth, have been revised, using the most recent values. The contraction effected in the appendix of this new textbook is more apparent than real since the essentials of much of the material deleted from the appendix of previous editions is incorporated in appropriate chapters. The omission of elementary subject matter that was included in earlier editions seems quite appropriate for, as the authors say, such topics are now generally handled adequately in prerequisite courses.

The fundamentals of physical chemistry are well covered, and experience with teaching this book's forerunner indicates that a radical departure in the new volume from the established pattern would hardly be justified at this time.

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Chemical Engineering. vol. 2, *Unit Operations.* J. M. Coulson and J. F. Richardson. McGraw-Hill, New York; Pergamon, London, 1955. 975 pp. Illus. $9.

Of all the engineering disciplines, chemical engineering defies attempts at systematization. The range of the field is so great that the sort of continuity one expects in moving from one topic to another is impossible. These reasons, perhaps more than any others, explain the sort of treatment of chemical engineering given in U.S. schools under the catch-all "unit operations." Now come two Englishmen who recognize that unit operations is exactly chemical engineering if we include a discussion of basic theory, as was done in volume I. One must admit that basic theory is a strongly unifying ingredient.

Coulson and Richardson have done a remarkably fine piece of work. Their first volume is superior to anything that has thus far appeared in the United States, and now the second volume presumably integrates the field. Unfortunately, this cannot be so. There must eventually be a third volume, because the discussions on the diffusional processes are not only sketchy but also are not sufficiently comprehensive.

Since the last chapter of volume I was devoted to mass transfer theory (with a single application), one had begun to look forward to what has long been needed in chemical engineering—a detailed analysis of the diffusional processes. This has not been done to the extent anticipated. Instead, a great deal has been written with reference to particulate technology—particle motion, sedimentation and fluidization, size reduction and classification. All these are, of course, needed and are better and more thoroughly done in the second volume than in several U.S. textbooks combined. But some day, a third volume must appear that will bring together the sections dealing with the diffusional processes. Then Coulson and Richardson will have settled once and for all what chemical engineering means and is.

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Biochemistry and Physiology

Biochemistry and the Central Nervous System. Henry McIlwain. Little, Brown, Boston, 1955. vii + 272 pp. Illus. $9.50.

This book is apparently intended for use as a textbook of neurophysiology and psychological medicine and, as such, it fulfills a valuable function in bringing students and workers in the general area of CNS research up to date on biochemical methods and findings in the field. Although in general, the author deals with the same material as is covered by the recent encyclopedic works on neurochemistry by Elliott *et al.* and by Waelsch, his treatment is necessarily far more concise but still sufficiently detailed for clarity. Many of the chapters contain well-documented, valuable summaries of quantitative data collected from various sources.

The chapter headings are "Biochemical studies of the brain," "Metabolism of the brain *in situ*," "The chemical composition of the brain," "Metabolism of separated cerebral tissues," "Cell-free cerebral systems," "Glycolysis and an oxidative pathway," "Pyruvate metabolism," "Oxidative phosphorylation," "Amino acids and cerebral activities," "Vitamins and the central nervous system," "Cerebral lipids," "Cytochemical and histochemical aspects," "Chemical and enzymic make-up of the brain during development," "Acetylcholine, sympathin and related substances," "Depressants and excitants of the central nervous system," "The speed of chemical change in the brain."

It seemed to me that the discussions of general metabolic processes in the brain—for example, glycolysis and the tricarboxylic acid cycle—although quite adequate themselves, did not emphasize sufficiently that these, or closely related reactions, occur in other mammalian organs as well as in some microorganisms and plants. This suggests that the brain is not distinguished from the other organs on the basis of its gross energy-