OBITUARY

SIR LEONARD HILL
MB., LL.D., F.R.S.

We regret to announce the death on March 30, 1952, of Sir Leonard Hill, at the age of 85 years.

Leonard Erskine Hill was born at his father’s school at Tottenham on June 2, 1862. He came from a family that had made notable contributions to literature and the public service. His father, George Birkbeck Hill, was a distinguished Johnsonian scholar, his great uncle, Sir John Scott, was legal adviser to Lord Cromer in Egypt and a judge in India. One of his brothers, Sir Maurice Hill, was a judge of the High Court, and another, Sir Norman Hill, was a well-known legal authority on shipping.

Leonard Hill was educated at his father’s school, and later at Haileybury, and from there he was sent to study medicine at University College, London. After gaining medals in anatomy and physiology he became a house surgeon at University College Hospital, and then, inspired, as he used to say, by a lecture by Burdon-Sanderson, he applied for and gained the Sharpey Scholarship in physiology and began work in Sharpes-Schafer’s department at University College. For a time he worked in Oxford as assistant to Burdon-Sanderson, and then returned to University College. Just after the turn of the century he went to the London Hospital Medical College to teach physiology, and when the university chair was created there he was appointed to it. This chair he held until 1914, when he joined the National Institute of Medical Research at Hampstead as director of the Department of Applied Physiology. Hill retired from the service of the Medical Research Council in 1930, but he did not remain idle. For some time after this he was director of research at the St John Clinic and Institute of Physical Medicine.

He was concerned essentially with human physiology. In his early days at University College, he investigated the cerebral circulation, and his book on this subject was published when he was only 30 years of age.

In the last decade of the nineteenth century Hill turned his attention to compressed-air illness, a subject which was to interest him for the rest of his life. His book on caisson sickness appeared in 1912. With colleagues at the London Hospital he made arduous studies of the effects of high pressures, and of the use of decompression chambers. After the first world war he and H. E. Soper produced a new series of diving tables.

It is, however, for his outstanding contributions to the science of ventilation that Leonard Hill will be best remembered. As far back as 1862, Pettenkofer had suggested that the ill effects experienced in crowded and ill-ventilated rooms were due to minute amounts of organic substances exhaled by the lungs and skin. Thereafter, for many years there was much controversy about this anthropotoxin theory. In the last decade of the nineteenth century serious doubts had been cast on the validity of the theory, but it was still widely believed. The death blow was given to it by the work of Hill and his colleagues which was published in 1913.

Thirty years before that the ill effects of high humidities in hot atmospheres had been shown, and during the first decade of this century, mainly due to the work of J. S. Haldane, the importance of the wet-bulb temperature as an index of heat was accepted. It remained for Leonard Hill to confirm the profound influence of air movement in moderating the effects of high wet-bulb temperatures, and also to emphasize its effect in producing invigorating conditions at more usual levels of temperature.

Hill’s report on ventilation and the effect of open air and wind, issued by the Local Government Board in 1914, was of outstanding importance. It re-orientated ideas on ventilation and gave a new stimulus to research. In it Hill gave a dramatic description of the experiments on medical students which showed the effects of air movement, or the lack of it, in hot and moist conditions, and he also introduced his kata-thermometer as an instrument for use as an index of the combined effects of air movement, air temperature and, if desired, atmospheric humidity on the removal of heat from the body. In a paper by Hill, Martin Flack, and O. W. Griffith, which appeared in the Philosophical Transactions of the Royal Society in 1916, formulae were given relating the cooling power, as measured by the kata-thermometer, to the air speed. Two further reports by Hill, on “The Science of Ventilation and Open-Air Treatment”, were published by the Medical Research Council just after the first world war, and these amply demonstrated the value of the kata-thermometer in studies of ventilation. Since that time the instrument has proved its value as a means of measuring air speeds.

In the evidence he gave to the Departmental Committee on Humidity and Ventilation in Flax Mills and Linen Factories in 1914, Hill described observations that he had made with the kata-thermometer in a number of spinning rooms and weaving sheds, and he advocated means of stirring up the air.

In 1913 a Select Committee of the House of Commons was called on Hill to give evidence on the ventilation of the Debating Chamber. Hill made recommendations designed to create pleasant and variable air movement around the heads of the Members, while avoiding chilling the feet. Nearly 40 years later the principles that he advocated have been applied in the new Chamber.

