T. P. Hilditch, C.B.E., D.Sc., F.R.I.C., F.R.S.

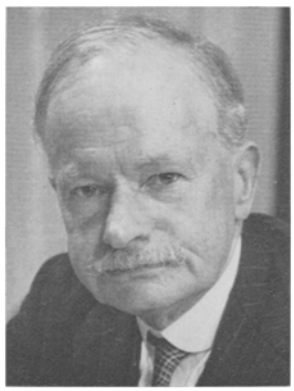
F. D. GUNSTONE, St. Salvator's College, The University, St. Andrews, Fife, U.K.

With deep regret, we mark the death of Professor T. P. Hilditch, August 9, 1965, in Birkenhead, England. Internationally known, Professor Hilditch was honored in his lifetime for his distinguished research in natural glycerides and other lipids. Just recently, he received the Alton E. Bailey Award from the North Central Section of the American Oil Chemists' Society. The Symposium on Natural Fat Glycerides, beginning in this issue, was conducted in his honor in Houston in April.

The moving address given at Houston by his student and colleague, F. D. Gunstone, is printed here. This address not only pays tribute to a rarely gifted chemist and teacher, but also portrays him as he is remembered by his students and friends—as a man of great warmth and dedication.

IF I WERE TO SPEAK of my school it would mean nothing to you, if I told you of my *alma mater* I doubt if you would be greatly interested, but to report that I did postgraduate research under Prof. T. P. Hilditch is to command immediate notice in this gathering and among all well-informed chemists. All those who shared this privilege enjoy a respect and a status which is quite independent of their own individual value.

Thomas Percy Hilditch was born in 1886 in London so that he is now in his eightieth year. When Chevreul died at the age of 103 Hilditch was three years old and he himself has humorously suggested that if his parents had been more foresighted the young child could have met the centenarian. Notwithstanding this oversight these two giants in our field of fatty acid chemistry cover the period from 1786 (when Lavoisier was still alive) until the present and we meet today in this historic tradition.



T. P. Hilditch

Hilditch had two careers; he was both industrial and academic chemist. To practise in these two spheres of activity is less common in Britain than in America and was even rarer in the past than today. Whether his industrial friends found him too academic I cannot say but I suspect that his academic friends frequently considered him too industrial.

After a successful career in the Universities of London, Jena, and Geneva he was appointed in 1911 as Research Chemist to J. Crosfield and Sons Ltd., of Warrington. It is interesting to observe that the present research manager of that same firm is Dr. Tony Crossley, one of Hilditch's many successful students.

During his fifteen years at Crossfield's Hilditch was particularly concerned with the process of fat hydrogenation, with the constitution of some of the less common constituents of commercial fats, such as palmitoleic acid, and, during the first world war, with the catalytic manufacture of acetaldehyde and acetic acid from alcohol. It is easy to trace a continuing interest in these first two topics through his subsequent academic career where he made useful contributions to the subject of hydrogenation and to the study of the less common acids.

In 1926 he became Professor of Industrial Chemistry in the University of Liverpool and continued in that appointment for a quarter of a century until his retirement in 1951. Those of us who are in our middle years should be encouraged to hear of someone who began a highly successful academic career when he was forty. During that quarter century, with the help of nearly eighty research students drawn from all over the world he published over three hundred papers dealing mainly with the component acids and glycerides of natural fats and with methods of studying these, but also, to a lesser extent, with the structure of the natural acids and with their properties. He worked and wrote on their geometrical stereomutation, bromination, hydrogenation, and oxidation by atmospheric oxygen and by other oxidising agents.

When I last saw Professor Hilditch in January he told me how much he appreciated the honour that you are seeking to do him by dedicating this symposium to him. You will not be surprised to learn that he has been honoured in other ways on previous occasions. In 1942 he was elected to the Fellowship of the Royal Society. This is one of the highest scientific honours that can be awarded in Britain and as the number of Fellows at any time is limited there is keen competition between scientists of many disciplines. On his retirement his country also recognised his achievements in its own peculiar way and made him a Commander of the Order of the British Empire. (We may have no Empire left but we retain these vestiges of the past.) In 1962 the Society of Chemical Industry awarded him the Lampitt metal. This award, given not for knowledge, nor scholarship, nor technical achievement, but for outstanding *service* to the Society, was well-deserved for he served the Society of Chemical Industry, and others like it, in a score of ways which took no account of personal advantage or of personal effort. Last year the French Groupement Technique des Corps Gras awarded him the Chevreul medal, so forging a link between these two great men of fatty acid chemistry. Now in 1965 the American Oil Chemists' Society, of which he has been a member for many years, has done him the double honour of dedicating this symposium to him and of giving him the Alton E. Bailey Award which I will have the honour to receive on his behalf in Chicago next month.

What are the major achievements of a career so fruitful and so successful? In my opinion there are three though, like so many of the fatty acids he studied, the major results are accompanied by many minor ones.

