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RECORD OF THE PROCEEDINGS ON THE OCCASION OF THE PRESENTATION OF A FACULTY GOLD MEDAL TO PROFESSOR A. D. WILKIE

15th February 1993

In the summer of 1992 the Council unanimously decided to award a Faculty gold medal to Professor A. D. Wilkie in recognition of his exceptional services to the actuarial profession.

Prior to introducing the authors of the paper to be discussed at the Sessional Meeting on 15th February 1993, the President presented the gold medal to Professor Wilkie.

The President:- Last October those of you who were kind enough to listen to my Address were invited to provide the next value in a numerical series, the first four terms of which I specified. I concede now that I was being a trifle unfair – since the determination of the "correct" answer depended on somewhat devious reasoning (linked to the years of admission of our first lady Fellows). If, however, I had posed an apparently even easier problem and had asked for the next value in the three-term series {1929, 1937, 1973}, those of you with a good knowledge of our history might have accused me of even greater duplicity, since you could have contended with some justification that at the time I was speaking this simple series had in fact no next term.

The years 1929, 1937 and 1973 are of special significance to us. In its 137-year history the Faculty has awarded only three medals (in each case a gold medal) – in 1929 to G. J. Lidstone, in 1937 to W. P. Elderton, and in 1973 to J. B. Dow. The first two medals were presented jointly with the Institute of Actuaries. The fact that we have made such awards so rarely simply confirms that the recipients have been Fellows of truly exceptional distinction, whose names will long be remembered by the members of our profession.

Last summer Council unanimously decided that the contributions to the work of our profession over many years by one of our current Fellows had been of such outstanding merit that he, too, should be awarded a gold medal. I am, of course, referring to our Vice-President, Professor Alasdair David Wilkie, to whom on this very special occasion it is my privilege to present the medal on behalf of the Faculty.

David Wilkie was born and brought up in Lancashire of Scottish parents. He was admitted a Fellow of the Faculty in 1959, having spent his school days in England and having been an undergraduate at Trinity College, Cambridge. The scope of Professor Wilkie's knowledge and the wide range of his interests is well known to all who have collaborated with him or who have studied his work. His breadth of knowledge was apparent even in his early days as an undergraduate. During the course of his time at Cambridge he obtained first-class honours in the Part 1 of the mathematical tripos, spent one year reading economics, and finally obtained upper second-class honours in part 2 of the English tripos, his work for which required a fair amount of study of medieval Latin. It is perhaps not surprising that some years later he came within a whisker of

winning the title *Brain of Britain* in the popular radio quiz programme. I understand that his studies during his last year at Cambridge may in fact have proved his downfall during the competition final, in the first round of which he was asked the meaning of the word "lapidary". With no hesitation he came up with an answer that would have been totally acceptable 600 years ago, but which the referee deemed incorrect in modern usage. The disconcertment caused by this ruling at such an early stage of the final may explain why he was pipped at the post and had to settle for the position of runner-up. While we all know that a little knowledge is a dangerous thing, the moral of this episode is that there are also rare occasions when too much knowledge can itself be a cause of some discomfort.

Such is the extent of David Wilkie's work for our profession that, if I were to try this evening to describe in detail even only his activities in the past few years the length of my remarks would, I suspect, test the good nature of the most patient among you. Time constraints compel me to restrict myself to a brief outline of his career.

His employment record is easily summarised. Having qualified in Edinburgh in one large Scottish life office, he spent a year working with a reinsurance company in Switzerland before returning to Scotland, to another large life office, where he subsequently worked for more than 20 years – his final appointment being that of Research Actuary. He then moved (eight years ago) from Edinburgh to become a consulting actuary in the South of England. We are fortunate his energy and loyalty are such that this geographical relocation has led to no diminution in his work for the Faculty.

