

of the brains of monkeys. These experiments laid the basis of our knowledge of localization of function in the cortex of the human brain. The incident is worthy of notice, for it illustrates the manner in which Crichton-Browne helped in the growth of scientific knowledge. There was no jealousy in his composition; he welcomed knowledge from any source, so long as it was real knowledge.

In 1875, Crichton-Browne left Wakefield to become a Lord Chancellor's visitor in lunacy. It was thus early that he became a feature of London social life: no gathering of medical or of scientific men seemed complete without him; he had a rare zest for public life. He was elected to the Royal Society in 1883, and at the time of his death he was senior fellow. In 1880, he became a member of the Royal Institution. James Dewar was then in the fourth year of his directorate; both men were steeped in the Edinburgh tradition. In 1889 he took over the honorary treasurership of the Institution, and held that office and all that it embraces until 1926. He was elected to the Athenæum Club in 1893. He took an active part in all medical societies which concern themselves with the life and disorders of the human brain.

It was during the later part of his treasurership at the Royal Institution that the writer of this note had the privilege of his friendship. One incident may be mentioned because of the light it throws on Crichton-Browne's character. Sir James Dewar was not always an easy colleague and was at times dictatorial almost outrageously so. It so happened that towards the end of the Great War, Prof. H. H. Turner of Oxford was busy in the theatre of the Institution making ready for his Christmas lectures for children. Dewar entered to find Turner grouping a class of young children to represent the heavenly bodies and their movements. "What is this?" demanded Dewar. Turner explained. Dewar banned the scheme out of hand. Turner banged the lecture-room door and refused to return—on the eve of Christmas. It was then that Sir James Crichton-Browne appeared on the scene and in two days had peace restored and lectures assured. It was all accomplished by clear thinking, honest speaking and the pertinacity of a good heart. He combined in his person and in his mentality traits of both the centuries in which he had lived. He dressed his beard and his hair to the last in the fashion which prevailed when he was a young man in the late 'fifties; his oratory was of the kind beloved by the Gladstonians, but his attitude towards affairs was always modern.

Crichton-Browne loved his native town—Dumfries and all connected with it—especially Burns and Carlyle. His pen never wearied in their defence. Next to Dumfries came Edinburgh and its great men—especially Walter Scott. His interests were so diverse and so wide. Among his writers, Shakespeare stood highest, Scott next. His pen was always busy—always in search of his country's good. It is not necessary here to give a list of the non-professional books he wrote—from "The Nemesis of Froude" (1903) until the last of his reminiscences, which began to appear after his official retirement in 1922. The

first volume of this series, "Victorian Jottings", appeared in 1926; the fifth, "The Doctors After-Thoughts", in 1932. Up to the last he and Lady Crichton-Browne went every year—spring and autumn—to breathe his native air at Crindau, Dumfries. It was during a visit to Crindau that death came to him. His brother, Balfour Browne, was the most successful parliamentary barrister of his time. Crichton-Browne himself had the makings of a great judge. Indeed he was a very great Victorian, the last of them. He was great not because of any contribution he himself made to medicine or science, but because he fostered the conditions which ensure the birth of knowledge in others. He was great both for what he did and for what he was. A. K.

### Sir Thomas Stanton, K.C.M.G.

THE sudden death on January 25, at the age of sixty-two years, of Sir Thomas Stanton has come as a great shock to his many friends, both at home and abroad. Although Stanton, as director of Government Laboratories, Federated Malay States, and later, as chief medical adviser to the Colonial Office, occupied prominent positions throughout a large part of his life, he never sought publicity, and the public never fully appreciated the work which he had done on beriberi, on malaria and other diseases, or his work at the Colonial Office in reorganizing the Colonial Medical Service.

Stanton went to Malaya in 1907 and was soon engaged in the work with which, perhaps more than any other, his name will be permanently associated—the discovery of the cause of beriberi and of means for its prevention. At the beginning of this century, beriberi was certainly a medical puzzle. Its neuritis and paralysis were so similar to alcoholic and lead poisoning that few people doubted that beriberi was the result of the entry into the body of some poison. The late Dr. W. L. Braddon strongly maintained the hypothesis that the poison entered the system in white polished rice, and that it was absent from par-boiled and partly polished rice. But evidence that rice was not a factor seemed so conclusive from experiments conducted by the late Dr. E. A. O. Travers in two jails at Kuala Lumpur that in Manson's "Tropical Diseases", third edition (1903), it is stated: "This view has been disposed of effectively by experiments by Dr. Travers. This experiment was prolonged and scrupulously carried out." Braddon was not convinced, and a polemic ensued, as a result of which Dr. William Fletcher carried out an experiment in his hospital wards at Kuala Lumpur at the suggestion of his chief, Dr. Travers.

