Percy Stocks: an appreciation

Dr. Percy Stocks's writing covered innumerable aspects of social and preventive medicine, and his contributions to medical literature opened up many topics which have since become important matters of debate. Because these papers amply repay study and are perhaps not as well known as they should be, the Editorial Board agreed that a bibliography of his works should be presented to our readers. We are grateful to Professor D. D. Reid, Dr A. M. Adelstein, and Dr W. P. D. Logan for contributing the following appreciations of Stocks's work as chief medical statistician at the General Register Office and as an international consultant.

By D. D. Reid

Percy Stocks's early work reflected his exposure to the stimulus and teaching of the remarkable group of men in the Galton Laboratory at University College that centred on Karl Pearson. Numerical methods in medicine were not new, for Farr had already demonstrated how vital statistics could contribute to medical science. But the potential of the powerful analytical techniques in biometry that were being forged by Pearson and his school was quickly appreciated by medical men like Greenwood and Stocks. It was perhaps hardly surprising that Stocks's first essays in this field were dictated by the genetic and biometric interests of the Galton Laboratory. Later, however, he returned to his essential concern with epidemiology and public health. In collaboration with Mary Karn, he applied mathematical and statistical methods of analysis to the study of outbreaks of measles in London.
He was able to show that the epidemic phenomena involved could be explained by changes in the immunity state of the child population and by the influence of weather and other environmental factors on the ease of transmission of infection. Stocks then extended his approach to other specific fevers by his work on infectiousness and immunity in respect of chicken-pox, scarlet fever, whooping cough, and diphtheria and on the spread of smallpox in partially vaccinated communities.

Stocks was one of the first to carry over many of the concepts and methods of epidemiology from the acute infections to the chronic diseases of middle and late life. He applied theoretical models of disease behaviour to the age patterns of cancer of the stomach in 1953 and of cancer of the lung in 1966. Subsequent major developments in this field on the relation of duration of smoking to the risk of malignant disease thus owe much to this original work. Stocks also used sophisticated methods to dispose of the notion that there were ‘cancer houses’ by showing that the spacing of cases simply reflected the degree of aggregation of people of similar age in the same area. Much of this work is relevant to current discussions of the time-space relationships of malignant disease.

Geographical studies of the distribution of mortality were one of Stocks’s special and enduring interests. His monograph on local cancer death rates published in 1947 was a text the fascinating contents of which were obscured by a drab title. Stocks was adept at pointing out the oddities in disease experience that hinted at possible causes; and he was quite prepared to push speculation beyond the conventional views of his time. He was the sentinel on the wall who alerted the Medical Research Council to the increasing menace of lung cancer and he certainly appreciated the overwhelming effect of smoking. But he also pointed out that air pollution in British cities might be responsible for their high death rates from lung cancer. By studies of international vital statistics and field studies in north-west England and Wales he produced evidence on the subsidiary effect of air pollution that is difficult to ignore. In the same way, he pin-pointed areas of excessive cancer mortality such as cancer of the stomach in north Wales or in the valley of the River Lea in north London and postulated the carcinogenic effect of some element in the soil or water supply. What may have sounded far-fetched in 1947 is now increasingly recognized as a practical possibility; and Stocks’s demonstration in 1937 of an association between water hardness and mortality from renal calculus and cancer of the bladder, and in 1973 of its relation to cancer of the stomach and other conditions, is typical of an initiative that is reflected in current epidemiological preoccupations, particularly in the field of cardiovascular disease.

In all this, Stocks displayed a fine balance of scientific qualities. He was well fitted, by intellect and training, to apply the technical methods of statistical analysis. He also knew the limitations of vital statistical data and exercised caution and discrimination in deriving conclusions from his work. On the other hand, he had the supreme advantages of imagination and intellectual courage, which his modest and almost diffident exterior belied. In pursuit of his personal ideal of the mitigation of the ravages of epidemic disease, he was prepared to speculate on causes and cures apparently without fear of being dismissed as an impractical visionary.

Many of Stocks’s intriguing findings for example, on the changes in mortality from diabetes in war-time, have not been properly followed through. His papers thus represent a treasury of epidemiological ideas that every intending investigator should raid. In retrospect, Stocks’s speculations may not have always proved correct but, in his field of vital statistics, his knowledge, imagination, and insight were unrivalled. To him, Paget’s description of Darwin could therefore justly apply: ‘He had the rare power of taking the common things that other men waste, and out of them making the grandest material of scientific work’.

BY A. M. ADELSTEIN

Percy Stocks is justly renowned for many reasons, but probably mainly for the wide sweep of his work at the General Register Office (GRO). This work ushered in the second distinct period in the development of epidemiology and vital statistics. The public health movement of the nineteenth century had been under-pinned by the magnificent system of vital statistics created and managed by William Farr. By giving the system its second wind Stocks helped significantly to develop the modern approach to social medicine.

