

suddenly emerging from a dark room into the sunlight. The danger is a very real one where the distress is chronic, and not exceptional. I need offer no arguments to show that in this emergency it did not exist; the mere statement of the occupations of the men, and of the wages they ordinarily receive, is sufficient proof.

When we consider that among the many trades represented there were bakers, bricklayers, bookkeepers, clerks, grocers, diamond-setters, musicians, photographers, weavers—in fact, men of every trade; and when we consider that the average wages ordinarily received by these men were fifteen dollars a week, it is hard for us to believe that such men would sweep the streets for a dollar a day, when they could get work at their regular trade for two and a half dollars. Indeed, many of the men were in the habit of looking for employment each morning before they went to work.

Looking back at it all now, and trying to find some one thing of more value than all the rest, I am impressed with the different minor results that have been accomplished. Thousands have been saved from starvation; families have been kept together, and homes prevented from being destroyed; the self-respect of the working-man has been preserved; and the cause of labor saved from taking a step backward, as it might have done had men been forced through hunger to ally themselves with anarchistic agitators. The rich have a better opinion of the poor, and the poor have a better opinion of the rich.

As we read of the case of the man who had been out of work for months, and who, in addition to supporting his family on the six dollars he received each week, brought to his minister one tenth of this scanty wage, to be used to help those around him who were suffering, we begin to realize that the true philanthropist is he who gives of himself, and not of his superfluities.

When the poor see thousands of dollars spent for their relief, and see men and women working far into the night, giving everything they have for them, they begin to have a better opinion of the rich. Religious and class prejudices have been broken down. Catholic and Jew, Presbyterian and agnostic, have worked together, side by side, shoulder to shoulder, in the cause of humanity. We have at last awakened to a sense of our responsibilities, and are beginning to realize that this life of ours is full of very real and vital problems.

Every year over eight millions of dollars are expended in New York for charity. What a comment upon our civilization! Are we never to realize the danger to our city in having this festering sore upon its life?

After all, are we really roused to the city's true conditions? Shall we ever be able to understand that there is more in life than the mere business of money-making?

"Hard times" and financial panic will pass away, but the problems of the city will remain. We shall still have our "East Side" and our "Tenth Ward," our tenement-houses and our sweating-systems. Shall it be so always?

Lawrence Veiller.

The Public Milk-Supply.

DURING the last few years there has been a growing suspicion that the milk-supply of our cities is a prolific means for the distribution of disease. Our newspapers sometimes tell us with startling headlines that there are more bacteria in city milk than in city sewage. Our

physicians are advocating the sterilization of milk for drinking purposes, and our bacteriologists are informing us on every occasion how milk may serve as a means of distributing disease. It is desirable that with all this cry we should know just what the danger is and the best methods of meeting it.

It is undoubtedly true that city milk contains great numbers of bacteria—numbers so great that they have no meaning to us. Some of the milk of our cities is forty-eight hours old before it is delivered, and even though it has been kept cold, bacteria have had a chance to grow in it until they are very numerous. But the question to concern us is not their number, but their effect upon the milk consumer. Bacteria have to most minds a bad reputation, but one that is not deserved. It is true that a few species are the source of much mischief, but it is equally true that the vast majority of them are perfectly harmless, and indeed beneficial agents in nature. We do not have any fear of swallowing a quantity of yeast, and in most cases it is no more harmful to swallow bacteria. The simple fact that bacteria are present in milk in great numbers does not in itself render milk dangerous any more than the fact that yeast is present in beer renders that beverage a source of suspicion. Mankind has for ages been drinking milk with these germs in it, and has in general suffered no injury from them. The question of interest, then, is not the number of bacteria in milk, but the conditions under which they may do harm.

It is unprofitable to speak of any general injury done by the bacteria of milk unless we can deal with definite facts. The only diseases which we have good reason for believing are distributed by milk are typhoid fever, scarlet fever, diphtheria, cholera, tuberculosis, and certain forms of intestinal troubles, such as summer diarrhoea. That typhoid and scarlet fever, diphtheria and cholera, may be distributed by milk has been demonstrated beyond question.

That tuberculosis may also be thus distributed is also certain, but at present we do not know whether the danger is great or slight. It is certain that a considerable percentage of the cows supplying the milk of the city are tuberculous, and equally so that the milk of tuberculous cows may contain the tuberculosis bacteria. Beyond a doubt the city milk is more or less infected with the tuberculosis germ. But this germ cannot multiply in milk although it may remain alive for some time. Hence when the tuberculous milk is mixed in distribution with other milk, the germs are diluted, and thus the chance of any lot of milk containing the tuberculous germ is much diminished by the time it reaches the consumer. Further, it has been found by experiment that it requires a number of germs to enter the body at once in order that they may serve as the source of the disease, and hence the chance of any person becoming affected through milk is perhaps not very great.

So far as concerns tuberculosis, fresh milk is even more likely to be infectious than stale milk. The case is different with cholera infantum and other intestinal troubles. It seems that these diseases are produced by certain bacteria, perhaps several different species, which multiply in the milk itself, and there produce poisons which do injury by direct poisoning when taken into the stomach. Here it is the multiplication of the bacteria in the milk itself which renders it injurious, and fresh milk would be harmless. In a word, then, fresh

milk may be a source of typhoid fever, scarlet fever, diphtheria, cholera, or tuberculosis, while milk that is not fresh may contain poisons which give rise to cholera infantum or summer diarrhoea.

