

the founder of this university, and his wife, have provided such opportunity and incentive here as follows:—

In addition to all previous gifts of the donor, and apart from the permanent funds of the university, full tuition of two hundred dollars each for thirty meritorious students will be paid into the treasury. For eight of these students, thus freed from tuition, Mr. Clark has also established fellowships yielding each holder four hundred dollars per annum, and eight more fellowships yielding each holder two hundred dollars per annum. These, with eight free scholarships as above provided, will be known as the "Jonas G. Clark Scholarships and Fellowships" respectively. Mrs. Clark has established two fellowships yielding four hundred dollars each, and two fellowships yielding two hundred dollars each, per annum. These, with the two remaining scholarships, will be known as the "Mrs. Jonas G. Clark Fellowships and Scholarships" respectively. These six latter are especially provided for the department of psychology, while the twenty-four presented by Mr. Clark are to be distributed among the other four departments at the discretion of the president and faculty.

The founder and his wife unite with the trustees and president in inviting sympathy and practical co-operation in the multiplication of such aids, large or small, temporary or permanent, here at the outset. Both scholarships and fellowships are open only to students in one or more of the five departments announced, and are renewable annually. They are designed to encourage promising young men, graduates of colleges and others, who have developed a preference for particular lines of study in which they desire to attain still further proficiency.

While intended to remove pecuniary hinderances in the way of such students, both scholarships and fellowships are primarily honors, awarded without reference to pecuniary needs. Thus, those desiring to do so may relinquish the emolument, and retain the title of scholar and fellow.

A plain, substantial, and well-appointed central building, 204 by 114 feet, four stories high, and with superior facilities for heating, lighting, and ventilation, has been constructed of brick and granite, and finished throughout in oak. A chemical laboratory, designed after consulting many experts and plans of recent European buildings, and containing about fifty rooms, is nearly completed. The foundations of a still larger department building are laid.

The work of instruction will begin in the five departments above announced, on Wednesday, Oct. 2, 1889.

#### TO PREVENT CONSUMPTION.

DRS. PRUDDEN, BIGGS, AND LOOMIS, pathologists to the Board of Health of the city of New York, having been requested to formulate a brief and comprehensive statement regarding the contagiousness of tuberculosis and the means of protection therefrom, have submitted the following:—

The disease known as tuberculosis, and, when affecting the lungs, as pulmonary tuberculosis (consumption), is very common in the human being, and in certain of the domestic animals, especially cattle. About one-fourth of all deaths occurring in the human being during adult life are caused by it, and nearly one-half of the entire population at some time in life acquires it. The disease is the same in nature in animals and in man, and has the same cause.

It has been proved beyond a doubt that a living germ, called the "tubercle bacillus," is the cause, and the only cause, of tuberculosis. It does not seem necessary to state the facts upon which this assertion is based, for the observation first made by Robert Koch in 1882 has been confirmed so often and so completely that it now constitutes one of the most absolutely demonstrated facts in medicine.

Tuberculosis may affect any organ of the body, but most frequently first involves the lungs. When the living germs find their way into the body, they multiply there, if favorable conditions for their growth exist, and produce small new growths or nodules (tubercles), which tend to soften. The discharges from these softened tubercles, containing the living germs, are thrown off from the body. In pulmonary tuberculosis these discharges constitute, in part, the expectoration. The germs thus thrown off

do not grow outside the living human or animal body, except under artificial conditions, although they may retain their vitality and virulence for long periods of time, even when thoroughly dried. As tuberculosis can only result from the action of these germs, it follows, from what has just been said, that, when the disease is acquired, it must result from receiving into the body the living germs that have come from some other human being or animal affected with the disease.

It has been abundantly established that the disease may be transmitted by meat or milk from the tubercular animal. The milk-glands in milch cows often become affected with the disease when their lungs are involved, and the milk from such animals may contain the living germs, and is capable of producing the disease. Among stall-fed dairy cows, 20 per cent or 30 per cent are sometimes found to be affected with the disease. Tubercular animals are also frequently killed for food, their flesh sometimes containing the germs, and, if not thoroughly cooked, it is capable of transmitting the disease. Boiling the milk, or thoroughly cooking the meat, destroys the germs. Although the meat and milk from tubercular animals constitute actual and important sources of danger, the disease is acquired, as a rule, through its communication from man to man.

Tuberculosis is commonly produced in the lungs (which are the organs most frequently affected) by breathing air in which the living germs are suspended as dust. The material which is coughed up, sometimes in large quantities, by persons suffering from consumption, contains these germs, often in enormous numbers. This material, when expectorated, frequently lodges in places where it afterward dries, as on the streets, floors, carpets, clothing, handkerchiefs, etc. After drying, in one way or another, it is very apt to become pulverized, and float in the air as dust.

