with the difficulties which attend this mode of life, with the misconceptions entertained about it and with the defects that follow from lack of organization. The National Union of Scientific Workers is not a trade union designed to protect a particular section of the community. It exists to further a cause which all scientists have at heart, and to voice the opinions of a valuable band of citizens who have been too long inarticulate.

The motives of research workers are, speaking generally, as mixed and as commonplace as those of their neighbors. It is well to recognize this fact, and to discard the illusion that the research worker necessarily pursues a lofty course inspired by an ideal superior to that which moves the remainder of mankind. One of the most powerful motives of the research worker is undoubtedly a desire for knowledge for its own sake; but mere love of knowledge, unaccompanied by any other motive, is seldom sufficient to lead to the laborious investigation imposed by research. The desire for reputation, not to be confused with base ambitions towards notoriety, is a worthy motive in research workers; many of them have enjoyed the companionship of older scientists, whose approval they look for as a gratifying reward. The expectation of being able to publish an important piece of research, and thereby earning a position in the ranks of some learned society, determines the choice of a way of life for many younger scientists. In medical science the pecuniary rewards of research work are not, and are never likely to be, as substantial as those of the practicing physician or surgeon, but the atmosphere of the laboratory offers attractions unknown in the busy consulting room or operating theater; such attractions are leisure to think, freedom from interruption and free play for the imagination. Among motives we have to reckon also with a desire for some more responsible post, such as a professorship, with its attendant intellectual status and greater security.

It is interesting to notice that when discussing the financial encouragement which should be given to research the National Union of Scientific Workers unsparingly condemns the system of patents, prizes and special grants for successful work. Payment by results is an impossible method for research work, because, as experience has shown, the most fruitful work has often been some fundamental inquiry into a scientific problem which seemed to offer very little prospect of practical gain. To dictate a practical objective would hamper much useful investigation. Moreover, it is extremely difficult justly to apportion credit for a discovery. The individual to whom the coveted distinction is ascribed has sometimes done little more than add the final stone to a building whose foundations have been laid and whose walls have been built by a host of workers of whom the world never hears. On the other hand, indirect encouragement by means of special grants for apparatus and assistance in publication of results is approved as a satisfactory method of financial encouragement.

It is recognized that some scientists can only do the best kind of research work when completely free from all other duties, such as teaching or routine work. Provision must be made for workers of this temperament, and they must be guaranteed a salary sufficient to enable them to be secure from financial anxieties. Other research workers prefer to combine some routine work with their experimental studies, and these are most happily employed in some university or hospital appointment, which enables them to spend part of their day in teaching and the other part in research.

The National Union of Scientific Workers is wise in insisting on the value of research to the community, for this is an aspect of the research question often unnoticed. Apart from the store which research workers add to the knowledge of the country, the inclusion of men and women with the research type of mind should be sought after in every community. Open-mindedness and breadth of view are developed by the search for truth, and the whole community benefits directly by the presence within it of such intellectually active citizens, who contribute qualities that can not be conferred in the same measure by any other intellectual occupation.—*The British Medical Journal.*

SCIENTIFIC BOOKS

Food Products. By HENRY C. SHERMAN. 2nd Edition, Revised and Enlarged. The Macmillan Company, New York, 1924, VII plus 687.

THE years immediately preceding the first edition of H. C. Sherman's "Food Products" had witnessed a great increase of interest in food problems and a corresponding increase in knowledge of food composition and likewise a rapid development of the important subjects of food sanitation and legislation. Out of the greatly augmented subject-matter then available a clearly written and very inclusive book was produced which has proved of great value in every way to teachers and students as well as a handy and convenient reference book for the general public. A feature of this book and of the new edition is the lists of references following each of the chapters, which makes it possible for the user to locate readily material which supplements and extends the chapter content.

