REPORT OF THE COMMITTEE ON THE CAUSE AND PREVENTION OF INFANT MORTALITY.

By ERNEST WENDE, M. D., CHAIRMAN, BUFFALO, NEW YORK.

Your committee, to whom was assigned the duty to investigate the causes and prevention of infantile mortality, beg to report that the results of their labor have been unsatisfactory for several reasons, though instructive in certain features.

Circulars, for the purpose of collecting data, were issued to the leading health officials and to every city of over 5,000 population in the United States, with the object of obtaining facts upon which, it was believed, instructive deductions could be based.

The replies received to these circulars of inquiries, of which the subjoined is a formulated copy, were relatively few, and were in many other ways unsatisfactory or incomplete.

The explanation is found in that the scope of the information sought for was too large and the questions too comprehensive, and that many to whom they were sent were not in a position to reply, having no records for reference.

Like other failures or mistakes, however, a lesson is conveyed which will undoubtedly bear profitable results in the future.

From the data gathered and the facts ascertained, it would appear, first, that, in the smaller cities, villages and towns, there is a lack of system in public sanitary matters, no proper effort made in regard to records and no uniformity of action.

Furthermore, it is apparent that the authorities are either neglectful or inefficient, undoubtedly due to the fact that the force of health officials is constantly being changed without precedent of sanitary knowledge or experience, as a pawn for political ventures, and also to the mismanagement of the precautionary measures that should be devised and devoted to the interest of the helpless.

Again, the methods adopted to enforce such ordinances as exist, are meagre or crude, and the procedures, particularly along the line of isolation, quarantine and disinfection, selected to limit the spread of the preventable diseases of childhood, are largely in the hands of the attending physician, thus minimizing the efficiency of this needed reform by a personal factor.

A discontinuance of this blundering mismanagement in health affairs, so manifest in the smaller communities, cannot be expected until the people better appreciate the benefits derived from an efficient
administration of official supervision as now in vogue in many of our larger municipalities.

It is most satisfactory to observe, as a means of protecting the human body from the invasion of pathogenic microbes or the effect of their toxic products, that bacteriological tests, principally in regard to diphtheria, are being rather extensively resorted to both for diagnosis and release, and with this object in view, laboratories are being established in many places, and even in communities too small to warrant such equipment, arrangements are made with private laboratories or with the State Board of Health to do this important work.

Little or no information, however, was obtained as to what system was in use. This would have been interesting and instructive to know as the value of this procedure depends so largely upon the ease and rapidity with which it can be made available, and prompt information conveyed; for in the treatment of an outbreak of a contagious disease there is no method so successful, so much desired, as an arbitrary measure that will meet the conditions quickly, fearlessly and in accord with the principles of bacteriology.

It is likewise gratifying to learn that, so far as the answers show, the profession are taking full advantage of this aid in their practice and that it is the opinion of almost all that through it a reduction of the number of cases has occurred, absence of epidemics noted, more adequate quarantine and disinfection made possible, and injustice through erroneous diagnosis precluded.

The utmost care must be continuously exercised so as not to confuse diphtheria with some trivial disease, it being perfectly obvious, from its dangerous character, that it is essential to form a diagnosis as early as possible.

However, the profession as a body do not, as was often the case formerly, attempt to evade the requirements of the local health laws in regard to this and like maladies, onerous as they are.

This is most acceptable information, as commercial and personal interests are so often affected by arbitrary sanitary restrictions as to be a strong incentive for evasion, to the consequent danger to the welfare of the general public.

Again, most of the reports from smaller communities bear osten-
sible evidence of absence of vigilance over the wholesomeness of the water and milk supply, this being a most important feature of public sanitation, always requiring a fearless surveillance and systematic investigation in their relation to all infectious diseases.

The experience, in cities where this has been carried out, has amply demonstrated the value and necessity of such action.
Several scarlet fever and diphtheria epidemics have, in Buffalo, been averted by promptly tracing the source of infection to a particular milk route.

Other features worthy of note as being suggestive are the general absence of special facilities for the careful isolation of children, suffering from infectious disease in asylums and institutions, by means of isolation wards; also of special equipment for conditions arising during the heated term, and of any official supervision demanding proper cubic air space.

