SIR ALMROTH WRIGHT
(1861 - 1947)

Sir WILFRED FISH
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To say that Almroth Wright was the man who made the 1914-18 war possible is no doubt an exaggeration and is as provocative as he himself could be upon occasion. But there is no doubt that Wright’s work on anti-typhoid inoculation saved hundreds of thousands of lives. It began at Netley in 1893 when Haffkine, the Russian bacteriologist, who had worked with Pasteur, visited the Army Medical College, and it was brought to a brilliant and successful conclusion during the 1914-18 war. Wright was both a clinician and a laboratory worker and he had a simple formula which enabled him to perform this dual role: he did his clinical work in the day-time and spent most of the night in his laboratory. It is true that the constant clinical challenge of diseases for which medicine had as yet no cure, “the pain in the mind” as Colebrook describes it, spurred him on to greater effort, but he loved a fight as much as any man, and the conquest of typhoid in the 1914-18 war was almost as much the result of his determined advocacy as of his unrivalled skill and brilliant scientific imagination in the laboratory. In the course of the controversy he was lost to the Army but found a permanent home, honour, and great opportunities for service at St. Mary’s Hospital.

He was one of the last survivors of what the Cavendish Laboratory called the sealing wax and string era that ended for physics in 1914 but persisted in biological research until after the last war. In the ’20s and ’30s a biological laboratory could be equipped for a few hundred pounds. A microscope of simple design, an incubator, a microtome, a few reagents and some glassware would suffice, but just so much more depended on the inventive genius and originality of the worker himself. And it was here that Almroth Wright excelled. His incredible skill in making and manipulating his minute pipettes and microscopic cells with hands, large and apparently clumsy but in fact sensitive and wonderfully controlled, was only exceeded by the sheer ingenuity of the devices themselves.

It may be true that he who would command must first learn to obey, but Almroth Wright is a notable example of the fallacy that he who would lead must first learn to follow. He had a wonderful flair for inspiring loyalty and enthusiasm in his staff but he was himself only happy when he was the leader. He was well aware of the responsibilities of leadership. At St. Mary’s he gathered his own team around him, founded his clinic and then, since he had only two rooms to accommodate the six or seven virtually unpaid workers, several visiting scientists, and the rapidly growing clinic, he collected the money to rent some empty wards from the hospital and fit them out as laboratories. There he continued to inspire his team to seek new means of securing specific immunity to bacterial disease. During the first war the resources of the departmental staff were devoted to making anti-typhoid vaccine and after the war this became a means of financing their research work. The research output is known
to everyone: the discovery by Wright and Douglas of the opsonic index and its use in controlling the dosage of vaccines, Freeman’s work on the desensitization of hay fever patients with extracts of grass pollen, Wright and Fleming’s work on wound infection in Boulogne at 13 General Hospital where other members of the Inoculation Department soon joined them, Colebrook’s work with Fry and Hare on puerperal sepsis culminating in the use of the sulphanilamides for the infection, and, of course, Fleming’s discovery of lysozyme in 1922 and of penicillin in 1928. More recently still the production of virus vaccine against influenza has been developed.

How then can one reconcile the role of an original thinker reflecting on the abstract problems of research with that of a man of action, collecting funds to build a research institute and forcing political issues at the highest levels? In fact there is no real conflict. The disciplines of research are just as strict and the objective must be pursued with the same brand of indomitable determination as must the purpose of any political or business engagement. The same courage is needed, the same qualities of leadership and the same stamina. Almroth Wright had them all. He was a man of exceptional insight and quick understanding. He could concentrate for long periods on an elusive sequence of ideas, but always with a constructive purpose. All his scientific speculation, supported by superb technical skill and by great ingenuity, had a practical trend which earned for him a place among the greatest benefactors of mankind whilst he was still in the prime of life.

