

Obituary

HENRY JAMES BUNKER, 1897-1975

Henry James Bunker died on 8 August 1975 at the age of 78. He had lived for many years in Twickenham, Middlesex, to the west of London.

Bunker was born in London on 27 April 1897 and educated at St Olave's Grammar School. Here he gained the nickname 'Bill' - apparently his schoolboy appearance bore some resemblance to a widely known hero (better, an anti-hero) of boys' fiction called Billy Bunter. The name stuck: for the rest of his life he was 'Bill Bunker' to his friends and colleagues.

He displayed scientific interests at an early age, lecturing to the Astronomical Society at 15, but his education was interrupted by the 1914-18 war, for the last three years of which he served in the infantry, first as a non-commissioned then as a commissioned officer. He returned to St Catharine's College, Cambridge in 1919, to take a degree with botany as principal subject. On leaving Cambridge he took up his first professional position, as assistant bacteriologist in an Admiralty research organization, the Royal Naval Cordite Factory at Holton Heath in Dorset. He became one of a small group of scientists, headed by A. C. Thaysen, which was studying topics in applied microbiology, mainly on behalf of the then new Department of Scientific and Industrial Research (DSIR). One subject was the use of waste vegetation for the production of ethanol and alcohol, a process involving hydrolysis to pentoses followed by bacterial fermentation. Another was concerned with microbiological breakdown of textiles, including cellulosic materials in particular. This work led to an intensive study of the microbiology of cellulolytic organisms (bacteria, fungi and actinomycetes), as well as practical investigations on the resistance of ropes or various types of fabric to deterioration, and the effect of pre-treatment and of protective agents. The research culminated in a joint monograph with Thaysen (Thaysen & Bunker, 1927*b*) and it conducted him into some unusual by-ways of science. In 1924, after considerable difficulties with the Egyptian Government, Howard Carter was permitted to open the tomb of the young Egyptian Pharaoh Tutankhamen. The body, less well preserved than some mummies, had remained undisturbed since about 1243 B.C. Bunker had the opportunity of examining samples of the wrappings, dust and other materials from the Pharaoh's sarcophagus and showed that, as far as modern microbiological methods could detect, no micro-organisms at all survived. In another direction, the products of bio-degraded cellulose included humus, which indicated that a similar process had initiated the formation of coal and peat deposits (Thaysen, Bakes & Bunker, 1926). In 1929, Thaysen's group was joined by another distinguished member of this Society, K. R. Butlin (see Kenneth Rupert Butlin, 1896-1965, *Journal of General Microbiology* 1966 **45**, 1-8), whose special interest was the acetic acid bacteria, and the interests of the Holton Heath microbiologists were expanding to include other classes of biodeterioration, notably that caused by sulphur bacteria.

It was logical to have such work under the direct sponsorship of the DSIR rather than the Admiralty, and in 1933 Thaysen's group moved to the DSIR's Chemical Research Laboratory (CRL) in the grounds of the National Physical Laboratory at Teddington, Middlesex. The diversity of the group's interests is illustrated by the topics discussed in the *Report of the Chemistry Research Board for the Triennial Period ended 31st December, 1937* (H.M.S.O., 1938): the (seemingly non-microbial) deterioration of stored naval ropes, the use of



DR HENRY JAMES BUNKER (from a photograph taken in 1971)

cellulolytic bacteria to split toxin-specific polysaccharides, actinomycete taint of fish, bactericidal effects of hypobaric oxygen, revision of the Rideal–Walker test, fungal blackening of paintwork, oxidation of ‘catechin’ by an actinomycete, observation of sulphate-reducing bacteria in oil storage tanks and corroding iron pipes, and physiological studies on *Acetobacter suboxydans*. Bunker was by then well known as one of the relatively few applied microbiologists in this country. His speciality had become the bacteria of the sulphur cycle, his research material being at first thiobacilli and later the sulphate-reducing bacteria. The sulphur bacteria were then a rather neglected group, studied mainly in Holland, and Bunker’s review (Bunker, 1936) collected together the scattered literature and laid the foundations for developments in this area after the Second World War. His review is perhaps the most recondite of Stationery Office publications to have achieved a second edition: it was reprinted in 1951. The sulphate-reducing bacteria were then among the most awkward of the sulphur bacteria to handle, yet they showed the widest range of economic activities, one of the most dramatic of which was their role in the corrosion of buried pipes (see Bunker, 1939*a*). They gradually displaced thiobacilli as Bunker’s major interest, as his

publications in the later thirties indicate. In retrospect, it is doubtful whether any of the pre-war workers on this group of bacteria, including Bunker, had a pure culture. However, at a practical level, recognition of their presence in instances of metal corrosion and pollution facilitated understanding of their mode of action and permitted a rational approach to their control. Acidification of the environment (Bunker, 1942) is still a cheap and effective way of containing small-scale pollution by sulphate reducers, and his demonstration of growth stimulation by yeast extract (Bunker, 1939*b*) provided a basis for the successful isolation of pure cultures by Butlin and his colleagues in the post-war period (Butlin, Adams & Thomas, 1949, *Journal of General Microbiology* 3, 46–59).