The new volume is a logical development of its predecessor. The experience of the last ten years and

the important developments in study and research have been drawn upon and used with the older material to make a consistent whole. Several chapters have been completely rewritten and two new chapters have been added. Certain rearrangements have been made in the interests of teaching, which like other changes reflect the experience of the years of classroom use by the author and others, but the general sequence of topics followed in the first edition, which means a chapter devoted to each important type of food, is unchanged. In both editions the following subjects are treated: production and preparation for market with statistical and economic data; proximate composition and general food value, sanitation, methods of inspection and standards of purity; and composition, digestibility, nutritive value and place in the diet.

The last decade has witnessed a very great interest in vitamins and a large addition to the knowledge of them. This newer work is particularly well treated in the book and in such a way that it falls into line with other factors which make up food value.

A new chapter deals with food adjuncts, unclassified food materials and extra foods eaten between meals, as well as salt, spices, flavoring extracts, vinegar and household and commercial beverages, substances about which information is not readily available. There is also a new chapter on food budgets and food economics.

The appendices are an important feature of this volume, as of the earlier one, and have been increased by a table on food products as sources of vitamins A, B and C, and another dealing with food legislation.

The subject index which concludes the volume is full and well arranged.

It is evident that the author has taken unusual pains in the selection of his material and in its arrangement and presentation and it is a readable book as well as a text-book and work of reference for general use.

As should be the case the author in making this book has drawn largely on his own extensive and important research work and study of food and nutrition problems. This adds not only to the interest of the book but greatly to its value.

C. F. LANGWORTHY

WASHINGTON, D. C.

Evolution or Christianity. By WILLIAM M. GOLDSMITH, Ph.D. The Anderson Press, Winfield, Kansas. 50 cents.

UNDER the title of "Evolution or Christianity," Professor William M. Goldsmith undertakes to meet the various anti-evolutionists on their own ground. He considers patiently all those whose ideas are in print, showing in what degrees each can be convicted of ignorance or dishonesty. Meanwhile he upholds the belief that there is no necessary conflict between Christianity and evolution, except when one or both is grossly misunderstood. There is no conflict between verified knowledge, on the one hand, and the sense of awe, reverence, duty and love on the other. The warfare of science rages around non-essentials.

Dr. Goldsmith is a young teacher of science, well trained and well informed. His work is issued in cheap form for wide distribution. It is a response to a real need in these days, and it is a pity and a shame that such necessity exists.

DAVID STARR JORDAN

STANFORD UNIVERSITY

SPECIAL ARTICLES

ULTRAVIOLET LIGHT AND SCURVY

IN his most interesting "Treatise on Scurvy," written in 1757, Lind repeatedly emphasizes the fact that scurvy is more prevalent in northern latitudes and that it usually occurs in southern latitudes during the rainy season and is improved by change of weather. He speaks of the fact that in several channel cruises when the weather was fine there was no scurvy aftr 12 weeks, but that on two cruises during cold rainy weather scurvy broke out in a month. In view of the fact that ultraviolet light can prevent the occurrence of rickets, Lind's book at once suggests that it may have been the lack of sunlight rather than the presence of moisture which led to outbreaks of scurvy during the rainy season.

This possibility is strengthened by a review in the *Lancet* (Vol. 1, 1917, p. 462) which states that in the winter of 1915 the Turkish wounded, who were suffering with scurvy, were greatly improved by exposure to sunlight. These results naturally suggest that ultraviolet light might have a beneficial effect both in the healing and in the prevention of scurvy. However, three series of experiments on guinea pig scurvy have shown entirely negative results.

Experiment I: Twelve guinea pigs, weighing about 290 gms each, were divided into two lots, with some light and some dark animals in each group. Six were depilated once a week on one side over an area of approximately 15 sq cm and radiated daily for 10 minutes at a distance of 12 inches from a Hanovia Alpine Sun quartz mercury arc, running on 110 D.C. at 58 volts and 3 amperes (11 lithopone units of ultra-violet light). The guinea pigs showed a very marked erythema followed by desquamation. A control experiment showed that the depilation in itself did not affect the health or rate of growth of the animals.