HYGIENE is the art of preserving health; that is, of obtaining the most perfect action of body and mind during as long a period as is consistent with the laws of life. In other words, it aims at rendering growth more perfect, decay less rapid, life more vigorous, death more remote. . . . It is undoubtedly true that we can, even now, literally choose between health and disease: not, perhaps, always individually, for the sins of our fathers may be visited upon us, or the customs of our life and the chains of our civilisation and social customs may gall us, or even our fellow-men may deny us health, or the knowledge which leads to health. But, as a race, man holds his own destiny, and can choose between good and evil; and as time unrolls the scheme of the world, it is not too much to hope that the choice will be for good."—(Introduction to "A Manual of Practical Hygiene," by Edmund A. Parkes, M.D., F.R.S.)

EDMUND ALEXANDER PARKES, M.D., F.R.S. (1819—1876).

Edmund Alexander Parkes was born at Bloxam, Oxfordshire, on March 29th, 1819. His father, William Parkes, of the Marble Yard, Warwick, was a man of culture and high character; and his mother, Frances Byerley, was an authoress, several useful works, well known in their time, being due to her pen, amongst others a work on "The Domestic Duties," which passed through many
editions. To hereditary descent may be attributed some of the literary talent and thoughtful philosophical disposition which were leading characteristics of Edmund Parkes in his later years. Parkes received his school education at Christ's Hospital, London, and later proceeded to University College, London, for his professional medical studies. At University College he was much associated with his uncle, Dr. Anthony Todd Thomson; and in Dr. Thomson's laboratory he early acquired that taste for original research and that dexterity of manipulation which he afterwards put to so good an account. After a very distinguished student's career, Parkes graduated M.B. with honours at the University of London in 1841.

After leaving college, Parkes decided to join the Army, and was gazetted assistant surgeon to the 84th (York and Lancaster) Regiment in 1842. He went on service to India and Burmah, where he remained for three years, returning to England in 1845, when he retired from the Army. In the two years (1846 and 1847) following upon his retirement from the Service, Parkes brought out two works which were founded upon his medical studies and experience in the East. The first work is entitled "Remarks on the Dysentery and Hepatitis of India" (1846), and the second "Researches into the Pathology and Treatment of the Asiatic or Algide Cholera" (1847). The book on cholera was chiefly written in India, where Parkes witnessed two violent epidemics of this disease. Speaking of these researches, the late Sir William Jenner said, in an address to the Royal College of Physicians in June, 1876, on the "Work and Character of the late E. A. Parkes, M.D., F.R.S.": "These works (on dysentery and cholera) prove, more than all the many honours he obtained at his College and University, the amount of work he must have performed as a student—the real knowledge he possessed, knowledge only to be acquired by hard, continuous, unremitting work; and the varied character of that knowledge, chemical, microscopical, anatomical, and clinical. These works, had they been written by one who had filled the post of physician to a hospital for years, would be held to give evidence of high merit in their author; but when it is remembered that they are the productions of a man who had only then closed, and that at an early age, his college days, their merit must excite our surprise. But when, further, we call to mind that the clinical records and post-mortem facts were collected by a man who had just entered the Army, everything around him novel and enticing, at such an age, to legitimate idleness and pleasure; that they were collected by
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a man to whom the complete discharge of his numerous official routine duties was a matter of conscience; that the records of clinical facts and of post-mortem appearances were made in India at the most trying season of the year, when the work of merely attending to the sick during a great epidemic must have been most laborious, our surprise at the merits of the works and our admiration for the man must, I think, be unbounded. Apart from the evidence these two works afford of Parkes's energy, power of work, and the wide extent of his knowledge, they prove that he possessed even then originality of mind, rare powers of accurate observation, and the ability to combine the facts observed and draw sound conclusions from those facts. Having regard to the age of their author, the circumstances under which the materials for them were collected, and their intrinsic merits, these two works are among the most remarkable in medical literature."

After leaving the Army, Parkes commenced practice in London, and graduated M.D. of the University of London in 1846. In 1849 he contributed papers on "Intestinal Discharges in Cholera" and on the "Early Cases of Cholera in London"—a disease which became epidemic in England in that year. In 1849 he was appointed special Professor of Clinical Medicine at University College, London, and Physician to University College Hospital. His clinical teaching was very highly appreciated; and he exercised much influence on his classes of students in the direction of inciting them to work and study and to put forth their best efforts in the accurate observation and recording of clinical phenomena. From 1846 to 1855 Parkes continued his work in London. He did not do much private practice, but he contributed largely to the medical press, especially the Medical Times, and subsequently the Medical Times and Gazette. In 1855 he delivered the Goulstonian Lectures on Pyrexia at the Royal College of Physicians. Parkes's health, whilst in London, was not very good, and he had an attack of pneumonia whilst living in Harley Street. In the light of his subsequent death at the age of 56 from disseminated tuberculosis, there is probably some foundation for the belief of his then medical advisers that the pneumonia was of tubercular origin.