David Wilkie's contributions to the scientific side of our profession are immense. His first paper to the Faculty Students' Society advocated a radical approach to economic problems and his subsequent work has covered virtually every aspect of actuarial activity. The number of our Sessional Meetings which have been devoted to discussing papers of which he is author or co-author runs to double figures, while the total number of his publications to date is in excess of 100. The words "to date" should be noted, since his prodigious research output shows no sign of diminishing. His fertile mind is still throwing out new ideas to challenge us.

I think it fair to say that, within the field of actuarial science, his research activities are unparalleled – certainly in modern times. His reputation is truly international and this is reflected in the fact that he is, by invitation, a corresponding member of both the Belgian and Swiss actuarial associations. You will all know that he was joint winner of the competition for scientific papers run by the International Actuarial Association in connection with last year's Congress in Montreal.

His achievements have led to appointments as an honorary or part-time professor, or as visiting research fellow, at several universities. It is to me a special pleasure that Heriot-Watt University, with which the Faculty has a close and long relationship, was the first to recognise his distinction in this way.

In the year after he became a Fellow of the Faculty he was admitted as a Fellow of the Institute. I understand that one of the motivating factors behind his decision to take the

necessary final parts of the Institute's examinations was the fact that, at that time, they provided the opportunity to study in considerable depth the advanced theory of statistics. This thirst for further knowledge remains an ever-present feature of his character. A few years ago his friends and colleagues were delighted when the Institute honoured him with the award of a Finlaison silver medal.

One could be forgiven for imagining that with such considerable research achievements David Wilkie has had little time to devote to the other activities of the profession. How wrong one would be!

His first post-qualification service to the Faculty was as a tutor. He was subsequently a member of our Board of Examiners for 15 years (including three years as Secretary and six years as Chairman). Many of you present this evening will appreciate the arduous nature of his work and of the considerable responsibility it entailed. He has been one of the Faculty's representatives on the Consultative Group of the actuarial associations of the EEC since 1979. For the past 20 years he has been a member of the Joint Investment Index Committee of the Faculty and the Institute and has played a significant rôle in the construction and development of the FT-Actuaries fixed interest indices.

His membership of the Executive Committee of the Continuous Mortality Investigation Bureau is of even greater duration! He joined that Committee in 1964, since when his service has been unbroken. For the past 10 years he has been the Committee's Chairman.

I have mentioned just some of the ways in which David Wilkie has served the Faculty. Many of you will know that he has recently agreed to accept further responsibilities on behalf of the profession by becoming the Chairman of the Scientific Committee for the International Congress to be held in the United Kingdom in 1998.

Perhaps you will forgive me if I conclude my remarks this evening on a personal note. In 1972 the Faculty elected the late Professor Harald Cramér an Honorary Fellow and it was at a luncheon in honour of Professor Cramér that I first met David Wilkie. Since then I have had the pleasure of collaborating with him on frequent occasions. In all our contacts his considerable courtesy and modesty have been very apparent – and, if I had a pound (or even an ecu) for each occasion on which I have benefited from his advice, I would by now be well on the way to being a rich man!

I mentioned earlier how pleased we were to have Mrs Wilkie with us tonight. Her support and encouragement have clearly been an essential ingredient in her husband's successful career.

On one side of the medal is engraved the Faculty's Coat of Arms. On the other the inscription is as follows:

Presented to
Alasdair David Wilkie
in recognition of his exceptional contribution
to the actuarial profession
15 February 1993

On behalf of the Faculty I am delighted to present the gold medal to Professor Alasdair David Wilkie.

Professor A. D. Wilkie:- Mr President, ladies and gentlemen.

I first take great pleasure in thanking you, Mr President, members of Council of the Faculty, and Fellows of the Faculty for the great honour you have bestowed upon me, unique among living actuaries.

Gold Medals are often awarded at the end of a successful academic or professional career. But I hope I am still young enough to contribute more to the profession. It is certainly my desire and my intention to do so.

You mentioned my interest in medieval literature. I hope that your listeners do not get the impression that I have a medieval approach to actuarial ideas, though I do find the history of the development of actuarial thought an interesting topic. Instead I have tried to use modern methods to develop actuarial ideas, and I hope that I have been successful.

