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.