During the Second World War, at the instigation of both the Medical Research Council and the armed forces, Thaysen's group embarked on a project which was to supersede cellulolysis and the sulphur bacteria as Bunker's primary interest. Widespread malnutrition was, quite correctly, expected as a result of the War, and one of the first installations for preparing a food yeast, *Torula utilis*, on a pilot scale was set up at Teddington. While not continuous in the modern sense, it was manned night and day and its products were successful in clinical and military trials. At the end of the War a full-scale plant was erected in Jamaica, where the substrate (molasses) was plentiful; the scheme did not survive the post-war economic recovery, but the potential of microbes as protein sources intrigued Bunker and the topic remained one of his major interests for the rest of his career.

During the War, like many other scientists, Bunker played his part in Civil Defence and contributed to the war effort in diverse ways. He joined the Local Defence Volunteers (later to be called the Home Guard) but withdrew to organize the laboratory fire-watching rota. His contemporaries recall a series of broadcasts which illustrated his ability to make even mundane science seem exciting. One of his broadcasts, entitled *Even Cheeses have Diseases*, was translated into Chinese and relayed over a Far Eastern radio service; the way in which the Allied war effort was thereby advanced is obscure. At the end of the War, Bunker was one of many scientists sent to Germany to assess the state of science and technology in that defeated country (see Bunker, 1946*a*).

Bunker's training had included a course in brewing and, with his new experience of yeasts, he welcomed an opportunity to form and direct a research department for Barclay Perkins, an old-established brewery at Southwark in London. He joined them in 1944, and immediately the proportion of basic research which he could undertake declined. However, by now Bunker was almost totally absorbed in the applications of science, and the variety of challenges offered by brewery technology delighted him. His lectures on this subject were much in demand, for their intrinsic interest as much as for the fact that he usually brought samples of the final product for the audience to taste. The sorts of problems that came his way included work on fermentation with pure cultures, exclusion of wild-type yeasts and other contaminant microbes, filtration, centrifugation, hop utilization, regular quality control, brewery hygiene and hygiene in inns. A minor example: the introduction of synthetic detergents in the late 1940s led to problems because their residues on glasses caused the 'head' or froth of beer to collapse and, though the taste was unaltered, the customers thought the beer had deteriorated.

In 1956 Barclay Perkins was taken over by a large brewing combine, Courage and Co., and Bunker's laboratory was one of the casualties of the merger. Now almost 60, he nevertheless embarked on a new and highly successful career as a freelance consultant in industrial microbiology. His wide experience of applied microbiology proved invaluable for, as he once wrote, he himself found it difficult to name an industry which 'has not, nowadays, some use for the microbiologist whether it be in constructive employment of micro-organisms

or in "trouble shooting" where their activities are deleterious'. Bunker did not retire; he continued working actively, even travelling, until the last few weeks of his life. Such work, being almost always of a confidential nature, led to virtually no research publications, so his bibliography became sparse in later years; his achievement is buried in the private reports and documents of his hundred-odd clients.

Besides his strictly scientific work, Bunker was an influential and respected figure in the learned societies associated with microbiology, and he played an important part in the development of two of them. Along with Marjory Stephenson and Paul Fildes, he was one of a small group that met together before 1940 to discuss the formation of the Society for General Microbiology. Plans were inevitably delayed by the War but, when the Society was started in 1945, Bunker became its first Treasurer. The financial provisions made at the start of a new society are vitally important for its success or failure; if the subscription is too high this can prevent young scientists from joining, while inadequate initial funds can lead to rapid failure of the society. Bunker always greatly favoured encouraging young microbiologists to join and take part in the activities of the Society; he managed the finances so well that, by the end of his period as Treasurer in 1951, the Society was securely financed with an annual subscription which was one of the lowest for learned societies in this country. In 1952 Bunker was made President of the Society and guided its fortunes during its formative years, during which it became established as a leading force in microbiology and a valued forum for discussion and education.