The question of the best method of dealing with milk so as to avoid these difficulties is one of growing interest. The growth of bacteria may be checked by ice, but this will not destroy the disease germs, and will not, therefore, prevent milk from being a means of spreading disease. Sterilization has been much resorted to in recent years. This usually consists in subjecting it to a boiling temperature by means of steam. Such treatment destroys all pathogenic germs and most others, and physicians have found it a great help in dealing with intestinal diseases. Its popularity has grown rapidly, and many forms of sterilizing apparatus have been placed on our markets. In Europe it is even more popular than in this country. But while the sterilization of milk is of value in the treatment of disease, it is to-day becoming unpopular with physicians as a method of providing a constant article of diet. The high heat injures the nature of the milk. It modifies the fats, the sugars, the casein, and the albumen in such a way as to render them less easily digested, and experiment has shown that sterilized milk is less easily assimilated than raw milk. Children fed upon it alone do not thrive. Physicians are now beginning to recommend in the place of sterilization another method of treatment known as pasteurization, as producing better results. This new treatment is simply to heat the milk to about 160° F. for a few moments and then to cool rapidly. This temperature destroys all the disease germs, and so far reduces the number of other germs as virtually to remove the danger of cholera infantum or other intestinal troubles. The milk must be used within twenty-four hours after such treatment, before the few bacteria which remain have a chance to become very numerous.

Pasteurized milk retains the taste of fresh milk, and is as easily digested and assimilated. Physicians find the treatment is equally valuable with sterilization in case of sickness, and is free from all secondary evil effects. The trouble with the method has been the difficulty of its application, for few people in our kitchens are familiar enough with the thermometer to use it. The operation may be practically performed in the following simple manner: The milk is placed in bottles, thoroughly clean, which are corked with cotton. The bottles are then placed in a basin in several inches of water, and the whole placed on a slow fire. The water in the basin is allowed to boil for ten minutes, the milk not boiling, but simmering slightly. The milk is then cooled, and used for food within twenty-four hours. These directions are unfortunately rather indefinite, and the result will vary with the size of the bottle and the amount of fire. Recently there has been put on our markets a form of apparatus which accomplishes the processes surely and simply. With some simple form of pasteurizing apparatus city milk may at all times be rendered free from disease germs, and if the milk is tolerably fresh, it will be perfectly healthful even for infants. If, however, the milk is stale, and the poisonous products of bacteria growth have accumulated, neither pasteurization nor sterilization will render it harmless.

As concerns food for adults, it is ordinarily not necessary to take any precautions unless in the case

of persons of slight vitality who would most readily yield to disease. But in seasons when any of the above mentioned diseases are prevalent, in periods of cholera, typhoid, scarlet fever, or diphtheria epidemics, it would be wise to pasteurize all milk that is used directly for drinking purposes.

H. W. Conn.

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Stonewall Jackson's Eccentricity.

ALL persons who saw much of General Stonewall Jackson remarked his taciturnity and his self-abstraction. I once rode with him during an entire day, and I now recall the trip as one of the most lonesome I ever made. It was in the summer of 1862, shortly after McClellan had "changed his base" to the James River, and was securely resting under the shelter of his gun-boats at Harrison's Landing. Jackson's command, recently from the mountains, had been withdrawn to a more healthful encampment a few miles north of Richmond, but General Lee, with the bulk of the army, was still fronting the enemy. Early one morning, while doing duty at Jackson's headquarters, I was told to get my horse and accompany the general on a ride. As we quietly jogged along the road, I endeavored to draw him into conversation about the incidents connected with the terrible Seven Days' battle we had just fought, but failing to elicit anything more than short negative or affirmative responses, I changed the subject to general topics—the weather, etc. Still meeting with no better success, I relapsed into complete silence, determined not again to talk unless invited to do so. For hours we continued down the road at a fox-trot, or rapid walk, without a word being spoken. The prolonged silence was growing oppressive to me, when I noticed him muttering, as if talking to some one he had in mind—probably arguing a question of strategy. As the debated point grew in interest, the muttering became louder and more frequent. He was evidently in hot dispute with an imaginary person upon a subject about which they differed widely. Dummy had apparently laid down some proposition which to the general's mode of reasoning was clearly untenable. He therefore replied, "No, sir! No, sir!" in a loud voice, and with a gesture of impatient dissent. The physical exertion seemed to arouse him from his reverie. Dummy vanished instantaneously; and turning to me with an odd expression of countenance, Jackson remarked, "That is a handsome cottage over there," pointing to a farm-house we were then passing. Immediately afterward, putting spurs to his horse, he went clattering down the road at a 2:40 gait, leaving me to bring up the rear. Not another word was spoken until we reached General Lee's headquarters, whither we were bound.

W. M. Taliaferro.

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"Voting by Machinery."

WE have received a letter from Mr. J. H. Myers, inventor of the voting-machine which bears his name, in which he commends our recent editorial article describing the operation of his invention as the "most interesting and faithful of the many" he has read, but takes exception to some statements in it as misleading. He regards as erroneous our remark that the Myers