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GOOD  GOOD  EXCELLENT  EXCELLENT  EXCELLENT

MEDIUM  MEDIUM  MEDIUM

POOR    Poor

HOW A SMALL CITY IMPROVED ITS MILK SUPPLY

SUMMARIZED BY
F. H. HALL

FROM BULLETIN BY
H. A. HARDING

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Popular Edition*

of

Bulletin No. 337

HOW A SMALL CITY IMPROVED ITS MILK SUPPLY.

F. H. HALL.

Pure milk a leading factor in public health. The character of its milk supply plays an important part in the health of any community. When produced amid unclean surroundings or handled carelessly, milk used by babies and children is certain to produce much intestinal trouble and frequent deaths; and when drawn from unhealthy cows or cared for where the contagion of disease can reach it, this "perfect food" may carry poison and destroy where it should nourish. Too often do we read of epidemics of typhoid fever and similar diseases being traced directly to some contaminated milk supply!

The importance of the subject, therefore, explains why this bulletin is published by the Station, although the work recorded was not done by it or under its control, the only connection of the institution with the matter being through one of its staff, who, as a citizen, served as a member of the Board of Health of the city of Geneva. However, the observations and data bring out the effect of two factors in the production of clean milk — publicity and payment based on quality; — and the Station is actively

* This is a brief review of Bulletin No. 327 of this Station, on Publicity and Payment Based on Quality as Factors in Improving a City Milk Supply, by H. A. Harding. Any one interested in the detailed account of this work will be furnished, on application, with a copy of the complete bulletin.
studying other factors; so city work and Station work admirably supplement each other.

**What was done.**

In 1907 the milk supply of Geneva was like that of other small cities in the State of New York,—probably not much better nor much worse than the average. An inspection of the dairies supplying milk to the city, made during the last quarter of that year, when reduced to a mathematical basis by the use of a dairy score card, showed an average rating of 411 points out of a possible 500. None of the dairies scored above 480 points—"excellent"—and only two above 450 points—"good"; 23 others were above 400 points—"medium"; while 15 were below 400, or "poor." In other words, more than 90 per ct. of the milk then sold in the city of Geneva came from dairies in which the surroundings were dirty or filthy.

In three years and a half, without exciting ill-feeling or complaint, without any advance in the price of milk except that justified by the general rise in the cost of feed and labor, and at an expense to the city of only $500 a year, a most striking change has been made in the sanitary quality of the milk. In the first quarter of 1911 the inspection showed no milk sold in Geneva that came from "poor" or "medium" dairies, a condition probably not true of any other small city in the United States. One-eighth of the dairies, furnishing nearly two-fifths of the milk, are in the "excellent" class and the remainder are "good." That means that all of the milk is now produced by reasonably clean cows kept in reasonably clean stables and is drawn by cleanly milkers into sanitary pails and promptly cooled; while more than one-third of this milk comes from tuberculin-tested cows.

**Simple agencies used.**

The means by which this improvement has been secured are quite simple. They include quarterly examinations of the producing dairies by the Sanitary Inspector of the Board of Health, score cards of each dairy furnished to its owner or manager, with suggestions for improving conditions, and re-
ports of the sanitary standing of the dairies published in the city papers. Incidentally, the payment, by dealers, of a higher price for better milk has aided materially in securing the hearty cooperation of producers.

The city ordinance covering the sale of milk provides that no person shall sell milk without a license from the Board of Health and that no one shall sell milk from a dairy which refuses to permit full and frequent inspection.

Acting under this ordinance the Board of Health appointed an inspector who visited the dairies and tried in all ways to secure the cooperation of the dairymen before and while making the inspections. By avoiding officiousness and any issuing of orders, by courteous explanations and by convincing herd-owners that the inspections were to be of mutual benefit, by offering opportunity for correcting errors either in examining or scoring the dairies, and by full and free discussion, both public and private, of the aims and methods of the Board of Health in work along this line, the Board enlisted the dairymen as friends of the movement instead of opponents.

The Inspector was provided with blank forms, devised by Dr. Pearson for use at Cornell University, which made the inspection depend less on dairy knowledge and training than on good judgment. These blanks contain a series of questions relative to herd, stable and surroundings to which answers can generally be given by "Yes," "No," or by figures of dimensions, temperatures, etc.

The five general points covered are the health of the herd and its surroundings, the cleanliness of the cows and things about them, the construction and care of utensils, the health of the employees and manner of milking, and the handling of the milk.

The score cards, of the form devised by Commissioner Pearson, were made out from the Inspector's answers to these questions. This was at first done by the Station member of the Board of Health; but later by the Inspector. The choice of this official was restricted by Civil Service requirements and the only eligible candidate proved to be a man wholly untrained in dairy matters. His inexperience and lack of dairy knowledge were slight handi-
caps in introducing the new system, since his unfamiliarity with the dairy was soon evident to the herd-owners he visited and made them somewhat distrustful of inspection; but he soon became an efficient man, especially after a "short-course" in dairying at Ithaca. It would have been much better had a dairy school or agricultural college graduate, with practical dairy experience, been available for the place at first, mainly because of the confidence dairymen would have been able to feel in him. Such men should be sought for dairy inspectors wherever they are available.

