

## Endpiece



Little did I think when I joined Dr R. A. McCance in his small laboratory at King's College Hospital in 1933 that, more than 60 years on, the work we did together would be remembered as it has been today.

The chemical analysis of foods, which Ann Walker has discussed, was largely carried out between 1933 and 1938. Dr McCance had already analysed a large number of plant foods for carbohydrate to provide information that was badly needed for the calculation of carbohydrate in diabetic diets. We extended the analysis to include, besides carbohydrate, water, N and hence protein, fat and nine minerals. Altogether we analysed 450 different foodstuffs from both plant and animal sources. Our only measuring instruments were a balance, pipettes and burettes and a visual colorimeter. The results were published in 1940 as the first edition of *The Chemical Composition of Foods*.

We used the information before it was published in our study of the weekly food intakes of sixty-three men, sixty-three women and more than 1000 children aged between 1 and 18 years. From the results of our food analysis we calculated the individual intakes of the various nutrients, something that had never been done before. This led to the discovery of the wide variation in energy intakes between individuals of the same age and sex. We were not able to make measurements of energy expenditure, but Gail Goldberg has told us

how this has now been done on individuals over several days. Energy expenditure does indeed vary between individuals, as does the intake, and Gail has described the adaptations the body makes to these variations.

The absorption and excretion of minerals was a subject that greatly interested us, both before and after we moved to Cambridge in 1938. In the 1930s we measured the intake, absorption and excretion of Fe and Ca, using ourselves and colleagues as experimental subjects. This led to the discovery that the amount of Fe in the body is regulated by controlled absorption from the intestine and not by excretion as had previously been believed. Investigations in Cambridge during the early war years showed that phytate in high-extraction flour hindered the absorption of Ca in the intestine. This led to the compulsory fortification with  $\text{CaCO}_3$  of flour used for making the National loaf. Sue Fairweather-Tait has described how this subject has advanced since the 1930s and 1940s, and she has given an account of her own particular interest, bioavailability, and the adaptation of the absorption processes that are involved.

In the 1950s we made use of our experience in analysing foods for another purpose. Laboratory equipment had improved somewhat by then; for example we no longer had to measure Na chemically, we had a flame photometer for this purpose. We analysed both human and animal bodies for the same substances we had measured in foods. Our particular interest was in the changes that take place during growth and development. Susan Jebb has described how new methods have provided new insights into the composition of the human body. As far as I know the new methods do not contradict anything we reported 40 years ago.

The effect of early nutrition on later development was of great interest to us in the 1960s. We used experimental animals in our work, but studies by others in recent years have shown the importance of early nutrition of human infants, not only for development, but also for the incidence and prevention of later disease. Joy Dauncey, who has looked more deeply into the subject, has described some of the mechanisms involved. Her studies in animals show clearly the importance of good nutrition, both before and after birth, for optimum health.

We employed many species of experimental animals as models for the human species but all the developments in biotechnology still lay ahead. Judith Hall has given us a masterly account of its potential and of her involvement in it.

Finally, Mary Allen has taken us into a completely different world, the world of comparative nutrition. She has described how a little investigation we made in 1971 on blackbirds and thrushes helped her in her own research on reptiles.

I would like to thank all the speakers for the trouble they have taken, looking up my old publications, preparing their papers and presenting them at the meeting. It gives me great pleasure to know that the simple investigations Dr McCance and I made from the 1930s onwards are not completely forgotten, and that they have had some influence, if only indirectly, on their own research.

Last but by no means least, I want to thank Margaret Ashwell, for without her this meeting would never have been held. It was her idea, her organization and her achievement and now she has co-edited this book. My concluding words are 'thank you Margaret, very much indeed'.

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