

back. They succeeded in having this changed, and in having the hot air forced out and fresh air forced in and brought to the rooms. They also had physicians appointed for the various schools to examine the throats of the children when any epidemic threatened, and suspicious cases were referred to their respective family physicians. If there was any evidence of defective sight they were referred to the oculist, and if the ears were defective they were also referred to a specialist. The teachers in these various schools have always been very glad to meet with the examiners and discuss these different questions and determine which children should have special care. Dr. Ryan thought that if physicians would improve their opportunities and bring this matter before the various school boards it would be productive of good results.

DR. SAMUEL W. KELLEY, Cleveland, Ohio, speaking of the relation of the physician to defective children, and what is to be done in the matter, narrated what has been done in Cleveland. Complaint was brought by a citizen that his child was not being fairly treated by the teachers in the public school. The physicians who were in touch with the conditions thought something should be done; a committee of physicians was appointed by school authorities to look into the matter as to whether there were enough defective children in the schools to justify appropriating money from school funds to take care of them separately from the brighter ones. This committee proved to the board that it was necessary. The plan was to get at some practical way of forming special classes in each school building rather than to have one large building apart from all the other schools. The children were selected by examination, only taking note of obviously defective cases. These special classes must be presided over by teachers specially trained for this work, six or eight pupils being enough for one teacher. This plan has been going on now for nearly three years, with very great satisfaction. The teachers who have the normal pupils are better satisfied, and so also are the parents of the defective children. It is necessary, however, to call these "special classes" on account of the prejudice of the people toward calling them "idiot classes." The objection which was at first raised has subsided, and the people do not dread sending their children to the "special classes;" they find it much better. It has relieved the state institution, which is overcrowded (as is also the case in many other states), and enables them to do better work with those who can not be benefited by any school near home; and in this way the plan will work beneficially to all concerned. The people at the same time are getting educated to classify children as to mental capacity, to individualize, to recognize backward and defective children—not to consider them as equally bright or else idiots.

DR. H. W. ORR, Lincoln, Neb., agreed that it is quite important to designate these children as backward children rather than to call them feeble-minded. Recently he has been impressed with the fact that in dealing with these children it is necessary to individualize. They can not be dealt with in classes or groups, but must be trained and educated as individuals. Physicians, he said, should attempt also to make clear to teachers the conditions that determine the necessity for dealing with a child in this way. If teachers understand these cases they can always be persuaded to carry the matter to the parents and so solve these difficult problems most intelligently. Until the education of children, especially the backward and defective ones, is individualized to a greater extent than at present, one can not hope to accomplish much along this line.

DR. FRANK S. CHURCHILL, Chicago, stated that there is much that is defective in the present system of education, but on the whole, it seems to him that the schools are better than they were twenty years ago. The improvement is in two directions, paying greater attention to the physical development of the child and making more of an attempt to individualize in their training. In regard to the physical side, it is not given as much attention in some public schools as it should have, but in some of the larger private schools the method is carried to a very high degree of perfection. An illustration cited by Dr. Churchill was the Francis Parker school of Chicago. This is

a private school, and, perhaps, not germane, although it is merely a question of time, he said, when the methods used there will be carried out in the public schools. In this school every single child is given two complete examinations yearly, elaborate physical measurements being taken both at the beginning and end of the school year. A full report is sent to the parent, and if the parents see fit, they consult their attending physician. If there is any special defect in a child, it is given special gymnastics to correct this. The teacher in physical training may go into the Latin class and say, "This boy, Jones, is defective in such and such a way; he must give up a certain amount of time in Latin and come to the gymnasium for corrective work." With regard to individualizing, the same care obtains there. The classes are subdivided into groups; in each group there may be two, three, four or five children, and the teacher has an opportunity to study each child. Dr. Churchill was much surprised at the accurate knowledge that not only the teachers but the principal of the school have shown. The principal showed the most remarkable knowledge of a certain child, though she had never taught her. Thus in the matter of individual measurements in the best private schools, some excellent ideas are being carried out. It is merely a question of time when the public at large will find it is possible to do this, and they will insist that more money be spent on public schools. Each teacher should have fewer children and pay more attention to these individually. Dr. Churchill agreed with Dr. Van Derslice that entertainment out of school is a pernicious practice. The children, however, are bound to have these entertainments in some way or other, and the thing to do, he said, is to have them in school.

