to take place before the College of Pharmacy begins the construction of a new $500,000 plant adjoining its present building on Nostrand Avenue, near Lafayette Avenue, which is expected to be fully completed within a year. The college was established in 1887 by the Kings County Pharmaceutical Society as a lecture center, but did not become a technical college until 1891. Approximately 3,000 students have been graduated from the institution and its classes number about 250 every year.

THE American Museum of Natural History is made the remainder beneficiary of trust funds aggregating more than $500,000, under the will of the late Frederick G. Voss. Before his retirement Mr. Voss was U. S. manager of foreign insurance companies. The will directs that the fund be used in further development of the institution's department of research in anthropology and archeology. The museum is the residuary legatee and will receive the principal of trust funds on the death of the life tenants.

THE Academy of Natural Sciences of Philadelphia has contributed $500 toward the completion of the fund needed for the Byrd Antarctic Expedition.

UNDER the auspices of the Industrial Development Board of Manitoba, a council has been formed to direct and stimulate scientific research on problems which have to do with the utilization of the resources of the province. The council has been formed with the assistance of the National Research Council at Ottawa and membership of the board includes engineers, chemists and manufacturers. Provincial industries will be asked to submit their problems and those of national interest will be submitted to the National Research Council at Ottawa.

THE new observatory for studying the northern lights at Tromsö, Norway, was completed and taken into active service this summer, under the direction of the Norwegian Society for Cosmic Physics. Aside from the northern lights, the observatory will also be devoted to the study of atmospheric conditions in high altitudes, and it will conduct magnetic and meteorological observations of great practical value in weather forecasting. The work is in the nature of a continuation and expansion of that of the Geophysical Institute at Bergen, with which it will be closely connected.

A new bee-culture field station, known as the Southern States Bee Culture Field Laboratory, has been established by the Department of Agriculture at Baton Rouge, La. Special funds for this purpose were appropriated by the last Congress. The Louisiana State University is providing laboratory facilities, heat, light and janitor services, and is also assisting financially in the procurement of scientific apparatus. W. J. Nolan, of the department's bee-culture laboratory, Somerset, Md., has been in Baton Rouge since early in July making necessary arrangements for conducting the experimental work. Dr. W. W. Whitcomb, Jr., recently appointed a member of the department's bee-culture staff, is also at Baton Rouge, where he will be stationed permanently.

WITH the approval of the Personnel Classification Board, the Bureau of Plant Industry has recently established the position of principal horticulturist in charge of horticultural crops and diseases. The establishment of this new position is with the intention of accomplishing a regrouping and consolidation in the supervision of several closely related activities. The new principal horticulturist will be assigned to the general supervision not only of the horticultural, pomological and related items of the present Office of Horticulture, but also the physiological project of the Office of Plant Geography and Physiology, the projects relating more or less directly to horticultural crops of the pathological laboratory and of the Office of Vegetable and Forage Diseases, and the entire office of Fruit Diseases and the Office of Crop Physiology and Breeding. It is believed that the more intimate correlation of these related activities will facilitate the cooperative research upon many important complicated problems of production of horticultural crops, not only among the specialists of the new administrative organization but also with specialists of the state agricultural experiment stations and other institutions and with the horticultural industries.

WE learn from *Nature* that Mr. J. G. Pearce, director of the British Cast Iron Research Association, has been unanimously awarded by the judges the first prize of 100 guineas for a series of practicable proposals relating to "Goodwill in Industry." The competition was organized by the Glasgow and West of Scotland Association of Foremen Engineers and Draughtsmen, and the judges represented the three parties in industry—the employer, the worker and the technical or administrative officer.

UNIVERSITY AND EDUCATIONAL NOTES

THE new Hilles Laboratory of Applied Science of Haverford College will be completed in time for the opening of the second semester.

THOROUGHLY equipped biological and chemical laboratories have been installed at Long Island University. The biological laboratory is designed to accom-

modate 192 students and the chemical laboratories 480 students.

AT the University of Virginia, Dr. Sydney William Britton, of the Johns Hopkins University, has been appointed professor of physiology as successor to Dr. Homer W. Smith, who has become head of the physiological department of New York University.

DR. EDWARD F. CASTETTER, associate professor of botany in the Iowa State College, has resigned to accept the headship of the department of biology of the University of New Mexico at Albuquerque.