During the Crimean War in 1855, owing to the inability of the base military hospitals at Scutari to cope with the enormous amount of disease that had resulted from the failure of the Government to realise the nature of the campaign the Army was engaged in, it became necessary to organise and equip an additional hospital near the seat of war. Parkes was selected by the Government to go to
Turkey, choose a site, and act as superintendent of the hospital when erected. Renkioi was eventually chosen as the site for the hospital, on the Asiatic side of the Dardanelles. The hospital was erected close to the coast, on an admirable site. It was constructed on designs prepared by Mr. Brunel, the celebrated railway engineer, and consisted of 30 wooden huts, each 100 feet long, 40 feet wide, and 12 feet high at the eaves. Each hut consisted of 2 wards, back to back, with 25 beds in each ward, the total accommodation being for 1,500 beds. Although these hospital wards were very far from being in consonance with modern views on hospital construction—as the wards were on the back-to-back principle, the windows under the eaves were very small, the w.c.’s and urinals were not aerially disconnected from the wards, and the sewage was carried away in wooden drains—still, they were undoubtedly a great advance on the system of utilising as base hospitals in war-time any building which could be made to contain a large number of beds. Brunel’s designs were warmly approved by Parkes, who considered “that every arrangement was distinguished by that perfection of detail and excellence of method which stamp all the works of that eminent engineer.”

The hospital was open for the reception of patients from October 2nd, 1855, to the middle of July, 1856, the total number of admissions from the seat of war being 1,331. A large proportion of the cases of sickness were spotted typhus, enteric, continued and remittent fevers, and dysentery. Parkes was evidently fully alive to the benefits to be derived from free ventilation and open-air treatment in diseases of this character, for he remarks that as soon as the men could crawl they were got into the open air. The pure breezes from the Dardanelles or the Aegean Sea soon brought strength to their enfeebled frames, and the period of convalescence was very short. “Of the whole number of 1,331 military patients, no fewer than 331 were furnished by the small corps of the Land Transport, or at the rate of 25 per cent. These men were admitted in a state which strongly reminded those who had been present at the time of the condition of the sick during the previous winter at Scutari. They were thoroughly prostrated, generally scorbutic, and presented the severest types of disease. They offered in all respects, both as to general appearance and cleanliness and as to severity of disease, a singular contrast with the soldiers of the Line. The men of the Land Transport Corps—hastily enlisted, and numbering many boys, and men considerably past their prime and quite unfitted to cope with the hardships of the Crimean winter—
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had had necessarily thrown upon them all the hard work and the exposure which had been so fatal to all classes in the previous year." The 331 men of the Land Transport Corps furnished no fewer than 27 of the 50 deaths that occurred in Renkioi hospital, whilst among the 1,000 men belonging to the Line only 23 deaths occurred. Parkes speaks highly of the discipline that was observed in the hospital, of which he—a civilian—was in charge, and warmly commends the devotion to duty and untiring sympathy of the female nurses and lady superintendents.¹

On his return from the Dardanelles Parkes remained in London until 1860, when in the month of March he was offered and accepted the Professorship of Military Hygiene in the recently created Army Medical School—the School being the outcome of the teaching of the Crimean War, and of the recommendations of the Royal Commission, presided over by Sidney Herbert, later known as Lord Herbert of Lea. Parkes continued to fill the Professorship until his death in 1876.

Referring to this appointment, the late Professor François de Chaumont, M.D., F.R.S.—who was for so long Parkes's chief assistant, and who succeeded to the Professorship on Parkes's death—wrote in an obituary notice of Dr. Parkes in 1876: "It showed the highest wisdom and foresight on the part of the late Lord Herbert and his coadjutors to select him [Parkes] for the important post he filled up to the time of his death, for he was unquestionably the man best fitted for it in the kingdom. The task he undertook was no easy one, for he had almost to create the science he was to teach, or at least to reduce it from a chaotic condition to something like order. Of course, much had been previously done by many workers; but it was all so diffusely scattered as to be only partially available for the public good." From the very first Parkes realised that courses of lectures were of little use in such a subject as hygiene, unless the student was made to apply practically the knowledge acquired in the lecture room. Laboratory work and laboratory demonstrations were from the very commencement associated with Parkes's teaching; and every student received from him the most careful and patient individual attention—the timid and slow were encouraged to persevere, and the able men were spurred on to further efforts.