Much satisfaction is found in the general condemnation, theoretically at least, of the long tube, death-dealing nursing bottle. It has not been ascertainable whether bottles equipped with these tubes are absolutely interdicted by ordinance.

As a matter of interest, it may be pertinent to here state that Buffalo has such interdiction through the action of the Department of Health, but that there is now pending in the courts a suit to test the validity of such action, this suit being prompted by commercial interests.

In preparation for this important litigation, to be able to demonstrate, beyond peradventure, the danger of such nursing bottles and the justification for suppressing them, the said Department of Health has resorted to a series of investigations, microscopically, bacteriologically and chemically.

Microscopic examinations of sections of an unused rubber tube taken from a nursing bottle revealed decidedly roughened and irregular surfaces. In several instances, small depressions, like bubbles, could be seen in the inner surface of the tube. It would, indeed, be difficult to designate a more efficient arrangement for the incubation of micro-organisms.

In one section, there is shown a distinct channel running from a depression on the inner surface to a bubble near the central portion of the rubber. Foreign material gaining entrance to such channels cannot be removed by the ordinary methods of cleansing.

Microscopic sections and bacteriologic examinations of infected rubber tubing, obtained from a purchaser in a local drug store, revealed the following: The inner surface of rubber tubing was coated with a deposit of decomposing material, this deposit being thickest at the portions adjoining the nipple and the glass tubing.

Microscopic examination of the material revealed it to be coagulated casein with innumerable bacteria of varied morphology.

Qualitative bacterial examination of the material revealed the bacillus acidilactici to be the predominating organism; the staphylococcus pyogenes aureus present with three (3) more distinct, and,
no doubt, other species, the varieties of which have not as yet been determined.

Five decigrammes of this deposit dissolved in 2 c.c of sterile water and injected intra-peritoneal into each of three (3) full grown guinea pigs, weighing respectively 200, 254 and 261 grammes, produced death of the animals in from 48 to 61 hours.

Portions of the infected rubber tubing were placed in small vials and kept in an incubator at a temperature of 98½° F. for 21 days.

After this time, portions of the tubing were softened and completely disintegrated.

Other pieces of infected tubing, soaked for a few moments in a 5 per cent. solution of carbolic acid and subjected to the same temperature, were not similarly affected.

This demonstrates that the prolonged effect of the decomposition of milk is such as to disintegrate rubber.

This process of disintegration and softening was found, by chemical analysis and investigation, to be due to the formation of the lactate of zinc which was soft and somewhat hygroscopic.

It is proper to state here that this interesting bacteriological work was done by Dr. Wm. G. Bissell, Bacteriologist of the Department of Health of the city of Buffalo; the chemical work by Prof. Herbert M. Hill of the University of Buffalo, while the photo-micrographic work was accomplished by Mr. Thomas P. Whittier, of Rochester, N. Y.

The work of this latter gentleman cannot be too highly appreciated and its excellence is the result of long-continued original experimenting which has resulted in a process of his own.

There is a uniformity of opinion that deaths from hereditary syphilis are not recorded as such. This is to be regretted, as many deductions, concerning this common malady and its possibilities, its social and economic features, could be brought out and be of value in influencing procedures affecting its origin.

In conclusion, while the work of the committee has been unsatisfactory in several ways for the reasons stated, it is strongly recommended that such a committee be continued with the suggestion that their work be limited to one specific line at a time, so as to permit thoroughness and efficiency.

American Public Health Association, Committee on Causes and Prevention of Infantile Mortality.

Buffalo, N. Y., June 15, 1898.

Dear Doctor:—The Committee of the American Public Health Association on the Cause and Prevention of Infantile Mortality take
the liberty of submitting herewith a series of inquiries to obtain certain important data.

Information of this character can only be obtained by this method from officials of your character, and to be valuable they must be accurate and available.

While the committee recognize it is considerable of a demand upon your time, they assume, in advance, that you are interested and trust that the importance of the subject will justify their request and that you will give their inquiries your very careful consideration.

All replies should be sent to the undersigned, who is

Very cordially yours,

ERNEST WENDE, M. D.,
Department of Health, Buffalo, N. Y.

Name of your city. Population.

Death rate per 1,000 for 1897—from all causes.

