on a fat and water-free basis or as the material occurs. Again use the weight of the free amino acid and not its anhydride. This procedure is in part a reversion to the elemental system so far as nitrogen is concerned, such as is now used for calcium, magnesium, potassium, phosphorus, etc., in food materials.

At one time most of these elements were expressed as the oxides such as K_2O (potash) for potassium and P_2O_5 (phosphoric acid) for phosphorus. The "oxide system" is still in vogue in the fertilizer industry except for trace elements and nitrogen. But surely the adoption of the elemental system for foodstuffs was a progressive step.

Such a procedure as is proposed under (3) still lacks absolute accuracy due to the fact that not all of the nitrogen of a food material is of known nutritive value. But the method is not clouded with hypothetical conversion factors.

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Book Reviews

One world or none: a report to the public on the full meaning of the atomic bomb. **Dexter Masters and Katherine Way. (Eds.) New York: Whittlesey House, McGraw-Hill, 1946. Pp. x + 79. (Illustrated.) $1.00.**

Since the publication of the Smyth report this book is perhaps the most significant which has appeared on the subject of the atomic bomb. It is a collection of skillfully edited articles written by the men who laid the scientific foundations on which the bomb was constructed; by the men who built the bomb; by those who were the official War Department inspectors of the destruction wrought by the bomb; by those who realize its implications for the world—in short, it is written *by those who know about the bomb*. Those of us who wish to live out our years in this world, who want some assurance that our children will also live out their years, can do no less than to listen to these men and ponder the message they carry.

Who are the authors of this significant book? Niels Bohr, A. H. Compton, H. H. Arnold, Hans Bethe, E. U. Condon, Albert Einstein, Irving Langmuir, Walter Lippmann, Philip Morrison, J. R. Oppenheimer, Louis Ridenour, Frederick Seitz, Harlow Shapley, Leo Szilard, Harold Urey, Eugene P. Wigner, Gale Young, and the Federation of American Scientists. *They are the men who know.*

What do they tell us, *these men who know*? Philip Morrison, one of the official War Department inspectors begins the book by giving a grim picture of the damage done at Hiroshima, and he speculates on the basis of observed facts about the damage a similar bomb might do in New York. Harlow Shapley, Harvard astronomer, next proceeds to discuss atomic energy as it operates in the sun and stars, thus providing a basis for understanding man's efforts to release this energy on earth. E. P. Wigner discusses the roots of atomic energy, explaining what atomic energy is and how it operates in a bomb, and Gale Young tells about the industrial possibilities of atomic energy. J. R. Oppenheimer, the man who directed the actual building of the bomb writes about it as "the new weapon" and points out that "the release of atomic energy constitutes a force too revolutionary to consider in the framework of old ideas." Gen. H. H. Arnold, former chief of the Army Air Forces, presents a sobering picture of air power in any future war. His chapter is followed by what the present reviewer believes to be one of the most important sections in the book. It is by Louis Ridenour and is entitled: "There is no defense." As a member of the famous Radiation Laboratory of the Massachusetts Institute of Technology, he is perhaps best equipped to discuss the problem of defense against an atomic bomb. After reviewing the facts, his conclusion is brief and to the point: THERE IS NO DEFENSE. E. U. Condon continues in a chapter on "The New Technique of Private War" by outlining the increased possibilities opened to the saboteur and the agent provocateur. If the reader raises a skeptical eyebrow, he is reminded that the authors of this book are serious scientists and not writers of scientific fiction.

Frederick Seitz and Hans Bethe attempt an estimate of how close is the danger of atomic warfare and warn that it is much closer than we dream. Irving Langmuir lucidly outlines the stages in an atomic arms race and the alternatives to such a race. He points out that we can, and must, find a basis for amicable living with Russia and is in favor of stopping the production of atomic bombs and dismantling the plants which produce them if these steps will insure peace.

Harold Urey assumes the mantle of Jeremiah when he asks the question (and it is far from a rhetorical one): "How Does It All Add Up?" He concludes that "it all adds up to the most dangerous situation that humanity has ever faced in all history." Leo Szilard raises the problem of whether an atomic arms race can be averted by an inspection system, and Walter Lippmann examines the question of the international control of atomic energy. Albert Einstein points a way out—a way he feels is the only course, that of vesting military power in a world state. Finally, the Federation of American Scientists, in a summary of the issues, warns that survival is at stake and issues a clarion call to action.

Yes, survival is at stake—not merely personal and individual survival but the survival of our nation, of other nations, and of civilization itself.

The facts assembled in this book provide a vision of what atomic energy can do in a world which uses it for constructive and peaceful purposes. But these same facts point to the inescapable conclusion that while "the nations of the world can have atomic energy and much more, they cannot have it in a world where war may come."

MORRIS C. LEIKIND
Library of Congress, Washington, D. C.

The Royal Society 1660–1940: a history of its administration under its charters. Sir Henry Lyons, F.R.S. Cambridge: At the Univ. Press; New York: Macmillan, 1944. Pp. x + 354. (Out of print.)

As the late Sir Henry Lyons has stated in his Introduction, this is not the complete history of the Royal Society: "This account of the way in which the Society carried on its business at different periods will provide the groundwork for a fuller discussion of its influence on the advancement of science; it also records the conditions under which the more eminent of its Fellows carried out their researches and discoveries. The complete history of the Society has not yet been undertaken, and it may well require the united efforts of several workers to deal with so wide a field of activity."

Nevertheless, this book contains a surprising amount of information about the origin of the Society and the 280 years of science in England since its establishment. Many interesting sidelights of scientific history are interspersed between the discussions of the financial problems and administrative organization of the Society which are its principal concern. It is amusing to learn, for example, that the Royal Society was accused of taking sides with the American colonists during the Revolution because it advocated the use of Benjamin Franklin's pointed lightning rods, and that the King himself tried to persuade the Society to rescind its resolution.

Although the original founders of the Royal Society were mostly scientists who met for the purpose of critically examining new discoveries and theories, the scientific purpose of the Society was often lost sight of, and scientists were actually in the minority until 1860. Even Samuel Pepys was president (a good one, to be sure) during the two years when Newton's *Principia* was being published. Incidentally, it was Sir Isaac Newton, first man of science to be knighted, who was responsible for the fact that the Royal Society now meets on Thursdays, since he was occupied at the mint on Wednesdays (the Society's original meeting day) during the first years of his presidency. Despite the presidencies of such well-known men of science as Newton and Sir Joseph Banks, the Royal Society was more of a cultural than a scientific institution until the middle of the Nineteenth Century. Since 1860, however, the Society has become the leader of scientific thought in Great Britain and a unique institution in the world of science. Like all venerable institutions, it is sometimes slow to