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Almroth Edward Wright was one of the most notable figures, perhaps the most notable figure, in the medico-scientific world during the first two decades of this century. He had a double connection with the Royal Army Medical Corps. From 1892 to 1902 he was professor of Pathology at the Army Medical School at Netley; and during the course of the First World War he served in France with the rank of Colonel, doing important research work on the bacteriology of wounds. Almroth Wright was the second of five sons of the Rev. Charles H. H. Wright, a Hebrew and Arabic scholar who was also a militant Protestant and a powerful controversialist. His mother was the daughter of Professor Nils Almroth, Governor of the Royal Mint in Stockholm; during the Crimean War she had accompanied Lady Alicia Blackwood to Scutari, had met Florence Nightingale and done some nursing. With such parents it was no surprise that four out of five sons attained distinguished positions, nor that Almroth Edward, the most distinguished of the group, had rather an independent and combative disposition, and throughout his professional life maintained a protestant attitude towards what he regarded as the most unscientific methods of the practising clinicians. It is true that at the turn of the century medicine was still in the therapeutic doldrums, but it was on the eye of a great stride forwards in which the discoveries of Wright took a prominent place.

During Almroth Wright’s childhood his father held in succession posts in Yorkshire, Dresden, Boulogne, and Belfast, so that it was no wonder that he learnt to speak
French and German fluently. At the age of 13 he attended the Belfast Academic Institute where he was well grounded in the classics. At the age of 17 he proceeded to Trinity College Dublin, where he took courses in modern literature and medicine. In 1882 he took his Arts degree, winning the Gold Medal and in the following year he qualified in medicine. Doubtful as to his future he asked Professor Dowden whether he ought to pursue literature or medicine as a career. Dowden advised him to practise medicine and enjoy literature as a pastime.

For the next six years he increased his knowledge in many ways. With a travelling scholarship he was able to visit Leipzig and learn from Cohnheim, Weigert and Ludwig. A year later he gained a law studentship and for a year studied law. Then apparently still undecided as to his future career he entered the Higher Civil Service and was posted to the Admiralty; he occupied his spare time in working at the Brown Institute where he met Victor Horsley and L. C. Wooldridge. He soon tired of the Civil Service and became demonstrator, first of pathology and then of physiology, at Cambridge University, following this, with the aid of a scholarship of the Grocers’ Company, by another visit to scientific centres in Europe. In 1889 he married Jane Georgina Wilson, a Cambridge graduate, and accepted the post of demonstrator of physiology at Sydney University. It was while there and for the benefit of his infant child that he devised the valuable method of citrating milk so as to prevent its clotting in bulk in the stomach. Two years later he returned to England and for a time carried out research work at the laboratory of the two Royal Colleges established under Professor Sims Woodhead. In a period of two years he published eleven papers of scientific worth chiefly dealing with the coagulation of the blood. Then came what he always regarded as a piece of good fortune. He was offered the post of Professor of Pathology at the Army Medical School at Netley. This was the turning point of his life which enabled him to devote a considerable part of his time to research. From now onwards his single aim was to advance medicine by scientific means. For 50 years his life was dedicated to research, chiefly into the problem of therapeutic immunization, and scarcely anything was allowed to stand in its way.

At Netley he had as pupils many brilliant young men who responded well to his enthusiastic stimulation. Himself encouraged by a visit paid to Netley by Haffkine, he began to experiment on ways of producing immunity against infection with the typhoid bacillus. He devised simple methods of measuring the patient’s resistance to the bacillus, and experimented on himself and volunteers to show that the injection of killed typhoid organisms produced an increased anti-bacterial power in the blood against the typhoid bacillus. He was thus convinced that protection against typhoid fever could be produced by inoculation with this vaccine, but he had some difficulty in persuading the army authorities to try the vaccine on troops. In the Boer War anti-typhoid inoculation was not compulsory, but its protective power in those who were voluntarily inoculated was demonstrated. Further proofs of its protective power soon accumulated and everyone knows how, by the use of preventive inoculation, typhoid fever in the First World War diminished in incidence and severity with the consequent saving of many lives.