I should like to take the time that I have available to comment on the sort of research that I have done. I am not an expert mathematician; you already said that I only studied mathematics at university in my first year. But I have always felt that mathematical and statistical methods were there to be used whenever a relevant practical problem came up. Just because British actuaries use relatively simple mathematics in their educational courses, so that we can accommodate into the profession those who do not have degrees in mathematics or statistics, does not mean that we all need to restrict ourselves to elementary methods for all of our work.

There is a culture among some British actuaries that denigrates the use even of elementary calculus in papers presented to the Faculty or the Institute at Sessional Meetings. I know, Mr President, that you would not subscribe to this culture, but I feel that if it gets the upper hand, then our profession will no longer carry the prestige or attract the quality of entrant that it used to.

I said that I found myself using relevant mathematical and statistical techniques for solving practical problems. Some of these problems have been traditional actuarial ones: the construction of mortality tables, and fitting functions to yield curves for fixed-interest stock. But some have been new: the development of multiple-state models for Permanent Health Insurance and for HIV infection and AIDS, and the construction of a stochastic investment model. This last in my view is the most interesting development. It has many possible applications, and much more work can be done using it.

The common thread has in fact been the ability to make use of computers. I had the good fortune to learn computer programming in its very early days, on the historic Ferranti Pegasus machine. I early learned what computers could do, and how to get them to do it, at least at an early stage in the development of computer technology. There may now be plenty of things that computers can do that I do not know about, because the field of computer work has expanded so enormously in recent years.

In fact one specific technique is at the heart of a lot of what I have done: a single algorithm (known as the Nelder-Mead simplex algorithm) for finding the maximum or minimum of a non-linear function. This can be used to find the parameters of a function that gives the best fit for a mortality graduation or a yield curve or a time-series model, or indeed for many other applications. Very often we require to find the best answer to some problem, and we can define "best" in a mathematical way either by maximising some function representing the good things or by minimising some function representing the bad things in our problem. We may find that we need to optimise two things at once. Mathematically this cannot be done. Either one optimises a weighted average of the two optimands, or one chooses one function to optimise and express the other as constraints.

The constraint on me this evening is that I must not talk for too long, because we have a serious paper to discuss. I just want to mention three groups of people to whom I owe a great deal. One group consists of other actuaries from whom I have drawn inspiration, led by the late Professor Sidney Benjamin, and including also my colleagues at Heriot-Watt, yourself Mr President and Professor Howard Waters, from whom I have learned a great deal about methods of modelling.

The second group consists of a single individual. You, Sir, have mentioned my predecessors as Gold Medallists of the Faculty. Lidstone and Elderton I never knew, though I have the privilege of following Elderton in his role as Chairman of the Executive Committee of the CMI Bureau. But my immediate predecessor is J. B. (Brem) Dow. He was the first actuary that I ever met, though I did not know when I met him that he was an actuary. The circumstances of it were this: my parents took their family, consisting of my brother and myself, on holiday to a hotel at Rosemarkie in the Black Isle during the late 1940s. So did Brem and Nita Dow. They got into conversation, my parents discovered that he was an actuary, and in due course they suggested to me that it might not be a bad idea if I became one too. At a much later stage I joined the company of which he was then Secretary and later General Manager. I am honoured to have known him, and I am only sorry that he did not live to see who his successor was.

The third group also consists of a single individual, my wife Patricia, whom I am pleased to have with me this evening. If it had not been for her encouragement and forbearance I would not have been able to spend the hours that I have done in carrying out research. Although she works in a different field, her own academic approach has taught me a great deal about how academic research should be carried out. Thank you very much, Patricia, for your help, and thank you, Mr President, for your presentation.

The President:- The Faculty, too, is very conscious of the support and encouragement which Professor Wilkie has received from his wife. I would like to conclude this part of the proceedings by asking our Secretary, Mr Mair, to present Mrs Wilkie with a bouquet of flowers as a small token of our appreciation of the part she has played in her husband's career.


PRESIDENTS
OF
THE FACULTY OF ACTUARIES