His work spanned some important landmarks in medicine, and his prolific writing shows clearly how well he understood them. He came to the Registrar General’s Office in 1933 and his early papers revealed his interest in developing the standard analysis of vital records; he had already produced an example of a retrospective study with controls, to investigate the environmental contribution to cancer.

In another paper he gives a careful analysis of the effects on longevity of the two great therapeutic discoveries of the time, the treatment of diabetes...
and of pernicious anaemia. This paper has a masterly discussion of how patients could be expected to accept the treatment, of how their deaths would be postponed, and of the effects on vital statistics. He concluded that two years after the introduction of liver therapy in 1926 there was a fall of 35% in the death rate from pernicious anaemia, but that by 1932 the postponed deaths of all the patients had masked these gains in older persons. He estimated the average lengthening of life in England and Wales of all persons afflicted with pernicious anaemia at 3 to 3½ years, compared with about 8 years for those who were treated. A similar analysis for diabetes was more difficult because here the mortality rate was increasing; nevertheless he concluded that the average life of a diabetic had been extended by nearly 3½ years.

This paper shows that Stocks was interested in widening the use of traditional records, and in fact during the rest of his career he was responsible, by his initiative and involvement, for a great expansion in the medical activities at the GRO. In all this he was not working alone, of course, but I hope that others will forgive the omission of their names from this tribute.

His guiding hand is evident in a whole series of sets of records, including the Survey of Sickness, the Hospital In-patient Enquiry (HIPE), the Cancer Registry, and the Mental Health Enquiry. He anticipated the need for a comprehensive medical information system, and for this he obtained the cooperation and the confidence of the Department of Health, the Medical Research Council (MRC), and other leading medical institutions and practitioners.

He himself did most of the work of planning, designing, and analysing the initial results. His introductions to the published results are models of clear thinking and any student of epidemiology would do well to study them.

Although busy innovating, he did not neglect the study and development of traditional vital statistics. He wrote papers to warn the profession of the growing scourges of our times—coronary heart disease and cancer of the lung—infering from a close examination of occupational mortality statistics that lack of exercise might be a factor in coronary heart disease. He noted that women of the higher social classes suffered more breast cancer than others. In 1935, in an elegant analysis, he showed how influenza was an important cause of death, noting that it often precipitated deaths from other diseases, particularly heart disease.

Percy Stocks had the unusual gift of being able to interpret his own times, often showing the way to the future of social medicine. As early as 1944 he wrote: 'The conquest of acute diseases is likely to continue with increasing rapidity and consequently chronic degenerative diseases will assume greater importance in the general morbidity picture. It is improbable that such conditions will respond greatly to chemotherapy; it is more likely that we shall have to go back to their beginnings and try to remove or counteract the irritant causes which, when unchecked, eventually produce them'.

His success owed much to his ability to distinguish the important data and methods, and to avoid the lure of trivia. Amidst this veritable avalanche of analyses, it is not surprising that sometimes his deductions were speculative and that sometimes his enthusiasm for the advancement of social medicine overran itself. In the paper quoted above, developing the subject of continuous health histories, he said: 'In my opinion it should be started forthwith for every newborn child, with, as first suggested, the keeping of continuous records of every event directly or indirectly affecting the child's health up to the age of 15. We may anticipate that before the children now being born have reached that age, a National Health Service will have been developed which could continue to take care of their records throughout life'.

This was starry-eyed and well ahead of its time. We still talk like this today seated astride our computers but we have not done much about it; we are busy looking for answers to the same questions on epidemiology; we still have not reached his (or Farr's) ideal system in which records of important events in every person's life are brought together.

As had happened before, the second world war concentrated the nation's mind on the problems of health; Percy Stocks's work in the GRO became a focal point for these studies. He regularly reported his careful analyses of the vital statistics, ever watchful for new ways of monitoring health. With the Government Social Survey he developed the Survey of Sickness. He aimed apparently at an Index of Morbidity, a single statistical measure of the health of the community, taking account of death and serious, moderate, and minor illness. Using war-time certificates of Priority Allowance of Foods, he analysed the effect of the war on diabetes, thyrotoxicosis, tuberculosis, and peptic ulcer.

In 1944 he analysed 'hepatitis and jaundice amongst the emergency medical service hospital in-patients' saying 'for some diseases old-standing beliefs about aetiology have been blown to pieces in the present war, and the jaundice group has suffered more disturbance, perhaps, than any.
As late as 1938 “catarrhal jaundice” was comfortably housed amongst diseases of the bile ducts.