This was perhaps the most spectacular of all Wright’s achievements. But this success was not complete for another 15 years. His reputation was now increasing and
from 1898 to 1900 he served on the Indian Plague Commission. Nevertheless, perhaps because of the slow acceptance of his work on typhoid by the Army, Wright was not entirely happy at Netley, and when in 1902 the post of pathologist at St. Mary's Hospital, Paddington, fell vacant and was offered to him, he accepted with alacrity. He now had the chance to develop, under favourable circumstances, the lines of research which he had already begun.

His impact on the hospital and medical school to which he came was remarkable. The writer happened to be a member of the first class which Wright took at St. Mary's. His lectures were enthralling and held the students with such rapt attention that one could have heard a pin drop. His soft melodious voice, his conversational manner carried on without the aid of a single note, his obvious depth of knowledge and keenness to impart it, combined to make him an outstanding and convincing teacher. So convincing indeed that one student who was a doubting Thomas said once that he was not going to a lecture by Wright, for (he complained) "He always convinces me of something which I know to be untrue."

On the research side Wright soon made his influence felt. It was no surprise that many brilliant workers were attracted to work in the laboratories under his guidance. In the early years his closest colleague was Captain S. R. Douglas who had come with him from Netley, but soon many young men joined the devoted band of workers—J. H. Wells, John Freeman, Alexander Fleming, W. Parry Morgan, Leonard Colebrook, John Matthews and many others. These gifted and enthusiastic men worked day and night in the outpatient department and the laboratories, helping Wright to extend the range of vaccine therapy (or therapeutic immunization) to one organism after another—the staphylococcus, the streptococcus, the tubercle bacillus, the influenza bacillus and so forth. Vaccine-therapy soon established itself all over the world. In 1906 this pioneer work of Wright was recognized by his being elected a Fellow of the Royal Society and by the conferment of a knighthood upon him. In 1911 Wright went to South Africa to investigate the outbreak of pneumonia among the native workers in the mines. By inoculation he somewhat reduced the incidence of the disease but it was left to Dr. (later Sir) Spencer Lister to differentiate the types of pneumococcus and to increase the benefit of inoculation. Meanwhile the Inoculation Department at St. Mary's was flourishing and funds for scholarships and research were provided by gifts from generous donors, and also by the sale of vaccines.

In the Great War Wright and his co-workers played an important part in improving the treatment of wounds. His brilliant assistant Alexander Fleming showed conclusively that most of the commonly used antiseptics when applied to wounds did harm to the tissues and even encouraged the growth of septic microbes. Wright showed in addition that stale serum was suitable material in which microbes might flourish, and he recommended that by applying hypertonic salt solution a free flow of fresh serum with anti-bacterial properties should be obtained. This started the treatment of wounds by hypertonic salt solution which was often of benefit and had a vogue for a time. Wright also tried, though without success, to persuade the authorities to appoint a scientific staff who should investigate all the available methods of treating wounds and determine which was the best method which then would be accepted by all serving medical officers.
Up to 1914 Wright had a considerable consulting private practice but he gave this up when he found it interfered with his researches. He was appointed Director of Bacteriology under the Medical Research Council but at the end of the War he returned from France to the laboratories at St. Mary's. He had been honoured with the C.B. in 1915 and at the end of the War he was made a Knight Commander of the British Empire. In 1927 he retired from his chair at St. Mary's but continued as Principal of the Institute of Research which he had built up. The new chemotherapeutic drugs were investigated in his laboratories, and his assistant Leonard Colebrook, working there and at Queen Charlotte's Hospital laboratories, showed the great value of the sulphonamides in the prevention and cure of puerperal fever and other streptococcal infections. When Alexander Fleming discovered penicillin in Wright's laboratories, Wright did not at first take an active part in that line of research, but when at a later date there was some danger that the full credit of the discovery might not be given to Fleming, Wright at once wrote to The Times and called attention to the claims of his colleague. He was rightly proud of the achievements of his junior colleagues, two of whom (Colebrook and Fleming) were elected Fellows of the Royal Society. In the last decade of his life Wright successfully underwent an operation for gall-stones. He died on 30th April, 1947, at his home at Farnham Common. Lady Wright had died in 1926. They had two sons and a daughter.