It has been shown experimentally that dust collected from the most varied points in hospital wards, asylums, prisons, private houses, etc., where consumptive patients are present, is capable of producing tuberculosis in animals when used for their inoculation. Such dust may retain for weeks its power of producing the disease. On the other hand, dust collected from rooms in institutions or houses that have not been occupied by tubercular patients does not produce the disease when used for the inoculation of animals.

These observations show, that, where there are cases of pulmonary tuberculosis, under ordinary conditions the dust surrounding them often contains the "tubercle bacilli," and persons inhaling the air in which this dust is suspended may be taking in the living germs. It should, however, be distinctly understood that the breath of tubercular patients, and the moist sputum, received in proper cups, are not elements of danger, but only the dried and pulverized sputum. The breath and moist sputum are free from danger, because the germs are not dislodged from moist surfaces by currents of air. If all discharges were destroyed at the time of exit from the body, the greatest danger of communication from man to man would be removed.

It then follows, from what has been said, that tuberculosis is a distinctly preventable disease. It is a well-known fact that some persons, and especially the members of certain families, are particularly liable to tuberculosis; and this liability can be transmitted from parents to children. So marked and so frequent is this liability, and so frequent is the development of the disease in particular families, that the affection has long been considered hereditary. We now know that tuberculosis can only be caused by the entrance of the germ into the body, and that this transmitted liability simply renders the individual a more easy prey to the living germs when once they have gained entrance.

The frequent occurrence of several cases of pulmonary tuberculosis in a family is, then, to be explained, not on the supposition that the disease itself has been inherited, but that it has been produced after birth by transmission directly from some affected individual. Where the parents are affected with tuberculosis, the children, from the earliest moments of life, are exposed to the disease under the most favorable conditions for its transmission; for not only is the dust of the house likely to contain the bacilli, but the relationship also between parents and children, especially between the mother and child, is of that close and intimate nature especially favorable for the transmission by direct contact.

If, then, tuberculosis is not inherited, the question of prevention resolves itself principally into the avoidance of tubercular meat and milk and the destruction of the discharges, especially the sputum of tubercular individuals. As to the first means of communication, those measures of prevention alone answer the requirements which embrace the governmental inspection of dairy cows and of animals slaughtered for food, and the rigid exclusion and destruction of all those found to be tubercular.

For the removal of the second means of communication, i.e., the sputum of tubercular individuals, the problem is simple when the patients are confined to their rooms or houses. Then, wooden or pasteboard cups, with covers, should always be at hand for the reception of the sputum. These cups are supported in simple racks, and at least once daily, or more frequently if necessary, should be removed from the racks and thrown with their contents into the fire. A cheap and efficient cup answering this purpose is now on the market, and is supplied by the druggists.

The disposition of the expectoration of persons who are not confined to their rooms or homes is a far more difficult problem. The expectoration certainly should not be discharged on the street, and the only practicable means for its collection seems to be in handkerchiefs, which, when soiled, should at the earliest possible moment be soaked in a solution of five per cent carbolic acid, and then boiled and washed. Handkerchiefs thus soiled are exceedingly dangerous factors in distributing tubercle bacilli; for, when the sputum becomes dry, it is easily separated in flakes from the cloth, and then soon becomes pulverized and suspended as dust.

It becomes evident from what has been said that the means which will most certainly prevent the spread of this disease from one individual to another are those of scrupulous cleanliness regarding the sputum. These means lie largely within the power of the affected individual. It is furthermore to be remembered that consumption is not always, as was formerly supposed, a fatal disease, but that it is in very many cases a distinctly curable affection.

An individual who is well on the road to recovery may, if he does not with the greatest care destroy his sputum, diminish greatly his chances of recovery by self-inoculation.

While the greatest danger of the spread of this disease from the sick to the well is in private houses and in hospitals, yet, if this danger is thoroughly appreciated, it is, for the most part, quite under control through the immediate destruction of the sputum and the enforcement of habits of cleanliness. But in places of public assembly, such as churches and theatres, particularly the latter, conditions are different, and the safety would seem to depend largely upon a dilution and partial removal of the floating and possibly dangerous dust by means of adequate ventilation.

Rooms in private houses and hospital wards that are occupied by phthisical patients should from time to time be thoroughly cleaned and disinfected, and this should always be done after they are vacated before they are again occupied by other individuals. Steamship companies should be obliged to furnish separate apartments for consumptive persons, so that no person in the exigencies of travel need be forced to share his room with one who might be a source of active danger to him.