As soon as the cards were made out, a copy of the one for each dairy was sent to the owner or manager, with check marks calling attention to easily remedied defects in herd, stable or handling; and each dealer was officially informed of the standing of the dairies whose milk he handled.

Further publicity than this was omitted for a time; but both producers and dealers were warned that after a fair interval to allow of changes and improvements, the results of the inspections would be given to the press so that consumers might judge intelligently of the character of the milk they bought.

A second inspection of the dairies was made early in 1908. As shown by Table I, the suggestions for improvement based on the first inspection, with the impending publicity, stimulated action on the part of the producers. Two "poor" dairies voluntarily abandoned the sale of milk and three others announced that they would do so when their contracts expired, while other dairymen so changed their conditions that the average score of the 38 dairies rose 21 points.

With the score cards of the third inspection, producers and dealers were given notice that the results of the next inspection would be made public in the press. Therefore, the essential facts of the fourth and all succeeding quarterly inspections were published. To protect the members of the Board of Health against legal actions should there be any financial loss from this publicity, the report of the Inspector was made to the Dairy Products Committee of the Board, who in turn reported to the Board.
The gradings of the different dairies thus became part of an official report which the newspapers were free to publish. The publication, beside general comments, included a list of the milk dealers of the city, with the dairies whose milk each handled graded separately as "excellent," "good" or "medium." The "poor" dairies had all left the field or become of better grade before any formal publication was made.

The results of the notice given that the Board would publish the data from the fourth inspection are reflected very plainly in the score cards, as will be noticed in Table I. The average gain was thirteen points and for the first time a dairy in the "excellent" class was reported.

**Table I.—Effect of Inspection, with Publicity, on Sanitary Condition of Dairies.**

<table>
<thead>
<tr>
<th>INSPECTIONS</th>
<th>Dairies</th>
<th>GRADING OF DAIRIES</th>
<th>Average score of dairies</th>
<th>Quarterly gain or loss in points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excell-</td>
<td>Good</td>
<td>Medium</td>
</tr>
<tr>
<td>First</td>
<td>40</td>
<td>0</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Second</td>
<td>38</td>
<td>0</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>Third</td>
<td>32</td>
<td>0</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Fourth</td>
<td>38</td>
<td>1</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>Fifth</td>
<td>34</td>
<td>1</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>Sixth</td>
<td>30</td>
<td>1</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Seventh</td>
<td>36</td>
<td>3</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Eighth</td>
<td>35</td>
<td>3</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>Ninth</td>
<td>35</td>
<td>3</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>Tenth</td>
<td>30</td>
<td>3</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Eleventh</td>
<td>35</td>
<td>4</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Twelfth</td>
<td>36</td>
<td>5</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Thirteenth</td>
<td>39</td>
<td>5</td>
<td>29</td>
<td>5</td>
</tr>
<tr>
<td>Fourteenth</td>
<td>39</td>
<td>5</td>
<td>34</td>
<td>0</td>
</tr>
</tbody>
</table>

Total gain in points, average all dairies ..................................... 54

From this time forward there was less rapid but still marked improvement in the score card points, with a gradual changing of the dairies to a higher grade, until the fourteenth inspection showed the disappearance of the last dairy in the "medium"
class and an increase in three and one-half years, in the average sanitary condition of about forty dairies — 500 cows — of fifty-four points.

The improvement in the dairies has, in the main, been gradual and quite uniform; but there were a few exceptions, as Table I shows. The decrease in the average score at the tenth inspection was due to the dropping out of several good dairies to secure the better prices offered at Rochester, and the failure to increase at the eleventh inspection and the decline at the thirteenth were due to the advent of new dairies with poor scores. The balancing of the score at the sixth and seventh inspections, however, brings out very strikingly the influence of the second factor in improving the milk supply,—payment based on quality. During the first year and a half of the inspections the milk sold in the city was distributed by one dairy company handling the product of nine to twelve dairies, and a dozen or more retailers, some of whom sold their own milk. In 1909, nine of these retailers united to form another dairy company, and until late in 1910 these two companies and one producer supplied the city with milk.

After the first inspection dealers were advised to consider the question of quality in their contracts with producers, which were about to be renewed, since it was quite evident that the promised publication of the sanitary condition of the dairies would influence custom. Knowledge that the milk he sold was produced under good or excellent sanitary conditions would aid a dealer, while production under poor conditions would be a bad recommendation for any retailer’s milk. It would, therefore, be unjust to treat all dairies alike in the matter of payment. With the new contracts, following the second inspection, most of the producers reached some understanding with the dealers in regard to improving the quality of the product, but no general agreement to make payment on the basis of quality was yet arranged.

