has grown rapidly in importance and influence during this period. The guide and director of a great research laboratory in Cambridge, he is everywhere recognized as one of the great pioneers of his science. In his active life he has made a series of fundamental discoveries, each of which has led to the opening up of new fields of work. The isolation and identification of tryptophane twenty-five years ago, at a time when but few of the amino-acids that enter into the composition of proteins were recognized, marked an epoch in the pure chemistry of these substances. The importance of this discovery was enhanced by Hopkins's later work on this substance, which led to a revolution in the physiology of proteins in nutrition, the end of which is not yet in sight. Some of the most fruitful work in recent physiology has been upon the nature of muscular contraction. The work of A. V. Hill and Meyerhof, of Embden, and many others, turns upon the fundamental earlier discoveries by which Hopkins, in collaboration with W. M. Fletcher, defined the conditions governing the appearance of lactic acid in muscle during activity, and its disappearance during recovery. One of the most important discoveries of this century is summed up in the word "vitamins." Fifteen years ago, Hopkins had carried out experiments which not only showed that appropriate mixtures of proteins, carbohydrates, fats and salts, might, for lack of traces of unknown substances, be inadequate for the nutrition of animals, but also at the same time established the general lines of the methods used ever since in the investigation of these substances, by important groups of biochemists in all parts of the world. The discovery of the dipeptide glutathione, coming at a time when the nature of the processes underlying biochemical oxidations was the subject of significant work in many laboratories, has again brought Hopkins into the van as a leader in yet another part of the field of biochemistry and given the signal for intense renewed activity there. Hopkins's work throughout has shown a genius for discovery. It has inspired a very large part of the best work in biochemistry in this century.

At a moment when there seemed some danger that the brilliant advances in paleophytology made by Professor Williamson might slacken owing to advancing years, Dr. Scott entered upon a fruitful cooperation with the veteran. Several joint memoirs were the result of this happy coalition; but later Scott established a quite independent position of his own. Among the numerous memoirs published by him during the last forty years, none stands out more prominently as a model of presentation of complex structure than that on Cheirostrobus, a new type from the Calciferous sandstone. Not only was its elaborate structure fully described, but also the comparative treatment showed a master hand. This quality came out with even greater effect in the study of the new class of the Pteridosperms, or primitive seed-plants with fern-like habit. The extensive knowledge of these early land-plants which we now possess has been mainly based upon the work of Scott, Oliver and Kidston. Such work, of which these examples do nothing more than suggest the nature and the scope, has been gathered up by Scott into his "Studies in Fossil Botany," now in its third edition. It deals primarily with early vascular plants, placing them in natural relations to their living correlatives, and giving a picture of early land-vegetation that has never been surpassed in clarity of presentment, combined with accuracy of detail and of reference. It supplies not only a great mass of fact that is positive and new; but it also subjects those facts to a detailed criticism and a philosophical treatment such as Darwin himself would have been among the first to appreciate.

## APPOINTMENT OF A. V. HILL TO THE BAKER LECTURESHIP AT CORNELL UNIVERSITY

IT is announced by Professor L. M. Dennis, head of the department of chemistry at Cornell University, that Dr. Archibald Vivian Hill, F.R.S., Foulerton research professor of physiology in the University of London and Nobel prizeman in medicine, will fill the George Fisher Baker non-resident lectureship in chemistry in Cornell University throughout the second semester of this academic year, from February to June.

The lectureship was founded and endowed last year by George F. Baker, of New York. Previous incumbents of the chair have been Professor Ernest Cohen, of the University of Utrecht, and Professor Fritz Paneth, of the University of Berlin, who is lecturing there this term.

At the age of forty, Professor Hill is one of the youngest of the fellows of the Royal Society, to which he was elected in 1918. His wife is a sister of John Maynard Keynes, author of "The Economic Consequence of the Peace." He was educated at Trinity College, Cambridge, and after graduating with honors and several prizes he was a fellow of that college for several years and then a fellow of King's College, Cambridge, and university lecturer in physical chemistry. He held a professorship in the University of Manchester for four years until 1923, when he accepted the Jodrell professorship of physiology in University College, London. The Royal Society established the Foulerton research professorship in physiology in London in 1924 and Professor Hill is the first incumbent. The Nobel prize in medicine was awarded to him in 1922.

Professor Hill has made important studies of the chemistry and mechanism of muscular contraction, using athletes as experimental subjects, and he plans to develop these studies still further while he is at Cornell. The university athletic association has offered to give him all possible aid. He is eminent not only in physiology but also in mathematics, physics and physical chemistry. He has brought these

special endowments to bear upon the solution of physiological problems and his investigations in this field have been of great importance.