What is your infant mortality per 1,000?—Deaths by age for each year up to five years of age.

Is it above or below the average during the past five years, and if so, what is explanatory of the increase or diminution?

What diseases of infancy are, in your city, as shown by the returns, the most fatal in their order of frequency?

What measures are adopted to influence "preventable acute diseases of infancy?"

What results are directly noticeable, in what particular maladies, to what particular measures and in what way could such measure be made more effective?

What measures do you enforce to prevent and to check the spread of diphtheria?

Does your city maintain a bacteriological laboratory?

Is it available for the profession to submit cultures and to verify the diagnosis of diphtheria? If so, what influence has this had upon diminishing the number of cases?

Do the profession attempt to evade the correct and prompt reporting of diphtheria or attempt to evade the municipal health regulations concerning it?

What measures are directed toward the causes of cholera infantum and in what way can they be made more effective?

What supervision over and regulations are adopted towards the milk industry in its bearing towards health?

What special protective features are in force during the heated term?

What attitude is adopted towards the relation of contagious diseases to milk and milk routes and is such relationship under surveillance?

What, if any, educational literature is distributed amongst the public and particularly in the crowded districts and among the poorer classes in regard to the care and feeding of infants and in regard to contagious and other diseases among children?

How efficient, in your opinion, are your municipal health laws and regulations in diminishing infantile mortality? How can such efficiency be demon-
strated and in what way can such laws and procedures be made more effective, particularly in regard to diphtheria and cholera infantum?

What supervision or standard, if any, is adopted by law, in children's asylums, in children's hospitals, tenement houses and other municipal institutions, as regards the cubic-air space allowed per capita to each child or inmate, in health and in disease (particularly in disease)?

To what degree and in what diseases is the influence of insufficient cubic-air space most noticeable as regards the development of infantile disease and as regards their mortality?

What is your mortality from the acute diseases of infancy in infant asylums, maternity and general hospitals?

What is your ratio of infantile mortality from acute infantile diseases in relation to density of population?

What provision is made for the isolation of children, in public institutions, suffering from contagious disease?

Are fresh-air missions maintained in your city?

What has been demonstrated as regards mortality of diseases of children since their establishment?

What provision is made by public institutions in your city for the care of sick infants which may be in them and are suffering from diseases peculiar to the heated term?

Are records kept showing hereditary influence in infantile tuberculosis, and if so, state frequency of paternal and maternal influence and type of manifestation?

What influence can be shown from the crowding, density of population, tenement-house influence upon infantile tuberculosis?

What type of infantile tuberculosis is most common, and what particular factors appear to directly determine its development and what particular form?

At what age and during what months of the year are most cases reported of diarrhea in infants, and what percentage of them are true cases of cholera infantum?

What evidence can you present to establish a direct connection between bad air and such malady and between high temperature and such malady?

What, in relation to density of population?

What, if any, control is exercised by ordinance over the feeding of infants, by prohibiting the sale of improper nursing bottles, food, etc., and what character of nursing bottles are interdicted?

What type of nursing bottles are considered improper or dangerous for infant feeding and for what reasons? (Answer as fully as possible.)

What results can you show from the interdiction of such bottles, and are the ordinances relating to such matters effective?

What percentage of acute respiratory diseases form part of your mortality in infants and to what extent are they complications of acute infectious disease?

What is your mortality from hereditary syphilis and at what age?

In your judgment, are such deaths correctly reported?

What ordinances have you and what supervision is exercised over baby farming, if allowed?

What mortality is shown among them and from what causes?

Are there free municipal baths in your city and is there provision made there for the bathing of infants?
Is provision made for public parks or breathing places in the crowded districts?
Are they shady and are they patronized in hot weather by mothers with sick infants?
What amount of shade trees are there in the streets in the crowded and in the tenement-house districts?
Any other information which you may have upon this subject and not herein specified, kindly mention.

Domingo Orvananos, M. D.,
Mexico, Mexico.

John Coventry, M. D.,
Windsor, Ontario.

Baxter T. Smelzer, M. D.,
Sec'y, State Board of Health,
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Ernest Wende, M. D.,
Health Commissioner,
Buffalo, N. Y.
Chairman, to whom reply should be sent.

Committee.