The Society had a relatively small but very active and friendly membership during those early days. Two meetings were held each year: the spring meeting in London which, under Bunker's Presidency, came to include the now familiar major symposium on a topic of importance to microbiologists as a whole, and a more specialized meeting in September which was usually held in a university outside London. The spring symposia became events of international importance while the autumn meetings were smaller, friendly gatherings at which the whole company would live, meet, discuss and be sociable on a university campus. Bunker played two important roles at this stage: as President he gave the Society the benefit of his wide knowledge of microbiology and microbiologists, helping to select topics and contributors for the major symposia; as an essentially happy and congenial companion, he was the spirit and generator of friendship in the smaller, more intimate autumn meetings. The President of the Society takes the chair at meetings of the Council and at official functions such as the Annual General Meeting. Bunker had a firm grasp on these occasions and could always handle the occasional difficult situation with skill and tact. There are some awkward customers in any society and, although these are not frequently elected to the Council, they can nevertheless cause trouble at meetings by insensitivity to the feelings of an audience and obstinate argument rather than reasoned discussion. Bunker had his share of such members but always seemed able to intervene before situations got out of hand, and to do so in a manner that left neither audience nor speaker too disgruntled. Bunker was one of those early members and officers who established the Society not only as a scientific forum but also as a group of friends with scientific interests in common. Members' appreciation of his value was shown by the fact that he was elected to serve on the Council for two further periods, 1957 to 1960 and 1963 to 1967, after he had retired from the Presidency. The Society made him an honorary member in 1967.

He was President of the Society for Applied Bacteriology from 1946 to 1949, and became a Trustee in 1960; he was a Fellow of the Institute of Biology and its President from 1967 to 1969; he was first Chairman of the Microbiology Group of the Society of Chemical Industry, Fellow of the Institute of Food Science and Technology, of the Royal Society of Medicine

and of the Royal Society of Arts, Honorary Member of the Microbiological Society of Spain . . . his *curriculum vitae* included 48 honourable and distinguished positions – Presidencies, Governorships, Fellowships, Examinerships, Committee Chairmanships or memberships – some 20 of them actively held at the time of his death. Among those he was proudest of was his membership of the Council of Brunel University, one of the new, technically-orientated universities to emerge (from the chrysalis of the Brunel College of Advanced Technology) in the 1960s. He played an important part in the organization of the new University, and Brunel recognized his contributions, both to the University and to Science, by conferring upon him an honorary Doctorate of Science in 1969. It was typical of Bunker's humour that he should stop Dr Idris Jones, an old colleague from CRL, in the street with the proud announcement: 'I've been doctored'. The distinction was well merited and, in 1970, the new University at Bath followed suit by conferring upon him an honorary D.Sc.

Bunker's reaction to his doctorate reveals another side of his character, his modest, self-deprecating humour, sometimes expressed in reviews and writings, too. He was immensely sociable, kind and friendly, on both private and public occasions, and his store of jokes was legendary. He was much in demand as an after-dinner speaker at, for example, the Annual Dinners of the Teddington Laboratory, to which he returned regularly long after he had left CRL. With the Society for General Microbiology a curious counter-tradition developed for, from the early days of the Society, Bunker's reputation as raconteur led to his being asked to talk after every dinner at which he was present. This custom continued long after his retirement as President. It was a tradition of the Society that there were no set speeches at its dinners, but Bunker's interlude became a firm custom and woe betide the President who forgot it. His strings of stories came when the dinner was at an end and the company was in a mood of relaxation and enjoyment; university common rooms rang with shouts of laughter when Bunker, usually assisted by a few notes on the back of an envelope, began his 'not-a-speech'. Over the years, members were regaled with hundreds of stories and will happily recall some of the favourites, such as the case of the donkey and the zebra, the BBC announcer and Rimsky-Korsakov, and the young man from Siberia.

Bunker's kindness, conviviality and general good humour sustained him through an unfair burden of illness and domestic sorrow. An intractable nephritis caused him to enter hospital every two or three years for quite serious operations – events he came to regard as others might consider a visit to the dentist: something unpleasant to be got over as quickly as possible. He married 'Pearl' (Rosemary Delahunty) in 1922, but she gradually became a chronic invalid and died in harrowing circumstances in 1950. He had two sons and two daughters, three of whom survive him but one of whom, his son Nigel, died tragically of cancer as a young family man in 1967. His companion, philosopher and friend in these trying times, as in happier ones, was Marie Travers (*née* Currivan), well known to members of the Society because she participated in Bunker's scientific achievement both as private secretary and as companion at meetings and social functions. To the delight of his friends and colleagues they married in 1970.

Bunker remained cheerful, active and in good health for his age until the last few weeks of his life, even travelling to Nice shortly before the nature of his final illness, pancreatic cancer, was diagnosed; the terminal stage of his illness was mercifully brief. Beside the personal loss to his widow and family is the loss to Microbiology of one of the father figures of our Society, of its Science and its applications.

I acknowledge the help of Mrs Muriel Wince, Dr J. Idris Jones, Professor M. Ingram, Dr J. G. Davis, Professor E. F. Gale and particularly Mrs Marie Bunker.

J. R. POSTGATE

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The references given below are rather arbitrarily selected to include not only all of Bunker's research papers and reviews, but also a proportion of minor articles and abstracts which illustrate the practical ramifications of his microbiological interests. In addition to those listed, he published an almost equal number of popular articles, lectures and broadcasts, almost all on the theme of applied microbiology. These and other documents are held in the archives of the Society for Applied Bacteriology.

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