After the sixth inspection, however, when most of the contracts for 1909 were made, the old company agreed to pay on the basis
of quality as determined by the Board of Health inspections, milk from “medium” dairies to bring three cents a quart, from “good” dairies three and a half cents, and from “excellent” dairies four cents.

The new company made its contracts at a flat rate. Part of what happened in consequence is shown by the seventh inspection, as given in Table I and explained by Table II.

**Table II.—Effect of Payment Based on Quality on Sanitary Condition of Dairies.**

<table>
<thead>
<tr>
<th>Inspections</th>
<th>Method of payment</th>
<th>Grading of Dairies</th>
<th>Average score of dairies</th>
<th>Difference</th>
<th>Gain or loss from previous score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Seventh</td>
<td>Quality</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>474</td>
</tr>
<tr>
<td></td>
<td>Quantity</td>
<td>0</td>
<td>15</td>
<td>10</td>
<td>453</td>
</tr>
<tr>
<td>Eighth</td>
<td>Quality</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>473</td>
</tr>
<tr>
<td></td>
<td>Quantity</td>
<td>0</td>
<td>22</td>
<td>3</td>
<td>458</td>
</tr>
<tr>
<td>Ninth</td>
<td>Quality</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>483</td>
</tr>
<tr>
<td></td>
<td>Quantity</td>
<td>0</td>
<td>22</td>
<td>3</td>
<td>463</td>
</tr>
</tbody>
</table>

There was, apparently, no improvement in the dairies at this inspection, since the average score was the same as at the sixth inspection, 458 points. But the dairies selling milk on a sliding scale based on quality continued to improve and two of them became “excellent.” The average score of the nine dairies under this company advanced one point from what it was at the sixth inspection and now stood twenty-one points above the average of the twenty-five dairies selling at a flat rate. These producers were without the financial reward to stimulate improvement and some allowed their dairies to retrograde. This was true of practically all of the five producers, now selling to the new company, who had before retailed their own milk. These dairymen felt relieved of the personal responsibility that publication of their standing imposed and gave less care to proper sanitary conditions. The lowering of the standard of these four or five previously independent producing retailers brought down the average score of the
twenty-five dairies under the new company three points. One of these dairies fell from 476 points in March to 454 in June.

This great difference in quality between the dairies selling milk under unlike contracts continued for nearly a year, but was so strikingly reflected in the demand for milk from the two companies that the new company, to protect itself, was obliged to reason very vigorously with its producers and to compel better conditions in the dairies. The following year it, also, made its contracts on a quality basis.

The effect of published quality on trade is plainly shown by the distribution, during the summer of 1909, of the decrease in sales which accompanies absence of residents on summer vacation, greatly increased at this time by a necessary advance in the retail price of milk from six to seven cents a quart. For this advance, consumers held the old company largely responsible, so its sales were nearly 3,000 quarts less for July than for June, while those of the other company were 2,250 quarts less. In August, however, the resentment against the old company had somewhat worn off and the better sanitary quality of its milk was exerting its influence, so this company sold only 2,000 quarts less than in June while the new company sold 4,800 quarts less. In September the losses were 2,800 and 7,200 quarts respectively; while in October the sales of the old company returned to about the June level and those of the new company continued to decrease. In November the new company sold 7,500 quarts less than in June.

Though consumers are usually quite unwilling to consider any advance in the price of milk to compensate for improved quality, they will give their patronage to the dealer who gives better quality for the same price.

But to secure milk from tuberculin-tested cows, however, only a few Genevans would pay an added price when the opportunity was offered them by a thoroughly reliable dairyman.

In the last analysis the limiting factor in the improvement of a municipal milk supply is the disinclination of the consumer to pay a price which will permit the production of first-class milk. The ex-
tent to which any supply can be improved depends ultimately upon the price at which the milk can be sold. Under the present system of indemnity for reacting animals by the State, milk from tuberculin-tested cows can be furnished at an increased cost of one-half cent per quart. Without such assistance it probably would not be furnished without an advance of at least one cent per quart. While a small proportion of the public are willing to pay the additional price the majority are not.

Payment for milk on a sliding scale based on the official dairy score and the presentation to all parties of the facts regarding the sanitary conditions under which the milk was produced and handled quickly improved the quality of the municipal milk supply. The dairymen were quick to produce the highest grade of milk for which they could obtain an adequate return.

During the past three years the improvement which has taken place in the milk supply of Geneva has been noteworthy from every point of view. While local conditions would necessitate slight modifications it is believed that the principles here outlined, of publicity and payment based on quality, might be applied with equal success in any small city, the health officials of which, by their sympathetic handling of the milk problem, could command the respect and co-operation of the milkmen and of the public.

The expense of the city due to dairy inspection has been approximately $500 per year. This amount is within the financial reach of practically all cities and cannot be considered a burden in view of the results obtained.