While it is probably never fatal by its nature, through frequent relapses and debilitating effects it may render a certain proportion of men permanently unfit for military service, and the approximate average time lost from this disease is six months. Therefore, in spite of the fact that it is not a fatal disease, from the military point of view it has been a serious one.

The problem of protecting our men, if possible, from this added suffering, was one of the first questions faced by the American Expeditionary Forces. Before any intelligent protective measure could be taken there were two points to be established. First, was this disease caused by germs? Second, if it was a germ disease how was it spread?

Attempts were made to use animals to establish these points, but no animals susceptible to this disease could be found. Therefore, as was the case of Walter Reed and his work on yellow fever, it was necessary to resort to volunteers from our army, who would be willing to sacrifice themselves that the many might be saved.

The first question studied was whether this was a germ disease. No germs could be seen with the microscope, but the Medical Department knew that there are numerous germs which can not be seen by even the most powerful magnification. Therefore this point had to be established by taking blood from men with the fever and injecting it into healthy men. Out of 34 such individuals inoculated with blood or some constituent thereof, taken from 7 cases of trench fever, 23 volunteers developed the disease. Out of 16 healthy men inoculated with whole blood from a trench-fever case 15 developed the disease. These experiments prove that trench fever is a germ disease and that the germs live in the blood of men so infected.

The next question was "How is this disease spread?" Naturally the body louse was to be considered first. Large numbers of these were collected from patients with trench fever and also some of the same kind were brought from England, which had been collected from healthy men. The lice from trench-fever cases were allowed to bite 22 men. Twelve of these later developed the disease, while four men bitten by lice from healthy men remained free from the disease. Eight other volunteers living under exactly the same conditions, in the same wards, but kept free from lice, did not develop trench fever. After blood inoculation the disease developed in from 5 to 20 days. After being bitten by infected lice the fever required from 15 to 35 days to develop.

With these facts in hand, namely, that trench fever is a germ disease and that it is carried by lice, it is now possible to take up the question of controlling, in an intelligent manner, the disease. As long as the protection of the men from lice was only a matter of comfort and of no military importance, their extermination did not warrant extraordinary measures, but now that it is known that it is not simply a matter of discomfort, but that the "cootie" (trench vermin) is incidentally one of the largest causes of disability, it is deemed worthy of extraordinary efforts to control these pests. It is a repetition of the question of mosquito control, yellow fever having been eliminated on the Panama Canal by these means.

It is no mean thing that these volunteers did in France. To face illness of weeks, with extreme suffering, requires peculiar valor. The average loss of weight for these men was from 20 to 25 pounds. Incidentally the hospital in which the experiments were carried out was shelled by the Germans in the early part of their March drive. It is believed by the Army Medical Corps that the sacrifice of this group of 66 men will in time lead to the protection of thousands of men from the ravages of trench fever.

SCIENTIFIC NOTES AND NEWS

AT the commencement exercises of Yale University the degree of doctor of science was conferred on Edward Sylvester Morse, director of the Peabody Museum, and on Dr. Henry Drysdale Dakin, the physiological chemist.

THE honorary degree of A.M. has been conferred by Harvard University on Outram Bangs, curator of mammals, Museum of Com-

parative Zoology at Harvard, and on Hennen Jennings, consulting engineer.

Major Ralph D. Mershon, formerly assistant professor of Ohio State University and now of the Naval Construction Board, has received the degree of D.Sc. from Tufts College.

Williams College has conferred the degree of D.Sc. on Dr. Raymond Dodge, professor of psychology in Wesleyan University.

Bowdoin College has conferred the degree of doctor of science on Charles Clifford Hutchins, professor of physics at Bowdoin; on Donald B. Macmillan, the explorer, and on Colonel Winford H. Smith, the surgeon.

The Willard Gibbs Medal for 1918 was conferred on William M. Burton, Ph.D., in recognition of his distinguished work in petroleum chemistry, at the meeting of the Chicago Section of the American Chemical Society on May 17, 1918. Introductory remarks by L. M. Tolman, chairman of the section, were followed by the presentation of the medal by Dr. Ira Remsen. A reception and dinner preceded the meeting at which informal addresses were made by Lucius Peter, president of the Chicago Association of Commerce; Thomas F. Holgate, president of Northwestern University; George N. Carman, president of Lewis Institute; W. E. Stone, president of Purdue University, and Julius Stieglitz, director of the department of chemistry, University of Chicago.

Dr. Allen Rogers has been appointed a major in the chemical service section of the National Army. He will be in charge of the Industrial Relations Department.

Dr. E. B. Forbes, head of the department of nutrition of the Ohio Experiment Station, has been commissioned a major in the Food Division, Sanitary Corps.

Dr. A. E. Kennelly, acting head of the department of electrical engineering at the Massachusetts Institute of Technology in place of Professor D. C. Jackson, who went into government service a month ago, has been called to Washington for special work with the Signal Corps. He will be away from the institute during the summer months, but expects to return in the fall.