¹ "Report on the Formation and General Management of Renkioi Hospital on the Dardanelles, Turkey," by E. A. Parkes, M.D., late Superintendent of the Hospital, 1856.
In 1863 the Army Medical School was transferred from its original quarters at Fort Pitt, Chatham, together with the invaliding establishment, to the Royal Victoria Hospital at Netley. Parkes followed the School from Chatham to Netley, and took up his residence at Sydney Cottage, Bitterne, in the near neighbourhood of Southampton. In 1864 appeared the first edition of the "Manual of Practical Hygiene." This work has been truly described as a monument of industry, research, and clearness, which supplied a scientific basis—hitherto lacking—for the study of the principles of the dawning science of hygiene, and for their practical application in military and civil life. Many of the facts and scientific data contained in this volume were only arrived at after experimental work conducted by Parkes himself and his assistants in the laboratories of the new Army Medical School; and it is obvious that Parkes himself tested the truth of nearly every statement of fact contained in his book, and refrained almost entirely from reproducing, without verification, as known and well-ascertained facts the statements of the earlier writers in his chosen field of work. The "Manual of Practical Hygiene" reached its fourth edition in 1873, and was translated into many European languages. After Parkes's death, in 1876, the work continued to appear under the editorship of François de Chaumont and, on his death, of Lane Notter.

All the later years of Parkes's life were chiefly devoted to the elucidation of the science of hygiene, to its practical applications for the benefit of the British soldier, and to imparting his own knowledge to the young medical officers on the threshold of their Army careers.

In 1862 Parkes commenced an Annual Review of the Progress of Hygiene, which regularly appeared each year in the Army Medical Department Blue Book, until the year 1875. These reviews of home and foreign progress in the science of hygiene have been described as models of précis writing—clear and concise in their aims and exhaustive in their treatment. He also acted as Secretary to the Senate of the Army Medical School, a post which entailed a large amount of writing and correspondence. In addition to all this work, he was constantly engaged in protracted inquiries on behalf of the Government for the purpose of determining the value of various articles of food, or of different inventions bearing on the life of the soldier. Among his most important labours in this field were the invention and perfecting of the new valise equipment, and the abolition of the old cumbersome and oppressive knapsack, which were effected by General Eyre's Committee, of
which he was a member. The work entailed by this was very great, being spread over a very long time, and requiring attention to be paid to the most minute details; whilst no small part of it consisted in overcoming the prejudices of those who were inclined to think that what the new arrangement gained in comfort it lacked in soldierly appearance.

In 1861 Parkes was elected a Fellow of the Royal Society, and some of his best work is recorded in the *Proceedings* of that Society—namely: Contributions “On the Elimination of Nitrogen During Rest and Exercise on a Regulated Diet of Nitrogen,” and on “A Diet without Nitrogen” (1867); “Further Experiments on the Effect of Diet and Exercise on the Elimination of Nitrogen” (1871); with Count Wollowicz, “Experiments on the Effects of Alcohol on the Human Body,” and “Experiments on the Action of Red Bordeaux Wine (claret) on the Human Body” (1870); “Further Experiments on the Effect of Alcohol and Exercise on the Elimination of Nitrogen, and on the Pulse and Temperature of the Body” (1872); “On the Influence of Brandy on the Bodily Temperature, the Pulse, and the Respiration of Healthy Men” (1873).

Parkes was for many years of his life a total abstainer, but he never took extreme views, and in none of his works is total abstinence inculcated as physically essential or morally desirable so long as the individual is capable of extreme moderation in alcohol; but no man held stronger opinions on the evils of excess. His views on the issue of spirit rations to troops in the field are very well set out in his pamphlet published in 1875, “On the Issue of a Spirit Ration during the Ashanti Campaign of 1874, with Appendices on the Effect of Rum, Meat Extract, and Coffee during Marching, and the Use of Oatmeal Drink during Heavy Labour.” On the whole, Parkes, like most modern observers, was strongly opposed to the regular issue of spirit rations, and believed that men can withstand fatigue, deprivations, and extremes of climate best if no alcohol is taken. It seems probable that Parkes’s views on the advantages of extreme temperance were originally formed whilst he was in India with the 84th Regiment. In this regiment at that time there were many teetotallers (at one time more than 400 in its ranks), and the records showed that both in common tropical service and on marches in India the teetotallers were more healthy, vigorous, and far better soldiers than those who did not abstain.