Almroth Wright was a genius but like many a genius he held some unorthodox views. He did not think highly of mathematics as an intellectual pursuit, and he had a low opinion of statistics as a method of ascertaining the truth of a proposition. He believed the male intellect was in general superior to that of the female, was strongly opposed to giving the vote to women, and justified this in a long letter to The Times (in 1917) and by publishing (in 1913) a book The Unexpurgated Case against Woman Suffrage. He even publicly debated the question with Bernard Shaw. The debate was held at St. Mary's Hospital Medical School and was the most interesting debate I have ever heard. Both protagonists made brilliant speeches and though Wright gained the victory of votes, on the whole honours were easy. Reading Wright's arguments at the present day one can see that many of them have already been falsified. Wright wrote a number of books and took endless trouble so that they should express his thought clearly. Strangely enough by coining many new terms which would express his ideas more clearly he sometimes made it more difficult for the ordinary reader. He justified this by saying "circumlocution is everywhere a temporary, and at all times a difficult, expedient; and the use of mathematical signs as a substitute for speech can be defended only in the case of the inarticulate classes of the learned." This justification was made in his remarkable book The Principles of Microscopy, published in 1906, in which he ingeniously explained the visual phenomena connected with the microscope without calling to his aid either advanced mathematics or complicated physics.

In 1909 he brought out his well-known Studies in Therapeutic Immunization which contained an account of the principal work which had been done in his laboratories during the previous years. In 1906-7 he had published The Principles of Vaccine-Therapy. The technique which Wright used was simple, ingenious, original and full of neat contrivances; in order to make it generally known he and his colleague Leonard
Colebrook published *The Technique of the Teat and Capillary Pipette* which explained each manœuvre plainly. A second edition was called for in 1921. During the First World War (in 1915) Wright published his views on Wound Infection. In connection with this subject he had a controversy with Sir Watson Cheyne in which Wright dealt some hard blows, some thought too hard.

During the last years of his life Wright thought long and wrote slowly and carefully on the attainment of truth. The book which he was writing was not finished, but the material was edited and published by his grandson. The title was "Alethetropic Logic," the first word being derived from two Greek words meaning "leading to truth." It is not an easy book to read, and it is for the philosophers and logicians to pass judgment on it.

In his new laboratory Wright was a benevolent despot. He was revered and beloved by his colleagues and was known as "The Chief" or "The Prof.," and he loved to joke with and sometimes to tease his friends. Nevertheless everyone knew his was the master mind and it was with him that the decision always lay. Though not a poet himself, he had a great facility for remembering poetry and could quote at great length from Shakespeare, Milton, Dante, and of modern poets, Rudyard Kipling. He once said that he would rather have written *Romeo and Juliet* than have done all the scientific work he had done. He was very sensitive to great music but he seldom went to concerts. Bernard Shaw meant one of the characters in *The Doctor's Dilemma* to represent Wright, who went to see the play but came out halfway through.

His predominantly scientific bent made him a little scornful of the clinician's methods. Perhaps if he had had a larger clinical experience before starting his scientific work he might have been a little more lenient. As it was, when he failed to obtain definite experimental proof he sometimes fell back on what he termed "experiential" methods of proof which, in substance, were not so far from the clinician's clinical experience. Many honours were showered upon him, including the Buchanan Medal of the Royal Society, the Fothergillian Medal of the Medical Society of London, and the medal of the Royal Society of Medicine. He was awarded honorary degrees at the Universities of Dublin, Leeds, Paris, Edinburgh, Belfast and Buenos Aires. In 1931 he was made an Honorary Fellow of Trinity College, Dublin, an honour which he very much appreciated. The following year he was made a Fellow of the Royal College of Physicians of Ireland and in 1938 the Royal College of Physicians of London elected him a Fellow.