During the first world war Leonard Hill was a member of the Health of Munition Workers Committee of the
Ministry of Munitions. He was mainly responsible for a memorandum on the ventilation of factories which that Committee issued. Great stress was laid on the need for adequate and variable air movement. In later publications Hill emphasized the stimulating effects of variable conditions, and later extensive work by others has entirely supported this thesis. He was also responsible for two memoranda on the nutrition of munition workers that were published by the Committee.

After the first world war Hill continued his studies of physiological aspects of ventilation, of the effects of radiant-heat—both solar radiation and long wavelength and of the effects of exposure to high temperatures. He also studied open-air treatment and the effects of sunshine.

Hill was elected a Fellow of the Royal Society in 1900 and was knighted in 1930. For his work on ventilation he was made an honorary associate of the Royal Institute of British Architects, and for some years he was President of the Sanitary Inspectors' Association. He was also a member of the Medical Advisory Boards of the Navy and of the Army.

He is survived by a widow, a daughter, and four sons, one of whom is Professor A. Bradford Hill, C.B.E., a member of the Editorial Committee of this journal.

THOMAS BEDFORD.

Sir Arthur Keith writes:—

Come October next it will be 57 years since I first met Leonard Hill, but the impression he made on me remains fresh and clear. The occasion was the London Hospital dinner which marked the beginning of the winter session of 1895-96; we were both newcomers, for he had just been appointed lecturer on physiology (his first lectureship) in the Medical College of the Hospital, while I had been given a corresponding post in anatomy. We were of the same age, both of us 29, he happily married, I still a bachelor. I was very anxious to meet the man with whom I hoped to collaborate. We met in a crowded doorway. His face was clearly alive, radiating a natural and constitutional happiness, but he was plainly contemptuous of external appearances, for his evening suit had long become many sizes too small for him. That did not disturb him in the slightest. There was nothing secretive about him; his thoughts and speech were free and open, often critical but never unkind. He was honest in word and in deed; honesty was his ruling passion. His contempt was reserved for the pretentious, the sentimentalist, and the coxcomb.

Hill and I were colleagues for 13 years, from 1895 to 1908, when I went to the Royal College of Surgeons. During that period my early impressions were confirmed. He was absolutely devoid of pretence. Nature had bestowed on him too many mental gifts; he had in him the making of a great artist—a painter. His desire for life in the open air was a passion; he never took kindly to hours of prolonged study, yet the devising of experiments, and the carrying them out gave him manifest pleasure.

E. L. Collis writes:—

The passing of Leonard Hill awakes many memories of bygone days. First I recall him communicating some exhibit to the Oxford University Junior Scientific Club, a muscle-nerve preparation which would not stop twitching like the dry battery in the Clarendon Laboratory which won't stop ringing.

The young Hill, just qualified at University College, was at home with his distinguished father, G. Birkbeck Hill, the student of Dr. Johnson, who was working at Pembroke College. I see him as a young man in a velvet coat, a low cut shirt and red tie. From his father he must have inherited his love of children shown in his books for children. A little girl, a friend of the old man (now my wife), tells me how when she went to see him her sympathy was demanded for his tabby cat that unfortunately every day lost her appetite after meals!

After those early days Leonard passed into the realms of pure science as a physiologist, but when I came later to follow industrial medicine I found him there established on account of his research on caisson disease which had previously puzzled doctors; it was only an example of the way in which he always sought to give practical and useful turns to his own speciality. In 1915 we found ourselves members of the Health of Munition Workers Committee. Industrial medicine attracted Hill, and it was for testing the atmospheric conditions in factories that he devised his kata-thermometer. He found troublesome the preparation of his work for publication. I recall Fletcher one day tearing his hair as he pointed to a hat box containing innumerable scraps of paper pinned together, "That is Hill's MS. on his kata-thermometer." When writing to my old friend on the occasion of his diamond wedding, I reminded him of this to his great delight.

How he became a friend of Sir George Newman, chairman of the Health of Munition Workers Committee, is of interest. When food rationing was first coming, Hill thought it important that meat, and not bread should be rationed. We organized a meeting to consider the matter on behalf of the munition workers, but I had not been able to coach Newman beforehand and he was at a loss. When appealed to he escaped by picking a quarrel with Hill, and the meeting ended in confusion. Then said Hill to me, "Your friend Newman, may be a great civil servant, but as a scientist he's a B.F." I left him and walking down Whitehall caught up Newman who turned and said to me, "Collis, your friend Hill may be a great scientist, but to get anything done he's a B.F." I told each of the other. They embraced, and meat was rationed after all and not bread.

Hill and I were together on the Medical Research Council's Tuberculosis Committee which was responsible for the first publication of the M.R.C.