DR. W. C. HOLLOPETER, Philadelphia, thought that physicians should be put on record as favoring some medical regulation of the school life of the child, and to inject into the public some ideas how to regulate it. The schools are not necessarily reformatories. The teachers have to accept scholars and the parents have as much, probably more, to do with them than the teacher. In other words, the environment has to be eliminated. Dr. Hollopeter urged giving less attention to the precocious child so as to give more chance for the physical unfolding rather than the mental development of such a child. He thought that by going back to the old curriculum of twenty years ago, and then adding additional time for physical development; the result would be a more normal child. A good bit of this viciousness, this irritability, etc., he said, is attributable, of course, to the mother.

## THE GREATEST MENACE TO WHOLE MILK IN CITIES' SUPPLY.\*

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The terms employed in a definition of milk vary with the view point of the scientist and the phase of the subject emphasized. For the present purpose the following, gleaned from various sources, will answer every need: Milk is a normal animal secretion forming a perfect emulsion and containing, besides fat globules in suspension, albumin, sugar and salts in solution, caseinogen in partial solution and certain ferments. Except for the one which produces lactic-acid fermentation, comparatively little is known of the ferments of milk.

The importance of these ferments is very great. Two classes seem apparent in recently drawn milk: Those expending themselves directly on the milk, and those relating more especially to the intrinsic food value of the milk. The latter speak of the kinship between milk and normal coursing blood, of which it is the most direct of all products.

These ferments are of delicate organization and, like

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all bodies of the class, are easily influenced by external conditions. They give to milk freshness, sweetness, virility—essential qualities quickly altered by unfavorable surroundings. Without these ferments more or less intact, milk is not whole milk, however pure it may be or however skilfully it may have been pasteurized.

In the past the cry was for pure milk; at a later day it was for sterile milk, but to-day the demand is for *bona fide* milk, for whole milk. So ancient an observer as Peter, the Apostle, referred to the desire of babes for the "sincere milk." That desire they never once lost from the remotest ages to the present time, although in the wandering of science that fact was lost sight of. Sincere milk is whole milk, milk whose integrity and food value remain untouched by age, science or knavery.

"Sincere" is an apt term to apply to milk. It is derived from two Latin words, *sine* and *sera*, and means without wax, the term having been employed originally in the crusade against adulterations in honey. Whole milk is sincere milk and only sincere milk is whole. Whole milk is as natural and definite a product as sirloin steak. Any deviation from its natural quality is irregular and inexcusable. Behind every gill of such milk offered for sale there is at least one culpable person.

In the recent crusade against impure food a term had to be coined to distinguish regularly distilled and ripened liquors from those produced in the laboratory by a process of blending. The term adopted is "straight"—all brands not properly coming under this head being by implication crooked. Whole milk is straight milk—milk about which there is no crookedness at all. Milk which is not whole is crooked milk—milk trifled with by ignorance, carelessness or dishonorable design. Which ever be the cause there is somewhere a real offender, somebody chargeable for the crookedness. That no serious charges can be made against a specific batch of crooked milk is no legitimate excuse for overlooking the offense or dealing leniently with the offender.

In proper legislation and eternal vigilance alone is safety found. What has been gained by our cities comes from the operation of these factors. In no other fields are results more encouraging. Again and again have students of the subject marveled, not that the quality of the milk supplied is not better, but that it is so good as it is.

In any large city the reception and distribution of the milk needed is a gigantic scientific proposition. For example, some of the New York City milk comes from dairies 400 miles away. In Philadelphia the work for just one day entails the handling of over 300,000 quarts of milk.

The popular demand for more facilities and greater dispatch in railway transportation has already gone a long way in solving this phase of the milk problem. Transportation may be said to be capable of taking care of itself. Still the question arises, are all the forces at present in operation equal to the most modern of emergencies? Is the present demand one for more legislation, or rather for education and dogged agitation? We hold emphatically to the latter.