The Pereira medal of the Pharmaceutical Society of Great Britain has been awarded to Miss H. C. M. Winch.

Dr. Norman Walker has been appointed inspector of anatomy for Scotland in the room of the late Sir James A. Russell.

G. Montague Butler, E.M. (Colorado School of Mines), has been appointed director of the Arizona State Bureau of Mines to fill the vacancy created by the resignation of C. F. Willis. He will continue to serve as dean of the College of Mines and Engineering, which position he has held for three years. The new director of the bureau intends to lay greater emphasis upon geological investigations, and will collect the data required for the preparation of a reconnaissance geological map of Arizona.

Professor Arthur Harmount Graves, formerly of Yale University, has been appointed by the Office of Forest Pathology, Bureau of Plant Industry, for work during the summer months on problems relating to disease resistance in the chestnut tree.

Professor Frank T. McFarland, of the department of botany of the University of Kentucky, has charge for the summer of the white pine blister rust eradication in the states of Kentucky, Tennessee and Missouri, with headquarters at Lexington, Ky.

Dr. S. K. Loy has resigned his position as professor of chemistry at the University of Wyoming to become chief chemist for the Midwest Refining Company. His office will be at Casper, Wyoming.

Mr. W. J. McGee, of the Bureau of Chemistry, U. S. Department of Agriculture, and formerly stationed at Savannah, Ga., has been transferred to San Juan, Porto Rico, where he is engaged in the inspection of food and drugs.

The Croonian Lecture before the Royal Society was delivered by Major W. B. Cannon, professor of physiology, Harvard Medical School, on June 20, the subject being "The physiological basis of thirst."

JOHN HARPER LONG, professor of chemistry at the Northwestern University Medical School for thirty-seven years died at his home in Evanston, Ill., on June 14, aged sixty-two years. Dr. Long, distinguished for his work in physiological chemistry, was vice-president of the American Assocation for the Advancement of Science in 1901 and president of the American Chemical Society in 1903.

FRANK N. MEYER, of the Department of Agriculture, has died in China. Mr. Meyer had travelled as an agricultural explorer through China, Siberia and Turkestan for nearly ten years and had introduced here many species and varieties of plants. He discovered the home of the chestnut bark disease.

MAJOR EUGENE WILSON CALDWELL, of the Medical Reserve of the army, an X-ray expert who recently perfected a device for stereoscopic fluoroscopy, died last week as the result of an operation to remove a cancerous formation on one of his arms, caused by burns received some months ago in making X-ray experiments.

A CABLE from London to the daily papers states that the American Army, at the suggestion of the French, is adopting the metric system for all war purposes, *e. g.*, for artillery, machine-guns, maps, etc. The convenience of such an arrangement is obvious as all "parts" become thereby interchangeable.

UNIVERSITY AND EDUCATIONAL NEWS

GIFTS to Yale University in the past year and credited as endowment made a total of $1,279,764, the alumni were informed by President Arthur T. Hadley at the commencement luncheon. From time to time gifts have been announced, but the new items included $100,000 as the Earl Williams Fund from Mrs. James Harvey Williams for the benefit of the University Press, and $400,000 from William L. Harkness, '81, as a building fund. The Williams Fund is a memorial to Earl Williams, 1910, 301st Field Artillery, who died in May. For the present the income will be used in war relief. The Harkness building after the war will be placed on Dwight Hall site, and will contain lecture and classrooms.

UNDER a compromise agreement Columbia University will receive half the estate of the late Robert B. Van Cortlandt. The value of the estate is said to be about $1,000,000.

A GIFT of Liberty Bonds and checks totalling $100,000 to Harvard University from 206 members of the class of 1893 is announced.

EIGHTEEN fellowships and thirty-three scholarships have been established for students in chemistry at colleges and universities throughout the country by the du Pont Company. The total value of these awards will be $25,000, the fellowships carrying $750 and the scholarships $350 each for the coming scholastic year. The fellowships are distributed among seventeen colleges and universities and the scholarships go to thirty-one institutions of learning scattered through the country, every section from the Atlantic to the Pacific, and from the Canadian border to Texas being included. The fellowships are for postgraduate work and will be established in the institutions which have the most advanced courses in chemistry. The scholarships go to members of the senior classes in institutions which pay particular attention to chemical instruction. The recipients of these awards, which are to be known as "du Pont fellowships" and "du Pont scholarships," are to be selected by the institutions themselves, the only condition made by the du Pont Company being that they shall go to students who have devoted the major part of their time to chemistry.

THE *Journal* of the American Medical Association states that a donation of $2,000,000 has been promised to the University of Toronto for research work. Professor A. B. Macallum, chairman of the scientific and industrial research council of Canada, urges that research science faculties should at once be established at McGill and Toronto universities.

DR. LAUDER W. JONES, head of the department of chemistry in the University of Cincinnati, has resigned to become head of the department of chemistry in the University of