Colleagues, both outside and in the GRO, speak fondly of the man Stocks; among his virtues they praise his working style, how quickly he got down to a job, and how much of the basic work he did himself.

So it is not surprising to find that following the tradition of Farr he contributed greatly to the construction of disease classifications, especially the adaptation of the International Classification of Diseases (ICD) so that it would serve both for morbidity and general medical use as well as for mortality. This essential tool of epidemiology, though apparently simple and surrounded by self-appointed experts, really needed all the hard-earned experience and dedication of someone like Percy Stocks to unravel its complexity and guide its development.

Percy Stocks did very well in steering the GRO into the era of social medicine, and for long after he left the GRO in the year 1951 he continued to give his valuable experience to the World Health Organisation (WHO), and until recently he was still using his expertise on the current statistics of the GRO, regularly producing important papers. I have enjoyed reading his papers for this review, some for the first time. They reveal him as a modest man, and I fancy their tone reflects his times—less exuberant and more restrained than Farr; addressed less to the world at large and more to the medical profession; without the excitement of the industrial revolution and great reforms but with the self-conscious atmosphere of the two world wars. As one of his close colleagues said ‘he was cool, objective, warm underneath, and always ready to look objectively at health questions’.

BY W. P. D. LOGAN

The day I joined the GRO in May 1948 Percy Stocks had just come back from Paris where he had played a leading role in the international revision conference of ICD—the Sixth Revision, which was memorable in that it heralded the turning over of responsibility for the decennial revision from the Government of France to the WHO. Stocks had been working on the new revision for several years as Chairman of the preparatory committee, and had been to the USA and Canada to discuss his ideas which were accepted there without opposition. His leadership and authority in ICD and what it meant was unquestioned, both within the WHO and outside.

I did not accompany him to the Paris meeting in April 1948 but I am told that the moment the conference finished and the UK delegation set off to the Gare du Nord, Stocks spent an hour or two in the waiting room with a writing pad on his lap, drafting the next issue of the Registrar General’s ‘Text’, while the rest of the delegates spent their time in less constructive activities.

In July 1948 he was off to the first World Health Assembly to make sure that his Sixth Revision of ICD was properly adopted without uninformed modification or obstruction. The ignorance was enormous—Stocks could hardly believe it, he said—but everything went all right and ICD/6 was officially adopted by the WHO. The Third World Health Assembly in 1950 was the last he attended. Nonetheless, the contact he had had with WHO had given him a great awareness of world health problems, as was demonstrated by his discussions on population, nutrition, and disease in a lecture on statistics and world health that he gave in Michigan in 1949.

Soon after he had retired from the GRO, he was appointed head of the newly established Centre for Classification of Diseases in the GRO branch office in Southport, Lancashire. The Centre was in fact created so that Stocks could continue to give advice on what ICD/6 was all about and how it was to be used. He was the unnamed author of two very useful WHO bestsellers in 1952, one on medical certification of cause of death, and the other on comparability between the Fifth and Sixth revisions of ICD.

WHO has a number of panels of experts, and one of these is the Expert Panel on Health Statistics. Stocks was one of the very first WHO experts and stayed on the panel until February 1972 when, at the age of 82, it seemed time to let him withdraw, especially since the usual age limit is about 65.

In his capacity as a WHO expert, he attended a series of WHO Expert Committee meetings on Health Statistics during WHO’s formative years, between 1948 and 1953, sometimes as chairman, and repeatedly came to the aid of the secretariat by indicating very clearly what was wanted. He was also a regular participant in WHO’s Subcommittee on Cancer Statistics, a field that had been of special interest to him throughout his working life but which concerned him most in the decades between the late fifties and late sixties.

Stocks did not by any means confine himself to cancer studies during this period but served as a consultant to the Pan American Health Organization and helped Ruth Puffer with her pioneering survey of urban mortality in the Americas. He worked...
out a novel weighting scheme for the coding of the death certificates and together with Dario Curiel from Caracas coded the 20,000 records that were analyses in the investigation. He did some of this in Washington until Mrs Stocks decided that he should not make such long journeys, so we gave him an office in the Palais des Nations in Geneva where he spent weeks steadily ploughing through those thousands of records. It was characteristic of him that he insisted on there being two consultants to do the job—not because he needed or wanted help but because, since coding continuity and uniformity was essential, the investigation should not put all its reliance on the survival of one consultant aged over 70.

That was over 10 years ago. Up to last year he was still publishing good papers that are read with admiration for their originality and lucidity. His contribution to epidemiology and to health statistics has been immeasurably great. Both the WHO and the health of the world have benefited enormously from his life’s work, and I who was his disciple and his colleague am grateful for all he did.

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