A Royal medal of the Royal Society was recently awarded to Professor Hill and was presented at the anniversary meeting of the society on November 30 with the following citation:

Professor A. V. Hill has made important contributions to knowledge of muscle and nerve. As to the former, his inquiries, begun some sixteen years since, were taken up at a time when, owing to the emergence of new facts, views of general acceptance stood in essential need of re-examination. In the past seven years Hill has accomplished this with a success beyond expectation. He has related to the mechanical the thermal aspects of muscular activity with a precision hitherto unattained and obtained data as valuable for the chemical as they are fundamental for the physical study of the problem. The technique developed by him enabled for the first time the discrimination, in the heat production of muscle, of successive quantities and rates characterizing successive stages of that activity, in spite of the closely consecutive and in part evanescent character of those phases. "Initial heat," uninfluenced by oxygen, the immediate accompaniment of the mechanical changes in the muscle, was thus distinguished from a "delayed heat" associated with functional recovery of the muscle; and in this latter there were recognized two portions which evaluate the relative shares of aerobic and anaerobic disappearance of lactic acid in the processes of restoration of the muscle. In association with this recovery process the molecular ratio between removed and oxidized lactic acid has thus been estimated. Besides furnishing this essential analysis of the functional reactions of isolated muscle, Hill has prosecuted notable inquiries into the factors conditioning the performance and maintenance of muscular effort in the human body, measured its chemical cost and traced to their causes certain of the limits set to the speed and endurance of the athlete. Further, he has succeeded not only in detecting but also in measuring heat-production accompanying the conductive activity of nerve. The scale of energy-change involved in this has required the devising of a refined technique; here again he with his pupils has obtained and measured the heat not only in block but also in its separate phases of production. Whenever the intimate mechanism of the activity of muscle and nerve may finally be elucidated, it is certain that the contributions of Professor Hill will remain fundamental for the explanation of the mechanism of them both.

## APPROPRIATION BILL OF THE DEPARTMENT OF AGRICULTURE

THE appropriation bill for the U. S. Department of Agriculture, carrying $128,362,385 for the fiscal year ending June 30, 1928, was reported to the House on December 13 from the appropriations committee. There is also available for the year $11,351,250 out of permanent appropriations under previous legislation.

The budget of the department for the next fiscal year would therefore total $139,713,635. The bill is $4,774,185 under estimates approved by the budget bureau.

The following is a summary of the bill:

For the secretary's office, including $657,000 for salaries, $1,071,366 rentals and other items, with salaries and expenses of the office of information, including publicity personnel, $1,115,000; salaries and expenses of the library, $84,180; office of experiment stations for administrative and general expenses, $3,719,386, and extension service, including cooperative work, reclamation demonstration, agricultural exhibits at fairs and administrative expenses, $2,877,480. This brings the grand total for the office of the secretary to $8,867,412.

Weather Bureau, $2,641,000, including $1,922,000 for station salaries and expenses; $241,500 for investigating atmospheric phenomena, and $31,500 for frost-warning investigations.

Bureau of Animal Industry $10,658,970, including $5,964,000 for indemnities and administrative expenses in eradicating tuberculosis; $712,390 for eradicating cattle tick; $429,170 for animal husbandry; $451,320 for eradicating hog cholera; $162,760 to combat diseases of animals, and $26,970 for eradicating dourine.

Bureau of Dairy Industry, $495,094; Bureau of Plant Industry, $3,914,585; Forest Service, $8,590,834; Bureau of Chemistry, $1,115,005; Bureau of Entomology, $3,062,265; Bureau of Biological Survey, $1,017,020; Bureau of Public Roads, $457,170 for administration expenses, road management, investigating road building and farm irrigation and engineering; Bureau of Agricultural Economics, $4,981,251; Bureau of Home Economics, $127,244; Federal Horticultural Board, $812,510.

Packers and Stock Yards Act, enforcement, $420,000; Grain Futures Act, enforcement, $135,000; food, drug and insecticide, enforcement, $1,311,385.

Cooperative forest-fire protection, $1,000,000; cooperative farm forestry, $60,000; cooperative distribution of forest planting stock, $75,000; acquisition of additional forest lands, $1,000,000.

Experiments in dairying and live-stock production in western United States, $41,610; establishment of Mandan (North Dakota) Experiment Station, $25,000; farmers seed grain loans collection, $10,000; eradication of foot and mouth diseases of animals, $100, besides unexpended appropriations.