Menaces to whole milk that were once so vital are now largely matters of history. This was brought about chiefly by improved transportation, the increased employment of ice, introduction of simple milk tests and education on the uses, abuses and excuses of milk preservatives. The ill-famed dairyman's pump may be said to be out of the race for highest notoriety. Chalk per-

haps never had anything but an imaginary existence as a milk adulterant.

But there are menaces to the milk supplies of cities which are not visionary, but real and vital. These may be classed as commercial and laid to the door of the middleman, the jobber, the milk broker, the man of huge commercial schemes. His kinsman in the rural district is the operator of the large creamery. But whether here or there, his aim and purpose is one and the same, namely, to buy up all the milk he can find and sell it anywhere by whatever methods will net the largest returns. As for scruples—there may be none to figure on.

The stringent laws against the employment of milk preservatives have taken from the hands of this unscrupulous fellow a cheap and most effective expedient for leisurely marketing his wares irrespective of their quality. As a result he has fallen back on the more expensive process of pasteurization. This is now unfortunately too much in the limelight of popular opinion. Whatever may be said justly in favor of pasteurization for immediate use as practiced in families and special plants, nothing can be said to the credit of milk pasteurized on a commercial scale to facilitate distribution and sale. The process does not remove the germs it destroys; indeed, does not destroy those of greatest danger, and only facilitates subsequent infection and contamination should the opportunity arise.

Another menace which it is to be feared is gaining in magnitude and which must be met in the open sooner or later, is the shipment to the city of "creamery skim" side by side with whole milk. Until somewhat recently this business could not be conducted with profit. The establishment of large creameries led to large quantities of skimmed milk, but it required the perfecting of machinery for pasteurizing on a large scale and the present general confidence in pasteurization to open a city market for this waste product of so many creameries.

To what extent this product is shipped into Philadelphia can not now be ascertained, since no separate record is made of skim milk received. To my personal knowledge one of these creameries ships the entire product, amounting to over 2,000 quarts a day, and always has orders that can not be filled.

The plan pursued is this: After the milk has passed through the separator and been deprived of all its cream the "skim" is passed through the pasteurizer. Here it is heated to 155 degrees F., as it flows onward to be immediately cooled, and put into 40-quart shipping cans and iced up ready to be sent to the city on the following morning. Ice is not used on the milk train.

It will thus be seen that milk which was collected last night was creamed and the "skim" pasteurized this morning ready for shipment to-morrow morning. Sunday shipments are made as on week days.

Here, then, is perhaps the newest, if not the greatest, menace in the cities' milk supply. From the viewpoint of the middleman this "skim" may be defined as a milk of sufficient "body," uniformity and quantity to permit of milk blending. Combination with a whole milk of extra rich quality, in proper proportions, makes a fair to good medium which meets every legal requirement and is not easily detected.

The purpose of this paper is not one of general condemnation of milk and milkmen on positive knowledge of but one creamery that is now shipping "skim" into the city, but simply (1) to plead for whole milk for the infants of our city, (2) to lament that so fair a house-

hold process as pasteurization should so deter the crusade for whole milk, and (3) to direct due attention to the menace of the prolific creamery swill tank—pasteurized skim.

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## CERTIFIED MILK AND THE GENERAL MILK SUPPLY OF LOUISVILLE.\*

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Milk is the most universally used commodity in every community, and the problems which confront the sanitarian in providing a city with a clean milk supply are many, varied and complex. The enormous mortality among infants during their first year of life is sufficient evidence of the importance of this subject. Harrington<sup>1</sup> gives some very convincing statistical data, and Straus, of New York, gives the percentage of deaths during the first year as 32 per cent. of the whole number of births. Hence we believe that the consideration of this question by the members of this section will be productive of great good to all.

Louisville has just passed through a wave of milk reform which has resulted in a great improvement in its supply, and we do not believe that the results can be surpassed by any city in the country.

To emphasize the necessity for reform it need only be said that the condition of the dairies in and around Louisville beggared description; they reeked in filth, the barns were most insanitary and foul and the cows diseased and dirty. Yet milk produced under these conditions was being sold and consumed and our infant mortality kept up.