Drs. Prudden, Biggs, and Loomis desire especially to emphasize the following facts: (1) that tuberculosis is a distinctly preventable disease; (2) that it is not directly inherited; and (3) that it is acquired by the direct transmission of the tubercle bacilli from the sick to the healthy, usually by means of the dried and pulverized sputum floating as dust in the air.

The measures, then, which are suggested for the prevention of the spread of tuberculosis are (1) the security of the public against tubercular meat and milk, attained by a system of rigid official inspection of cattle; (2) the dissemination among the people of the knowledge that every tubercular person may be a source of actual danger to his associates if the discharges from the lungs are not immediately destroyed or rendered harmless; and (3) the careful disinfection of rooms and hospital wards that are occupied or have been occupied by phthisical patients.

THE annual meeting of the American Climatological Society will be held in Boston, June 24 and 25; Dr. V. L. Bowditch of Boston, president.

#### SIXTH ANNUAL REPORT OF THE SUPERINTENDENT OF HEALTH OF PROVIDENCE.

IN this report, Dr. Charles V. Chapin, the superintendent of health, records many important facts and observations. The number of deaths reported was 2,608. The population of the city being 121,500, this gives a death-rate of 21.48 per thousand. From consumption there were 359 deaths, an increase of 46 over 1887: 10.39 per cent of all deaths were from diarrhoeal diseases. Malarial fever first appeared in Providence in 1880, when one death was reported from that cause. Since that time 92 deaths have occurred from that cause: 9 in 1885, 11 in 1886, 28 in 1887, and 44 in 1888. The disease is confined almost entirely to certain well-defined districts of the city, which are particularly exposed to those influences which have been conclusively shown to be the chief causes of the production of the malarial poison. But 2 deaths occurred from measles, while there were 28 from whooping-cough. There were no deaths from small-pox: indeed, there has been but one death from that disease in Providence since 1875.

Dr. Chapin, in this report, deals specially with two forms of contagious disease, — scarlet-fever and typhoid-fever, — and it is to these two subjects that we shall mainly devote our attention. In writing of scarlet-fever, he says, "Scarlet-fever is one of those contagious diseases which tend to recur in epidemics at more or less regular intervals. Since 1840 there have been ten epidemic periods, separated by intervals of about five years. As is usual with the disease in this part of the world, these epidemics generally have begun in the autumn, and increased in severity until late in the winter or spring. One of these epidemics, though not a severe one either as regards the number of cases or the mortality, began in August, 1884, attained its maximum in November, and was pretty well over by early spring. In 1887 another epidemic occurred, beginning in August.

"During the epidemic of 1884, some efforts were made by this department, chiefly by regulating school-attendance, to check its spread, but apparently without any very great influence. The rapid onset of the disease in the autumn of 1887 so attracted the attention of the public, that it was deemed feasible to adopt more stringent measures. While it cannot be definitely proved that the marked falling-off in the cases and deaths from this disease which immediately followed the adoption of more stringent measures was due to this, yet it is rendered highly probable from the fact that such a decrease in scarlet-fever at that time of the year is markedly at variance with the usual course of the disease in Providence, and indeed in all cities in this climate. Though there is no theoretical reason why scarlet-fever, being a purely parasitic disease, should not be entirely stamped out, yet we can never hope to accomplish this, so long as the public, and physicians also, are as careless about it as they are at the present day. While in the majority of cases, except among the very poor pretty fair isolation is maintained at first, it is not kept up long enough, and children are often allowed to ride in the horse-cars, go to Sunday-school, or visit a clothing store and try on half a dozen different coats, by the end of the third week, and before they have ceased to peel; and the most discouraging thing about it is, that it is often done with the consent of the attending physician. It must, I am afraid, be the duty of the health department to insist upon the contagious nature of this disease for many years to come, and, while striving not to render its rules inoperative by reason of their being too far in advance of public sentiment, strive, whenever opportunity offers, to make them more and more stringent.

"It is popularly believed that nearly every person will have scarlet-fever sooner or later; and I very frequently see persons who say they had rather let their children catch scarlet-fever while they are young, as it would go so much harder with them when they grow up. But such a belief is totally without foundation. During the past five years there were reported about 2,300 cases of scarlet-fever. If we assume that this rate has been continuous for the last fifteen years, then there have been only a little over 7,000 cases of scarlet-fever during that time. If we approach the problem in another way, and take the deaths during the last fifteen years, and assume the mortality to have been ten per cent, which is certainly low, the number of cases during this time is 13,970, or, in