certain set of resolutions adopted before the close of the war will furnish a final solution of these difficulties, notwithstanding the eminence of those directly concerned in drafting or in adopting the resolutions.

The great scientific progress since the Middle Ages has been largely due to the separation, mental or statutory, of concepts or institutions of fundamental human interests. As instances, we may refer to the separation of church and state, of knowledge and superstition. It would seem very unfortunate if we should now allow moral and ethical questions to becloud our vision as regards scientific merits or demerits. We all welcome exposures of unfair scientific dealings practised persistently by such large numbers as to constitute national characteristics, but if these exposures are to be really effective they should bear evidence of the fact that the accused had a fair chance to defend themselves. Hence the need of open international scientific conferences seems to be greater now than before the war.

G. A. Miller

QUOTATIONS

A NATIONAL LABORATORY FOR THE STUDY OF NUTRITION

A resolution of the Inter-Allied Scientific Food Commission, which does not appear to have attracted as much notice as it deserves, dealt with the need of establishing national laboratories for the study of human nutrition. The commission pointed out that, as at least one quarter of the whole income of a nation was devoted to the purchase of food by its individual citizens, it was a matter of the highest importance for the welfare and prosperity of a country that the methods of utilizing its food resources in the best way should be explored and definitely established on the basis of scientific data. The commission therefore adopted a resolution urging the allied governments to establish national laboratories to be devoted to the task. There is no doubt that the want of such a laboratory will be especially felt in the United Kingdom, where the husbanding of our food resources is likely to remain imperative longer than in countries which are normally nearly self-supporting.

The contrast between the extent to which the study of human metabolism has been fostered by the state or left to private enterprise in England and the United States is little to the credit of our rulers. Nor can it be pleaded in extenuation of the neglect that English men of science have shown no signs of being attracted by the problems of nutrition and metabolism. On the contrary, without any depreciation of the labors of such Americans as Atwater and Benedict, or such Germans as Rubner, we can justly claim that the present generation of English physiologists has made contributions to the science of nutrition equal in value to anything which has been achieved elsewhere. We need merely cite the brilliant researches into the chemical mechanisms of digestion which we owe to Starling and Bayliss, the work of Hopkins and his pupils on protein metabolism, and the succession of important contributions to the study of deficiency diseases which have come from the laboratories of the Lister Institute, culminating in the recent work of Dr. Chick and her collaborators.

Since the war the Royal Society, by the agency of its food (war) committee, has, with little official aid and, at times, in spite of official indifference or neglect, done much to bring the subject of national dietetics under proper scientific guidance, but we are of opinion that its work will not be extended and made of permanent value to the nation unless effect is given to the Inter-Allied Commission's proposal.

We shall endeavor to make the reason plain by considering one only of the topics within the scope of nutritional research. The Inter-Allied Commission mentioned the need of determining the amount of food required to maintain the health and strength of persons engaged in different occupations. As we had to point out some time since, when the policy of the food controller received less inspiration from scientific sources than has happily been the case during the past twelve months, the broad distinctions between class and class, the

general laws of human energetics, have been long established. But details which are of great importance when any exact view of the subject is desired, still escape us. To express the energy requirements of agricultural laborers in terms of food with the precision attainable by an actuary in estimating their average expectation of life is still an ideal of the remote future. This is only in part due to the greater difficulty of measuring energy transformations as compared with the measurement of longevity. It is now quite possible by means of relatively simple apparatus to carry out such determinations on a large scale. But the task is not one that any private investigators can be expected to undertake. The mere compilation of statistics of family consumption, a less laborious affair, occupied much of the time of the United States food investigators for years. Here is a proper object for the team work of which so much is heard in these times. It involves physiological skill both in making the measurements themselves and in paying due heed to the attendant circumstances, such as the cooling power of the air in the factory or workshop, a point scarcely heeded by many past students; industrial knowledge is needed to decide what factory processes are *in pari materia* so that representative samples may be chosen for experiment; lastly, some experience in the handling of numerical data is required to decide the significance of departures from the average and the limits of precision of the averages themselves. Nor does it suffice to enroll a suitable team of investigators and send them out into the factories to collect data. The routine application of a physiological technique is the death of science. When a method is intelligently applied upon a large scale anomalous results must emerge, the analysis of which upon a laboratory scale and with the attendant simplification of the conditions may lead to the discovery of new and important truths. The investigating staff must be attached to a headquarters laboratory controlled by a physiologist competent to sift real anomalies from mere technical errors and to cause them to be sedulously investigated. We conceive that in this way alone a really adequate knowledge of the energy requirements of muscular work can be attained.

When it is remembered that this problem, important as it is, is only one of the problems of human nutrition which are still unsolved, we do not think more need be said in support of a national laboratory of nutrition. No doubt the time will come when the intelligent citizen will find it difficult to understand how any nation could neglect to make such a provision for its literally vital needs.—*British Medical Journal.*

SCIENTIFIC BOOKS

An Outline of the History of Phytopathology. By HERBERT HICE WHETZEL. Philadelphia and London, W. B. Saunders Company. 1918. Pp. 130, with 22 portraits.

The domain of plant pathology is rapidly taking shape as a highly important part of the contribution of botany to the economic life of the world, as well as a department of botanical science demanding recognition from students of the modern aspects of science in general. The enormous losses which crops suffer from parasitic and predatory fungi have long been recognized in a general way, but only in recent years, since numerous investigators have undertaken to study the causes which inhibit the optimum development of cultivated plants, has the great diversity in the etiology of plant diseases been so clearly shown. With the recognition of the diseases and their causes has grown up practical means for controlling or avoiding many of them. The economic returns have reacted upon the opportunities for investigation, and consequently great progress has been made in this department of botany within the few decades just past, more especially in America. The epidemic of the chestnut blight, the fight against the white pine blister-rust, the barberry-wheat campaign, and the government and state quarantine acts against the importation of diseased plants, have brought the subject home to every one.

The pioneer work by Professor H. H. Whetzel, of Cornell University, on the history of