

MARGARET NEWMAN : ELSIE WIDDOWSON

Elsie Widdowson Pioneer of Nutritional Studies Born 1906 in Wallington Surrey, attended Sydenham County Grammar School Studied Chemistry at Imperial College, London and graduated with BSc in 1928 becoming one of the first women graduates of Imperial College. carrying out postgraduate work at The Dept of Plant Physiology, developing methods for separating and measuring the fructose, sucrose and hemicellulose of fruit. She measured changes in the carbohydrates in fruit from time it appeared on tree until it ripened. 1931 she received PhD in Chemistry for her thesis on the carbohydrate content of apples. Her main interest was the biochemistry of animals and humans. And together with Professor Dodds studied the metabolism of the kidneys and she received a doctorate from the Courtauld Institute. Elsie struggled to find a long term position, Dr Dodds suggested she consider specialising in dietetics, which she did learning about the composition of meat and fish and how cooking affected them. While studying industrial cooking techniques she teamed up with Robert McCance who was a junior doctor researching chemical effects of cooking as part of his research on the treatment of diabetes. Elsie pointed out a error in his analysis of the fructose content of fruit. They became scientific partners and worked together for 60 years until McCance died in 1993. They worked on the chemical composition of the human body and on the nutritional value of different flours used to make bread. Elsie with McCance also studied the impact of infant diet on human growth. They studied the effects from deficiencies of salt and water, and produced the first tables to compare the different nutritional content of foods before and after cooking.. Their work became of national importance during the Second World War. They wrote a book called *The Chemical Composition of Foods* and it became known as the dietician's bible and formed the basis for modern nutritional thinking. During World War 2 when essential foods were limited Elsie and McCance became concerned for the health effects extreme rationing would cause. they carried numerous experiments by putting themselves on starvation diets and rigorous exercise such as climbing mountains and burning double the normal amount of calories. then they put themselves on their developed diet of bread, cabbage and potatoes for several months, which showed that good health could be supported by this very restricted diet. They were also the first to advocate for the fortification of foods, specifically bread, with vitamins and minerals such as

WOMEN OF NOTE IN BRITAIN 1 calcium. Their work became the basis of the wartime austerity diet promoted by the Minister of Food. They were consulted on the rehabilitation of the victims of severe starvation in Nazi concentration camps and visited Netherlands, Germany and Denmark to study the impact of the poor wartime diet on the people in Nazi occupied territories. Elsie followed up this work in the following 30 yrs by studying malnourishment in Africa. Research on animals showed that malnourishment in early life led to lifelong effects on growth and health. Elsie showed that a newborn human has 16 per cent of its weight as fat, much greater than one or two percent of other species. She also studied the importance of the nutritional minerals in natural and artificial human milk. Her work led to revised standards for breast milk substitutes in the UK in 1980s She held numerous positions in nutritional societies She was a Fellow of The Royal Society, was awarded a CBE in 1979 and made a member of The Order of the Companion of Honour in 1993 In 2020 she was included by the BBC in a list of seven important but little known British Female Scientists. She died in 2020 at the age of 94.