Amongst others of Parkes’s writings should be mentioned “The Composition of the Urine in Health and Disease and under the action of Remedies” (1860), a very able work on the clinical
side; "On the Causes of Sickness in the English Wars and on the Means of Prevention" (1862), read before the Royal United Service Institution; and, in conjunction with the late Sir John Burdon Sanderson, "Reports on the Sanitary Condition of Liverpool" (1871), a city which at that date presented the combined problems of poverty, disease (typhus), overcrowding, and insanitary conditions in their most acute and pressing forms.

In 1863 Parkes was elected a representative of the Crown on the General Medical Council, and in this position he made the happiest and most beneficial use of his great influence. His large and varied experience in different capacities and spheres of work, more especially his wide experience as a teacher and as a member of the Senate of the University of London, were all brought to bear on the questions of medical education with which the General Medical Council had to deal. In 1868 appeared in the Lancet his papers on medical education. These papers received great attention, and led to the institution of various reforms in the teaching of the student and his subsequent examination for a licence to practice. These reforms were not, of course, effected at once; and many of the measures advocated by Parkes are only now in course of adoption. His views were far in advance of his time, and were also too much opposed to traditional customs and observances to be realised except after many years of waiting.

It is rare that a man of robust constitution continues to get through such an amount of work as Parkes did in his fifty-six years of life; but it is simply marvellous that he should have accomplished what he did with his feeble frame and delicate organisation. The stress and strain of so many activities gradually wore him out, although his courage and nervous energy remained at their usual high level until the end of his life. During the winter of 1875 his health gradually failed, and a long illness—which was eventually shown to be due to disseminated tuberculosis—had its fatal termination on March 15th, 1876.

In Parkes were combined a brilliant intellectual endowment with moral and social qualities of the very highest order, which caused him to be loved and respected by all who knew him. He had absolutely no worldly ambition for himself. He steadily declined to accept any recognition of his great services from the Crown, although such was, on more than one occasion, urged upon him. So great was the innate modesty of his spirit that he could not bring himself to believe that his work was more worthy of recognition than that of his colleagues at Netley or elsewhere.
The guiding principle of his life was to make the best use of his capacities for the advancement of the truth in medical science, whereby would be gained the prevention and alleviation of human disease and suffering. By his friends and contemporaries Parkes was recognised as possessing a character of singular beauty, sincerity, and gentleness. The unconscious influence of his character and bearing exercised an extraordinary attraction upon those with whom he had any kind of relation; and there were, and still are, many who have benefited deeply andlastingly by his example and precept. He was not only himself desirous of leading the highest kind of life, but he was always eager to help those around him with sympathetic encouragement and advice to raise themselves to his own exalted standard. Although more than thirty years have elapsed since Parkes's death, those who had the good fortune to know him hold him still in grateful remembrance as the perfect type of man—the personification of all that is highest and noblest in humanity.

Of his influence upon the Army, and more especially upon the Medical Service of the Army, it is difficult to speak without using terms which to some may savour of exaggeration. Probably only by the few who are conversant with all the changes and reforms that the Army has experienced in the last thirty years is it at all clearly realised how the work and teaching of Parkes have inspired and underlaid the slow evolutionary process by which the Army has so much benefited. That it is better to prevent disease than to cure it; that the efficiency of an Army in peace or in war is dependent upon the health and stamina of its component units; that the medical service has as great a responsibility in the prevention of disease in the Army as in the care and treatment of the sick and wounded—these are great principles of which the truth is at last realised, and which are more or less practically applied in the organisation, administration, and equipment of the Imperial Army of to-day. But all these great principles formed the basis of Parkes's teaching, and were pressed for recognition upon the supreme military authorities of the country nearly fifty years ago. They might, even to the present day, have remained to a great extent ignored or unacted upon, had not the latest campaign, in which the bulk of the Imperial Forces of the Crown were concerned, shown how essential they are as guiding principles in modern warfare, and what a terrible penalty in sickness and death is exacted from the Army that fails to recognise that a sanitary service—fully equipped and organised for war—is indispensable, if the Army is not to be decimated by preventable disease.