appear as a new datum for whatever schemata we offer of central mechanisms. The data for such schemata have been so few that the diagrams were easy to make but not of much significance. The new ones if less easy to sketch will have more meaning.

Lucas had little patience with unfounded speculation or with the elaboration of hypotheses without any attempt to test them. But that his thoughts were not limited to the direct results of his experiments is shown by his cautious but suggestive remarks on the possible application of his analysis of the Wedensky effect to inhibition in the central nervous system, and again on the possible basis for an explanation of reflex summation. His attitude is expressed in these words:

> There is a tendency to attribute to the central neurone and its connections properties which have no basis in the direct observation of the simple conducting tissues. It is our belief that the time for such a procedure can only come when it has been proved after repeated trial that there is no explanation of central phenomena possible in terms of properties revealed by the study of the simple tissues.

His sense of the immensity of the problems which drew him on is shown in the conclusion of his Croonian Lecture, in which he remarks "we may now claim to have passed through the first phase of ignorance, in which we merely admitted that we did not know, and to have reached the second phase of ignorance, in which we are recognizing what precisely are the points on which our want of knowledge is most profound." The breadth of his outlook on physiology is shown in two stimulating articles on "The Evolution of Animal Function" published in 1909 in *Science Progress*.

Thus he was a scientist combining rare mechanical ingenuity and experimental skill of the highest order with a wonderful grasp of the crucial tests through which advance should come and a broad philosophical view of the truths he brought to light. But besides all this he was a man of great personal charm and nobility of character. His keen and delightful sense of humor and his modest, friendly personality made him a companion and friend beloved by those about him.

The spirit in which he left his absorbing career to play his part in the great fight for liberty is reflected in a letter written in the spring of 1915, an extract of which appears in the *Atlantic Monthly* for October, 1916 (page 546). He was to have joined an artillery company, but on the very day he was to have been sworn in he was sent for to carry on research at the Royal Aircraft Factory on devices for the control of aeroplanes. He had already perfected an aeroplane compass and was engaged in similar experimental work when he met his death in a flying accident.

Alexander Forbes
Harvard Medical School

INDUSTRIAL RESEARCH IN CANADA

The Canadian government has appointed an honorary advisory council on scientific and industrial research to advise a committee of the cabinet consisting of the ministers of trade and commerce, interior, mines, inland revenue, labor and agriculture, on all matters relating to the extension and coordination of scientific and industrial research, with a view to securing united effort and mutual cooperation between scientific workers and industrial concerns, and to selecting the most practical and pressing problems indicated by the industrial necessities for submittal to research and other institutions and individuals for solution.

The members of this advisory council are: Dr. A. Stanley Mackenzie, president of Dalhousie University, Halifax, N. S.; Dr. Frank D. Adams, dean of the faculty of applied science, McGill University; Dr. R. F. Ruttan, professor of chemistry, McGill University, Montreal; Dr. J. C. McLennan, director of the Physical Laboratories, University of Toronto; Dr. A. B. Macallum, president of the Royal Society of Canada, University of Toronto; Dr. Walker Murray, president of the University of Saskatchewan, Saskatoon; Mr. Robert Hobson, president of the Steel Company of Canada, Hamilton, Ont.; Mr. R. G. Ross, consulting electrical engineer, Montreal; and Tancrede Bienvenu, manager of La Banque Provinciale, Montreal.

The question of the cooperation of the scientific men and laboratories of the country with the industrial concerns with a view to solving

the problems raised by the war and to placing the industrial resources of the country in a position to meet the conditions that will arise after the war has been under consideration by the government and by representatives of science and industry for some time, as it was felt that it was more desirable to follow the example of the British government in this matter.

The question was fully discussed at the meetings of the Royal Society of Canada in May, 1916, and a deputation of this society waited upon the Honorable Sir George E. Foster, minister of trade and commerce, and the Honorable Sir Thomas White, minister of finance, to place the services of the society at the disposal of the government and to recommend the appointment of an advisory committee for the furtherance of industrial research. The matter had already been considered by the minister of trade and commerce and action was promised.

Sir George Foster held a number of conferences with representative men of science and industry, and as a result of his report to the government definite action was decided upon in June by order-in-council. In his memorandum he pointed out "the urgent need of organizing, mobilizing and economizing the existing resources of scientific and industrial research in Canada with the purpose of utilizing waste products, discovering new processes —mechanical, chemical and metallurgical— and developing into useful adjuncts to industry and commerce the unused natural resources of Canada."

SCIENTIFIC NOTES AND NEWS

THE president and council of the Royal Society have made the following awards: A Royal Medal to Dr. John Scott Haldane, F.R.S., for his services to chemical physiology, more especially in reference to the chemical changes of respiration. A Royal Medal to Professor Hector Munro Macdonald, F.R.S., for his contributions to mathematical physics. The Copley Medal to Sir James Dewar, F.R.S., for his investigations in physical chemistry, and more especially his researches on the liquefaction of gases. The Rumford Medal to Professor William Henry Bragg, F.R.S., for his researches in X-ray radiation. The Davy Medal to M. le Prof. Henri Louis le Chatelier, For.Mem.R.S., for his researches in chemistry. The Darwin Medal to Professor Yves Delage, for his researches in zoology and botany. The Sylvester Medal to M. Jean Gaston Darboux, For.Mem.R.S., for his contributions to mathematical science. The Hughes Medal to Professor Elihu Thomson for his researches in experimental electricity.

THE Stockholm correspondent of the *Morning Post,* as quoted in *Nature,* states that the Nobel prize for physiology for 1916 will probably be awarded to Professor H. J. Hamburger, of Groningen University. It is stated that the Swedish Academy of Sciences has decided not to award this year the Nobel prizes for physics and chemistry.

PRESENT and former students of Professor E. B. Wilson will give a dinner in his honor in New York on the evening of December 28. Former students of Professor Wilson, whether at Columbia or elsewhere, who have failed to receive an announcement of the dinner, can obtain full particulars by addressing Professor Gary N. Calkins, Columbia University.

PROFESSOR S. A. MITCHELL, director of the Leander McCormick Observatory of the University of Virginia, has been appointed by Columbia University special Ernest Kempton Adams research fellow for a period of five years. This award comes as an extension of the regular Adams fellowship held by Professor Mitchell for the years 1914–16. The research undertaken was the determination of the parallaxes of the fixed stars by photography with the 26-inch McCormick refractor. Already the distances of one hundred stars have been determined.

OWING to ill health, Mr. H. W. Henshaw has resigned his position as chief of the Bureau of Biological Survey, Department of Agriculture, dating from December 1. Mr. Henshaw has been connected with the Department of Agriculture since 1905, serving as assistant chief of the bureau until 1910, and