It should be emphasized, however, that the composition of the nuclei is not constant. Some specimens of cod sperm which we have examined have, for example, contained as much as 23 per cent of histone, while the nuclei from the rat carcinoma have sometimes failed to yield any histone at all. The figures do, however, indicate that chromosomin forms the largest constituent of the nucleus, and since it represents the characteristic substance of the chromosomes, there would appear to be little material left to form the nuclear sap unless this contained some nucleic acid. It is an attractive hypothesis, but one for which there is no direct experimental proof, that the spindle which is formed at metaphase is a gel of nucleic acid. The attachment of the chromosomes to the equatorial plate of the spindle could then be conceived as involving perhaps the acidic groups of the nucleic acid and basic groups of the chromosomin, the acidic groups of the latter being neutralized by the histone. Alternative methods of combination are, of course, possible. But the important experimental fact is that the nucleus is composed of at least three amphoteric substances: chromosomin, nucleic acid and histone (or, in special cases, protamine), two of these possessing predominantly acidic properties and one, the histone, predominantly basic properties. Between three such substances a number of salt-like unions could be formed, the nature of which would be controlled by the acidity of the medium in which they existed. It is not, however, our present purpose to speculate on the nature of the changes which occur in the nucleus; discussion of this and other aspects of our work will be reserved until it is possible to give a more detailed account of our experiments.

We desire to thank Dr. A. Haddow of the Chester Beatty Cancer Research Institute for providing us with the Walker carcinoma tissue, and the Medical Research Council for a grant to one of us.

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OBITUARIES

Sir Stopford Lauder Brunton, Bt.

SIR STOPFORD BRUNTON, who died on July 25, was the elder son of the late Sir Thomas Lauder Brunton, the eminent physician. He was born on October 11, 1884. He was educated at Cheltenham College, from which he went to the Royal Military Academy, Woolwich, and later to McGill University, Montreal. There, after studying mining geology, he took his degree in 1912. He worked on the Canadian Geological Survey until the War broke out in 1914. Holding a commission in the O.T.C., he drew up a scheme of military training which was accepted at Ottawa, and led to his being sent to France to study modern methods of field-defence. On his return to Canada he raised No. 6 (McGill) Heavy Siege Battery, recruited from graduates and undergraduates of the University, and as officer commanding, took his unit to France in 1917, remaining on that front until the end of the War.

For the next six years Sir Stopford was engaged on survey and mining in Nova Scotia. The results of his work were embodied in two publications, the second "The Gold Deposits of Nova Scotia: a New Hypothesis concerning the Structural Features of the Province", published in 1925, was awarded the Leonard Gold Medal for 1927, jointly by the Engineering Institute of Canada and the Canadian Institute of Mining and Metallurgy. Sir Stopford, in spite of failing health in recent years, was keenly interested in agricultural progress in Nova Scotia, where he owned a farm.

Inheriting the high ideals of his father and something of the fine quality of his genius, he had much personal charm and a kindly, unselfish, generous nature, to which the affectionate devotion of his friends and former comrades offers a fitting tribute. Sir Stopford married in 1915 Elizabeth, daughter of Prof. J. Bonsall Porter of Montreal, and leaves a son and a daughter. The former is now serving in the Royal Canadian Army Medical Corps.

Dr. A. C. Klebs

DR. ARNOLD KLEBS, the eminent Swiss medical historian, died on March 6 at Nyon, on the Lake of Geneva. Born on March 17, 1870, the son of Prof. Edwin Klebs, the famous bacteriologist who was successively professor of pathology at Bern, Würzburg, Prague, Zurich and Chicago, he received his medical training at Bern, Kiel, Würzburg and Berlin, and qualified at Basle in 1894. After post-graduate work in London and Paris, he went to the United States at the age of twenty-six. He gained a reputation by his work on tuberculosis, for which he founded a sanatorium in Alabama and a tuberculosis institute in Chicago. Afterwards he made the acquaintance of the late Sir William Osler, who inspired him with an interest in the history of medicine.

One of Klebs' earliest articles on this subject was the history of inoculation against smallpox (1913). Eventually he published a large number of medico-historical essays either independently or in collaboration with Sudhoff, to whom he devoted a remarkable article on Gianmatteo's "Practica" in the *Festschrift* in honour of Sudhoff's seventieth birthday.

In 1921 Klebs played an active part in the foundation of the Swiss Society of the History of Swiss Medicine and Sciences, which holds a congress regularly every year. In 1938 he published a standard work, "A Short Title List of the *Incunabala scientifica medica*". His last great work was a bibliography of the writings of his friend Harvey Cushing, which appeared on the occasion of the seventieth birthday of the great brain surgeon. His own seventieth birthday was celebrated by Prof. Henry Sigerist, of Baltimore, in a *Festschrift* which appeared in the *Bulletin of the History of Medicine* in 1940. His last years were embittered by the War, which deprived him of the visits of his friends in Europe.

J. D. ROLLESTON.

WE regret to announce the following deaths:

Prof. F. Bacon, professor of engineering in University College, Swansea, on August 23, aged sixty-two.

Prof. W. G. de Burgh, F.B.A., emeritus professor of philosophy in the University of Reading, on August 27, aged seventy-six.

Prof. John Hilton, professor of industrial relations in the University of Cambridge, on August 28, aged sixty-two.