A. BRAZIER HOWELL, secretary of the American Society of Mammalogists, who for the last six years has been connected with the U. S. Biological Survey and the U. S. National Museum, has been appointed lecturer in comparative anatomy at the Johns Hopkins Medical School. Dr. Clarence E. Ferree has been made resident lecturer in ophthalmology and director of the laboratory for physiological optics. His wife, Dr. Gertrude Rand, will be associate professor of ophthalmology.

PROFESSOR E. A. MILNE, Beyer professor of applied mathematics in the University of Manchester, has been appointed as from January 1, 1929, to the Rouse Ball professorship of mathematics at Oxford. Under the will of Mr. W. W. Rouse Ball, of Trinity College, Cambridge, money was bequeathed for the foundation of Rouse Ball chairs of mathematics at Oxford and Cambridge. Early this year Professor J. E. Littlewood was appointed to the Cambridge chair.

DISCUSSION AND CORRESPONDENCE

SPARING ACTION OF FAT ON THE ANTI-NEURITIC VITAMIN

IF fat be added to an almost fat-free diet,[1] the amount of the anti-neuritic vitamin required to establish any definite level of growth or frequency of ovulation is always less than is required when fat is absent; in other words, fat acts to spare the water soluble anti-neuritic vitamin. Animals on inadequate levels of the vitamin are not only more gravely impaired in stature and ovulation when fat is absent than when present, but they invariably develop fatal beriberi sooner. A level of anti-neuritic vitamin can be found, for instance, on which all animals deprived of fat die in slightly over a month, but on which animals allowed ten per cent. of dietary fat invariably live over four months. Furthermore, fat-free animals near death from beriberi when given only three doses of rice-polish-extract resume more energetic growth if also shifted to a diet with fat present; in spite of this growth and hence increased body substance they also come down later with their second attack of beriberi. Our experiments have been performed with adequate levels of the other water soluble vitamin B (P P) and of the fat soluble vitamins A, D and E, so that we are not at liberty to assign the remarkable favorable action of fat to increased amounts of these substances. Nor have we been able thus far to establish the presence of the anti-neuritic vitamin itself in the fats used. It would appear that we must recognize their mediation in those unknown metabolic processes for which anti-neuritic vitamin is essential. The clear-cut facts herein reported go far toward explaining the beneficial effect of fats[2] recently emphasized by us in earlier studies on highly purified diets.

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[1] We have employed Diet 542 (casein—extracted one week with acid water—20, cane-sugar 70, autoclaved yeast 10, salts 4, 2 drops cod-liver oil (Patch) daily) and Diet 550 (casein 20, cane-sugar 59, lard 10, autoclaved yeast 10, salts 4, 2 drops cod-liver oil (Patch) daily). For both diets the anti-neuritic vitamin was furnished at various levels by separately fed unautoclaved yeast. E is administered as a few drops of wheat germ oil daily.

NOTATION IN ATOMIC STRUCTURE

IN most books and papers on atomic structure little attempt is made to distinguish between frequencies and wave numbers except where it becomes necessary to give numerical examples. Both these quantities are usually designated by the letter ν.

It is our practice to use a tilde over the symbol when it indicates wave number, *i.e.*, $\tilde{\nu} = \nu/c$. Similarly, when dealing with the Zeeman effect, it is sometimes desirable to use the wave number corresponding to the frequency of the Larmor precession. This frequency may be designated by L, and the wave number L/c is then denoted by $\tilde{L}$. We have found this notation extremely convenient.

There is need for standardization of the symbol for Schrödinger's wave amplitude. We usually indicate this by the symbol Ψ. The wave amplitude referring to an individual quantum state of a system of one degree of freedom is indicated by Ψ_n, where n is the quantum number of this state, and then

$$\Psi_n = \psi_n \exp(-2\pi i E_n t/h)$$

where ψ_n indicates the part of Ψ_n depending on the coordinates. The choice of the minus sign in the exponential factor is dictated by the fact that we often use the transformation

[2] Evans and Burr, "A New Dietary Deficiency with Highly Purified Diets," *Proc. Soc. Exp. Biol. and Med.*, Vol. 24, 740 (1927); Vol. 25, 41 and 390 (1927–1928).