This appalling condition of affairs was due to the universal use of distillery slop, or swill, as a food for these dairy cattle. The large number of distilleries on the outskirts of the city, with a thousand barrels of slop to be disposed of daily, caused a number of dairies to be established in the city limits and on the outskirts. Scrub cows, lean and often sick, were purchased in the fall and fed for from three to five months on distillery slop, the milk being sold as a by-product. The ultimate object of all the dairymen was to fatten the cattle for sale as beef later in the spring. Although there were ordinances on the city statutes specially prohibiting the sale of milk produced from swill-fed cows, the practice went on unabated.

Louisville has been slow to wake up to the needs of its health department and it was not until five years ago that the present efficient health officer, Dr. M. K. Allen, obtained sufficient appropriation for the establishment of a laboratory in connection with the department. Prior to this time, although the law prescribed the chemical standard of milk, there was no method by which the department could have the proper examinations made. Being greatly interested in the milk question, I frequently made the Babcock test for the department during the term of office of the predecessor of the present health officer, and on the strength of these examinations a few prosecutions of offenders against the chemical standards were instituted. Since the estab-

lishment of the present laboratory in connection with the health department, and frequent prosecutions, the addition of water and preservatives to milk is practically discontinued, but the feeding of swill kept on.

I am firmly convinced that good milk can not be produced from cows fed on distillery slop, hulls, screenings, wet or dry brewer's grain or sour ensilage. I have frequently seen milk produced from swill-fed cows cause serious disturbances when fed to infants, while milk from cows properly fed would agree perfectly. Milk from swill-fed cows has an appalling bacterial content and is hyperacid.

Those of you who have never visited a dairy barn, inhabited by cows fed on this slop, can not realize the conditions presented. It takes a barrel of swill a day to give a milk cow the equivalent of a properly balanced food. This very quickly causes an almost continuous diarrhea, the discharges being very acrid and foul. The cows are kept tied in their stalls practically continuously, and when turned out it is in a sea of liquid manure, as a rule. The barn reeks in liquid manure, the cows' flanks and udders are caked with liquid manure, the walls are spattered and the mist arising on a cool day from cows, floors and walls wet with the manure will make it impossible to see clearly at a distance of fifteen feet. The odor is foul beyond description, and in this atmosphere the cows are milked, by dirty milkmen, in dirty, uncovered pails, which are emptied in dirty, uncovered cans standing in the corner of the barn. This milk is not cooled in winter or summer and is either retailed from a wagon, drawn in measures from the large cans, or bottled from the can in front of the customer's residence. These facts are not exaggerated, and such milk was sold to Louisville infants and invalids until April 1, 1907.

The public is largely to blame for this condition of affairs. As Coit says, however, "ignorance and greed in those engaged in the production of milk prevails and its delicate nature is disregarded in the commercial expedients for its sale." A clean and cold milk can not be produced as cheaply as a dirty and contaminated milk, and the public, Harrington says, "prefers milk, plus cow-dung, at 8 cents a quart, to clean milk, not so flavored, at 9 or 10 cents."

The production of milk from swill-fed cows was made possible by the existence of a Dairymen's Protective Association, organized to defend in the courts any action brought against the feeders of swill. That an amusing, though serious, condition existed was developed during the investigation, to be referred to later, in that the attorney for the dairymen's association was also the Louisville attorney for the State Board of Health and the State Pure Food Commission. Prosecutions were instituted, but, as was to be expected, convictions could never be obtained.

In 1891 I realized that a pure milk supply for babies could not be had through the ordinary channels, and in a paper in a symposium on milk before the Louisville Academy of Medicine, the late Dr. J. A. Larrabee, an ex-chairman of this section, also taking part, I suggested the appointment of a milk commission, under whose auspices a certified milk could be produced, but the plan did not meet with favor and was abandoned. About five years ago, still convinced of the practicability of the plan, I advocated it again before the Pathological Society. A commission was appointed by this society, but not receiving the support of the other members, who did not think the plan practical, it was again abandoned.

\* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Boston Med. and Surg. Journal, Feb. 1, 1906.