I think that in the minds of many chemists, and particularly perhaps for those not familiar with all the details of his work the name of Hilditch is associated with his major research effort, namely, the component acids and the component glycerides of a great number of animal and vegetable fats. Between 1926 and 1951 no-one did more than he to discern the patterns which run through these related areas of component acids and component glycerides. And in recognising this we recall that in those pre-chromatographic days much more effort and time were needed than today. When I was in Hilditch's department in the mid forties—after the development of the valuable alkali isomerisation process—we had to work hard to determine the component acids of a drying oil in three or four weeks and the component glycerides in two or three months. Today we reckon the necessary time in hours or days.

The second major achievement of the man we honour today is his three books, which have appeared altogether in nine editions over more than half a century. In the

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early years of this century university courses in chemistry included the History of Chemistry. As a student Hilditch found no satisfactory text so in 1911 he produced his own *Concise History of Chemistry*. His second book, *The Industrial Chemistry of the Fats and Waxes*, ran to three editions, but it is for his third monograph, *The Chemical Constitution of Natural Fats*, that he is most widely known and acclaimed. First published in 1940, the fourth edition appeared in November, 1964, having been completed with the assistance of P. N. Williams. This has been, and remains, a mammoth work of incalculable value to many generations of chemists. I have always considered this book to be a combination of critically appraised facts and of informed comment upon them and I have found the one as valuable as the other. The third edition was published in 1956 and therefore the fourth should last to the end of this decade. Even that is uncertain, for work reported at gatherings like this soon render such books out-of-date. But what then? Will Hilditch live to a great age like Chevreul and give us yet another edition? We do not know. But it is clear to me that we shall continue to require collated information of this kind and that when we can no longer rely on Hilditch for it we will have to find someone else—probably a corporate body able to recruit the assistance of several people—to continue this task.

Award presented to Professor T. P. Hilditch at the Hilditch Symposium on Analysis of Natural Fat Triglycerides held at the AOCS meeting in Houston, April 25–28, 1965. The award is an aluminum reproduction of the old alchemist's symbol for olive oil, one of the earliest forms of chemical nomenclature for a fat. The inscription reads: "The American Oil Chemists' Society proudly presents this alchemist's symbol for olive oil to T. P. Hilditch in recognition of his fundamental research to define natural fat triglycerides in terms of modern chemical symbols."

Hilditch's third big contribution to fatty acid chemistry is, in my opinion, the way in which he trained and inspired nearly eighty research students. Thirty of these came to the Liverpool laboratories from overseas. They came from several European countries, from all the former British Dominions, and from many of her former colonies (including America) but, above all, they came from the subcontinent of India, and we welcome Dr. Achaya as the unofficial representative of that large group of Hilditch's students. Many of his students maintained their interest in and their practice of fat chemistry. They are to be found in high office in industry and in government research establishments. A few entered academic life and one of them (H. E. Longenecker) is now the President of Tulane University, New Orleans. It is not for me to assess the contribution which each of these has made to the further study of this subject—the names of Jasperson, Lea, Lovern, and Shorland, to mention only four, are well known to you—but the influence of T. P. Hilditch in the academic and industrial pursuit of fatty acid chemistry has been extended and is still exercised through many of his students.

It has been easy to speak of Hilditch the chemist for his publications speak for him. It is less easy to speak of Hilditch the man but I must try.

From 1943 to 1946, when he was approaching sixty, I was a young postgraduate student of his. Since then my contact with him has been mainly through correspondence and, to a lesser extent, through infrequent meetings at lectures or in visits to his home. Through this limited knowledge certain facts emerge.

There is the respect and affection of his former students. Most of them are still in touch with him though they may have graduated from his laboratory over thirty years ago; many of them still visit him. All those I have met hold him in high regard and most of them can tell at least one good story which reflects the essential humanity and the many-sidedness of their former teacher. There is his generosity towards his students and here I speak from personal knowledge for I have received from him, at various times, advice and encouragement and an obvious, though difficult, attempt not to overshadow my own effort to build up a reputation. He is also a humble man of scientific integrity. He is surprised, but pleased, when honours came to him. The march of science is such that at conferences such as this much of the work done in earlier years, usually under more difficult circumstances, is superseded by newer results obtained by newer methods. Hilditch welcomes these new techniques and the new insight they bring, he is not unduly envious of present day opportunities, and he accepts those new ideas which he considers sound even when they replace his own earlier views. This is clear from the generous way in which he has treated some of the newer concepts of glyceride structure in the fourth edition of his monograph. He is indeed a Christian gentleman and I believe that his faith inspires his honesty of purpose, his service for others, and his interest in his students as chemists and also as men and women.

In dedicating this symposium to Thomas Percy Hilditch I know that we have brought him great pleasure. I am certain that you have honoured me in inviting me to contribute in this way, and I consider that we honour ourselves by associating our discussion and our work with the name of this man whom we all respect and for whom many of us have a great regard and affection.

• *Obituary*

J. E. Maroney (1940), Chief Chemist, Service Laboratory, American Meat Institute Foundation, Chicago, died March 31, 1965.