Sir Almroth Wright will for ever be known as the apostle of vaccine-therapy who extended widely the principle first demonstrated scientifically by that wonderful genius Louis Pasteur. Wright founded and established on a secure foundation an Institute of Pathology and Research which is now known by his name and by that of his celebrated colleague and former pupil Sir Alexander Fleming. On the centenary of his birth it is right that the Royal Army Medical Corps should recall his achievements.
When I joined the Corps in 1903 typhoid inoculation, that is to say, the injection under the skin of a killed suspension of *B. typhosus*, was well under way. It was initiated and started by Almroth Wright when he was professor of pathology in the Army Medical School, Netley, from 1892 to 1902. The good work was carried on by Leishman, Harvey and others. By the time the war came in 1914 a large proportion of the Army was protected against typhoid fever. If Almroth Wright had never done anything else, this alone would have brought him fame.

I was in charge of a "mobile laboratory" in France in the first war and used to see Sir Almroth at No. 1 Casualty Clearing Station at a place called Chocques on the road to Bethune. He would come into my laboratory and help me with blood cultures in suspected "typhoid" cases. In early 1915 there was still quite a lot of typhoid fever in Belgium and we were both kept busy. So far as I remember, he did not stay in France very long; he soon went back to England to do even more important work.

Whenever I think of Sir Almroth Wright in connection with the Corps, I always at the same time think of Sir David Bruce. I knew Sir Almroth fairly well in those early days, and Sir David very well. Both had a great deal to do with the Corps, and both attained scientific eminence in a high degree. Sir David was the older by some six years, but when one looks into things more closely, the likeness between these two men is not so obvious. Sir Almroth was a wonderful laboratory worker with unrivalled techniques, but I would not like to say the same for Sir David. Lady Bruce did all his laboratory work with great precision, and without her, in my opinion, Sir David would never have reached so exalted a position in the scientific world as he eventually did. Sir Almroth had a great wit and sometimes a caustic tongue, which he knew well how to use, and he had a host of friends, whereas, as far as I could see, Sir David had but few and seemed to me quite devoid of any sense of humour.
Obituary

Brigadier A. E. RICHMOND
C.B.E., D.P.H.

Arthur Richmond, who died in January this year, was the last Director of Hygiene at the War Office—and the first Director of Army Health. This translation he himself engineered, as his devotion to the dynamic concept of "positive health" emerged from a professional lifetime of preventive medicine. His splendid personal qualities have been extolled elsewhere; and there is a danger that these might overshadow the great practical contribution he made towards the organization of the Army's health.

He qualified at St. Thomas' Hospital in 1915 and served for the rest of the First World War and a year beyond in the Middle East and Egypt. In 1921 he obtained the D.P.H., thereafter being posted to India; and in 1923 he obtained the D.T.M. Between the wars he exhibited a catholic taste in his chosen discipline. With McCrombie Young and Brendish he was a member of a commission set up in 1925 to study sandfly fever in Peshawar. Their report, which bears his hallmark, is a masterly statement of a painstaking and pioneer investigation. In 1930 he carried out "with meticulous care and exactness" applied physiological experiments in a comparative trial of three types of stretcher slings. While Assistant Professor of Hygiene at the Royal Army Medical College, Millbank, an appointment he assumed in 1936, he published a survey of malnutrition and an exhaustive review of carbon-monoxide poisoning. He also directed the development, over two years, of the Millbank Hot Air Disinfector and Drying Machine, which was widely used in the field until D.D.T. came into use.

In 1940 he became Deputy Director of Hygiene to the Middle East Forces, where he remained until 1946. Here his great personal charm, his exceptional capacity for inspiring loyalty and enthusiasm, and his quiet confidence born of long and wide experience, assured that everything possible was done to maintain and enhance the health of the Forces. This military achievement involved the acceptance of personal and communal health disciplines by many different allied troops to whom they were sometimes novel ideas. But he and his staff also assumed responsibility for the health supervision of occupied enemy countries and of enormous indigenous labour forces; and at the same time they built up a most efficient industrial hygiene organization to cope with the hazards of a mechanized war. The full scope of these commitments is admirably reviewed by Richmond and Gear and this paper is rewarding reading. In it he is already revealing his delight, above all, in the "positive picture of health and vigour shown by the soldiers." . . .