The question was far from being one of merely academic interest. There were hundreds of new cases of beriberi every year in Malaya. The tin mines suffered severely. Sometimes the disease attacked the jails so seriously that a sentence of six months' imprisonment threatened to be a sentence of death, or what might perhaps be regarded as worse, a life sentence of paralysis following beriberi. Fletcher set out to confirm Travers's view that rice played no part in causing beriberi. At the end of



the experiment, he was convinced that rice was the cause of the disease. The next question was, How did the rice produce beriberi? It was at this point that Stanton and Fraser of the Institute for Medical Research entered on their work, which not only showed exactly how rice produced beriberi but also what rice produced beriberi and what rice did not produce the disease. They showed further that the disease was not, as Braddon maintained, caused by a poison in the rice, but was a deficiency disease caused by the removal of the pericarp in the polishing of the rice; and they proved that if a fowl were suffering from beriberi as a result of being fed on a polished rice, it could be rapidly cured by giving it the polishes. They found that unpolished rice never produced beriberi in fowls, and with the introduction of unpolished rice into the jails the disease rapidly disappeared. For a time it looked as if the amount of phosphorus pentoxide ( $P_2O_5$ ) in rice could be taken as an indicator of the danger of beriberi developing, but further observations showed that this test could not be relied on.

The discovery was of great value in itself, and of vast economic importance to Malaya; so much so that had it stood alone it would have justified all the money that had been spent on the Institute for Medical Research from its foundation. But it had a still greater significance, for it suggested lines of research into other diseases, which in their turn proved to be deficiency diseases. To-day vitamins are a household word, and the accessory foodstuffs are studied in probably every country in the world. There can be few Governments which are not inquiring into and trying to improve the food of their nationals on the lines of the discovery made by Stanton and Fraser.

Space will not allow me to say much more on Stanton's work in Malaya. From 1911 until 1926 we were colleagues on the Malaria Advisory Board in the Federated Malay States, and Stanton's interest in this subject was shown not only by his valuable contributions to the discussions of the Board, but also by his researches into the morphology of the anopheline larvæ, which were of material assistance to the practical work of mosquito control and the prevention of malaria in Malaya.

May I conclude with a personal remark. No one could come into contact with Stanton without realizing that behind a quiet demeanour lay an active brain, carefully balancing the pros and cons of everything he discussed. What was perhaps not less important, he was a man who could be trusted; a scientific investigator of distinction and a great gentleman.

MALCOLM WATSON.

#### Dr. W. W. Vaughan

NEWS of the death on February 4 of Dr. W. W. Vaughan, as the result of an accident, will be received with deep regret by his many friends in scientific circles. A note in last week's issue of NATURE, p. 236, described the circumstances of the unfortunate fall, while visiting the Taj Mahal at Agra, which resulted in his death. When we went

to press, it was reported by cable that his condition after the amputation of his leg was favourable, and it was hoped that he would make satisfactory progress toward the recovery of his normal good health. Those, however, who saw the serious nature of the accident at the time of its occurrence, when Dr. Vaughan had to lie in the open with a compound fracture for more than an hour before an ambulance could be found to move him to the Thomason Hospital, scarcely expected that he could recover, and their fears have been sadly confirmed by the fatal result.

Dr. Vaughan was one of the few headmasters of public schools who had been presidents of the Educational Science Section of the British Association; and he was distinguished among all of them who have occupied this office in the continued part he played in the work of the Association. It was while visiting India as a member of the delegation of the Association to the jubilee meeting of the Indian Science Congress Association that he met with the accident which has led to his death.

Dr. Vaughan was born in 1865 and was the son of Prof. H. H. Vaughan, regius professor of modern history in the University of Oxford. He was educated at Rugby School, New College, Oxford, and the University of Paris; and his main subjects were modern languages. In 1890 he became an assistant master at Clifton College, where he remained until 1904, when he was headmaster of Giggleswick School. From 1910 until 1921 he was master of Wellington College, and he then returned as headmaster to his old school, Rugby, where he remained until his retirement in 1931. He was president of the Modern Language Association in 1915, of the Incorporated Association of Headmasters in 1916, of the Science Masters' Association in 1919, and of the Education Section of the British Association in 1925. He served on the Consultative Committee of the Board of Education and on the Government committee appointed in 1916 under the chairmanship of Sir J. J. Thomson, on the position of natural science in the educational system of Great Britain. At the time of his death he was a member of the Council of the British Association and of the Advisory Committee on Education in the Colonies.

When Dr. Vaughan was president of the Science Masters' Association he dealt, in his presidential address, with the importance of science as part of a liberal education. He urged that the aim of scientific instruction should not be purely utilitarian but that of education as a whole—the liberation of man's soul. He referred to these objects again in his address to the Educational Science Section of the British Association. "We seem almost to have lost the will," he said, "to keep by education the pores of the soul and the mind ever open to the impressions of experience, to the stirrings of emotion, to the slow and enduring influence of the reason. We have too often pinned our faith on the production of dexterity, of mental facility, of almost thoughtless accuracy, and we have our reward in our educational looms being ill-adapted to the production of contentment and beauty and the power or the will to reason."