

# PROCEEDINGS OF THE NUTRITION SOCIETY

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TWENTY-FOURTH SCIENTIFIC MEETING—THIRTEENTH ENGLISH MEETING

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## FACTORS AFFECTING THE NUTRITIVE VALUE OF BREAD AS HUMAN FOOD

Chairman, Professor R. A. PETERS

Professor R. A. Peters (Department of Biochemistry, University Museum, Oxford): It would not be proper for me to make many remarks before the start of this meeting. We are going to hear a large number of aspects of a complex problem very ably discussed. I have been asked to make it clear that we are here today to discuss the scientific aspects of these problems of bread and not to deal with those problems which have a political approach or bearing. Of course, in the last limit it is difficult to interpret that properly, because there is an obvious borderline where the scientific aspect has an impact upon policy, but I think we can make a rough division by saying that we shall not be concerned today with pure questions of psychology. Whether it is better to eat something which looks white or blue is not the kind of thing that we ought to discuss today! If I feel doubtful, I shall appeal to the Society. We must thrash out some of the facts on which all arguments must be based and in this connexion I will remind you of one or two points. No meeting of this kind dealing with bread should start without an allusion to it as "the staff of life". I know that this is supposed to come from the Old Testament, but I have been asking some of my Oxford friends exactly what is meant by "the staff of life" without getting very definite answers; finally I had to resort to the dictionary, which said that the phrase, the "staff of life", was first used in 1638. The Hebrew quotation is "breaking the staff of life", meaning "to diminish or cut off" the means of obtaining food. Bread obviously at the present time provides a very important nutritional problem. Many folk are living largely on bread, and even more so if they happen to be unable to eat potatoes! Therefore, of course, small changes in the nutritive value of bread may be of great importance. Every one knows that the extraction of flour has been recently changed from 85 per cent. to what is now known as 80 per cent. I think perhaps everyone does not remember that the 85 per cent. that we used to have was originally a choice between a white flour and the 85 per cent.

VOL. 4, 1946]

1



Recently it was supposed, apparently, that the whole country was pressing for the 80 per cent., which some people indeed thought was a better bread. Folk had complained in the past of being upset by wholemeal flour, but it must be realized that the position is now quite different; the 85 per cent. extraction flour was a very beautiful and wonderfully chosen foodstuff. It had practically no fibre; it was medically proved that it was non-irritant even to people with ulcers. It must be admitted, however, that there are differences induced by different ways of baking. I am bound to say that when we baked it at home for one year it was excellent, and it is curious that I have never elsewhere tasted bread baked from 85 per cent. extraction flour as good as that baked in the home! At present we have not got that choice to which I have just referred. If we wish to get 85 per cent., apparently we cannot do so. We are, in a moment, going to listen to our friends on these subjects and I would like to remind them and you that some of us who have been drilled into a biological frame of mind over many years will require a deal of convincing that it is nutritionally sound to drop the wheat germ from the diet. Forty years ago, Hopkins (1906) wrote:

“. . . no animal can live upon a mixture of pure protein, fat and carbohydrate, and even when the necessary inorganic material is carefully supplied the animals still cannot flourish. The animal body is adjusted to live either upon plant tissues or the tissues of other animals, and these contain countless substances other than the proteins, carbohydrates, and fats. Physiological evolution, I believe, has made some of these well-nigh as essential as are the basal constituents of diet . . .”.

I know that those who have a more purely chemical discipline often feel that it is illogical for biologists to believe in the value of unknown substances but, if you continue to work on these matters for some years, you do approximate to Hopkins' opinion and you become certain that there are valuable substances, present in a complex material such as wheat, of which you do not yet know, and you would prefer to be on the safe side when responsible for advice.

#### REFERENCE

Hopkins, F. G. (1906). *Analyst*, 31, 385.

## The Composition and Milling of Wheat

Dr. R. A. McCance and Dr. E. M. Widdowson (Department of Medicine, Cambridge)

Wheat is not a substance of fixed and invariable composition, and it is well known to vary with the species, season and locality. In point of fact these differences are most important, and determine to a large extent the uses to which wheat shall be put. Manitoba wheat contains more protein than English wheat, and less carbohydrate and water. There are also differences in the mineral and vitamin content. Thus Manitoba wheat tends to contain more vitamin B<sub>1</sub>, but less calcium, than English wheat, whereas both wheats have about the same amount of phosphorus,