7 ibid. (1939). 72, 361-373.
9 ibid. (1940). 74, 121-137.
In 1945 he was promoted C.B.E. and in 1946 became Director of Hygiene at the War Office. There could not have been a better man in a more useful place at a more suitable time. For now the war drive was over, it could be a period of consolidation or, in less worthy hands, of disintegration. He had the evangelistic attitude and could effortlessly invoke it in others. Clearly he determined where emphasis should be laid by drawing on his compendious experience in the Middle East; but it was also a continuing process stemming from the wide interests he had earlier demonstrated. He gathered together a new generation of hygienists to keep the war lessons alive and used his period of office particularly to equate hygiene with the study of full health—the soldier in his total environment. Much of his work and achievements during this time can be deduced from the Report on the Health of the Army 1946-1948.\(^{11}\)

He guided the introduction of the PULHEEMS system of medical classification, a fascinating and monumental task. Again and again he drove home the importance of Personnel Research, with which he was intimately concerned at committee level and by having some control of the activities of physiologists employed on the Medical Research Staff Pool. Through this agency he also pioneered the long and successful post-war nutritional research which effectively defended, and led to improvement in, the soldier’s ration scales. He emphasized the complementary importance of physical training and took an especial and stimulating interest in remedial physical training and the functioning of conditioning centres. In October 1947 he brought together these interests in his Chadwick lecture\(^ {12}\) entitled “Positive Health—Its Attainment in the Soldier and the Army’s Contribution to it in the Civilian.”

Over four years he rationalized health education in the Army, with special reference to the National Service intake. Determined he won the necessary time in training programmes covering the whole field from basic training units to R.M.A. Sandhurst and even to troopships. Other highly personal interests were diverse. He sponsored an Inter-Services Advisory Panel on the Purification of Water Supplies in the Field; kept hard at the development of suitable insecticide formulations, and apparatus therefor, at a time when the trade were not yet ready to take a lead; formed a Dermatological Research Unit which he sent to the Far East to study fungal infection. Always his diffident but compelling way of handling people, particularly in committee, was a joy to behold. He played a large part in there birth of the Services Group of the Society of Medical Officers of Health, of which he was President during 1947-48. In 1950 he retired from the Army, was awarded the Chadwick Prize and Gold Medal\(^ {13}\) for outstanding work in health promotion, and joined the staff of the Ministry of Health as a temporary medical officer.

The real pleasure for a devotee is to discover how quickly he endeared himself to everyone he encountered both at the Ministry and in local government. His stature was in no wise diminished by holding a relatively junior position in an office shared with several colleagues. From 1950 to 1957 he was Secretary of the Medical Research Council Committee on Influenza and other Respiratory Virus Vaccines. High tribute

\(^{11}\) W.O. code No. 6765 (1952).


\(^{13}\) Ibid. (1950) 94, 272-273.
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has been paid to his organization of the Committee's work and, particularly, of the field trials, during the 1957 Asian influenza epidemic\(^\text{14}\). He also was keenly interested in the epidemiology of poliomyelitis, which became the subject of a further Chadwick lecture\(^\text{15}\) in 1951; and with Bradley\(^\text{16}\) he completed a study of meteorological conditions in relation to poliomyelitis in England and Wales for 1947 to 1952. A third interest lay in the pattern and control of Sonne dysentery in England and Wales\(^\text{17, 18}\); and in many other fields his wisdom became known and was depended upon.

But, having in some measure redressed the balance by this catalogue of activity, one is forced back to the realization that it was by his personality that he exerted most influence; and that he achieved his greatest successes in the hearts and minds of those who knew him. He had the humility of the truly great—tenacity without aggression, charm without ingratiating, determination without obsession, exactitude without intolerance, dignity without unfriendliness, power without a hint of corruption—above all, kindness and loyalty. Altogether a gentleman.

D.H.D.B.


\(^{17}\) ibid. (1956). 15, 2-6.