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NOTICE TO SUBSCRIBERS

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The great epidemics of the 70's brought forcibly to the attention of the people the necessity for organized public health work. Though the first State Board of Health was based upon the suggestion of a woman in Massachusetts, during a typhoid epidemic in that state, the American Public Health Association, organized in 1872, was the chief influence towards organized State Boards of Health.

The Secretary of the North Carolina State Board of Health says, in the First Biennial Report: "Had there been no Medical Journal in North Carolina there would have been no State Board of Health now in existence," (1881). Investigation reveals the fact that the Medical Journal was edited by Dr. Wood, and that he was, probably, the sole proprietor, hence a true statement would read, "Had there been no Dr. Wood in North Carolina there would have been no State Board of Health organized at that time," for the law establishing the State Board of Health was procured by him through his untiring efforts towards that end.

The law establishing the North Carolina State Board of Health which was passed on February 12, 1877, made North Carolina the twelfth state to express its appreciation of organized health work by legislation. This law made the State Medical Society, which was organized in 1849, the State Board of Health. The work was placed by the Society in the hands of a committee, of which Dr. Thomas Fanning Wood was elected Secretary and Treasurer. The sum of one hundred dollars annually was placed at the disposal of the Medical Society, to defray the expenses of the work.

The wedding of the Medical Society and the State Board of Health proved unsatisfactory and a new law, passed in 1879, severed the tie. Under this law the Board of Health was placed on a permanent basis. The balance of power was left with the Medical Society, however, as that organization was empowered to elect six members of the Board and the Governor (at that time Governor Jarvis) to appoint three. The appropriation was raised to two hundred dollars annually. A study of the financial report covering the first four years of the work shows how entirely inadequate the appropriation was and also emphasises Dr. Wood's devotion to the work. More than half the expense, incident to the execution of the duties of his office, was met by the Secretary out of his own not overabundant private means. Dr. Wood was elected Secretary of the newly appointed Board on May 21, 1879, and served in that capacity until his death on August 22, 1892.

That Dr. Wood's vision for North Carolina has materialized can be readily seen, for in the first Biennial Report almost every phase of the work, as it is now being carried on, was touched upon and largely mapped out.
Under the law of 1879 the first county boards of health were organized. This law made all registered physicians eligible to membership, and also made the Chairman of the County Commissioners, Mayor of the county town, and the County Surveyor ex officio members of the board. This board was empowered to choose one of its members to act as County Superintendent of Health. The compensation received by this official was "such amount as was spent in the year 1878 for medical attendance on the jail, poorhouse and workhouse, and the amount paid for medico-legal examinations at coroner's inquests." As in some counties this amounted to nothing at all, and in many a very small sum, the County Superintendents of Health "undertook their duties impelled alone by their pride and the interest they had in their work." These duties were to "advise the people and officials with respect to the health of their counties," to serve as physician to the poorhouse, county home, and jail, and to keep a register of the vital statistics and report monthly thereon to the office of the State Board of Health. It was thought that the County Superintendents of Health would be able to procure accurate morbidity and mortality reports in their counties, but the machinery proved entirely inadequate. Dr. Wood, undaunted by the failure of his first attempt to collect reliable vital statistics, drafted a bill requiring the "Registration of Vital Statistics at the Annual Tax Listing." This bill was enacted into law on February 11, 1881. The tangible results, to use Dr. Wood's own words, were "346 pounds of freight" which proved to be of little value.

Under the law of 1879 chemical analyses of drinking waters were made free of charge by the chemist of the Board, Dr. A. R. Ledoux, of the North Carolina Experiment Station. Fifty-six examinations of water were made the first year. Of these twenty-seven samples were sent from Wilmington, and out of the twenty-seven samples but four proved good; when these facts were published the public mind of that town became agitated on the question of installing one of the first, if not the first, public water supplies in the State.

In 1878 a card was issued entitled "Timely Aid for the Drowned and Suffocated," but the first health pamphlet issued by the Board appeared in June, 1879, under the title "Disinfection, Drainage, Drinking Water and Disinfectants," and was written by Prof. William Cain, a member of the Board. This pamphlet awakened so much interest in the subject that later a more elaborate treatise was issued on the same line, entitled "Sanitary Engineering." The same year pamphlets were issued on "Methods of Performing Postmorten Examinations," by Dr. Thomas F. Wood, and "Limitation and Prevention of Diphtheria," by Dr. R. L. Payne. (In this paper we note stress is laid upon the "carelessness of ditching in August and September.") In the pamphlet, "Sanitary Engineering" working plans for a sanitary privy are given, which embraces practically every idea advanced today, of the same structure, with the exception of the necessity for fly-proofing the building.

An Act Relating to the Board of Health, passed March 9, 1885, authorized the Board to compensate the Secretary and Treasurer for his services, which had hitherto been rendered gratis. An increase in the annual appropriation from $200 to $2,000 a year, made this possible. In addition to the regular fund for the expenses of the Board, $250
was appropriated annually for printing. This sum enabled the Bulletin of the North Carolina Board of Health to make its first appearance in April of 1886, of which issue there were six hundred and fifty copies printed. The idea of the Bulletin was to "give each month the nature of the diseases prevailing during the preceding month in those counties reporting to the State Board of Health; the condition of the jails and poorhouses in those counties; the meteorological reports from the ten stations in the State, and such other information and advice for the advancement of the public health as may come to the attention of the Board." The subscription price of the Bulletin was placed at fifty cents, in order that the publication might be entered at the postoffice as second class matter, and in that way a considerable amount saved on postage. The financial reports show no receipts from this source, hence the conclusion is that as a paid publication the Bulletin was not a success.

Under the law of 1885 the County Boards of Health were more efficiently organized. The inspection of public buildings, made for the first time under this law "brought to the eyes of the community a disgraceful state of affairs."

In 1886 a step forward in the work of preventing the spread of epidemics, was taken when at the meeting of the International Conference of State Boards of Health it was agreed that each State would notify the others when a contagious or infectious disease occurred within their borders.

The chief addition to the pamphlet issued by the Board in 1886 was the publication of "The Care of the Eyes and Ears," written by Dr. R. H. Lewis. This pamphlet attracted considerable attention and was reviewed by out-of-State health publications, and a special act of the Legislature later authorized the Secretary of the Board to issue a second edition of 10,000 copies.

The Biennial Report of the Secretary for 1888-1889 showed an increase in the number of County Boards of Health, and also that a number of towns had, during that period, begun the voluntary reporting of mortality returns. Regarding these reports Dr. Wood says: "Accuracy can not be expected, * * * as the work is voluntary. * * * The Board considers this pioneer work, from which they hope to educate the people up to the necessity of accurate vital statistics." In this report Dr. Wood advances the idea, which was later put into effect, of first collecting vital statistics from the towns of five hundred or more inhabitants. It was during this biennial period that the necessity for teaching hygiene in the public schools was first stressed.

During 1888 an epidemic of yellow fever in Florida showed the wisdom of having an organized State Board of Health ready to cope with the situation, for at that time many refugees found shelter in the mountains of the western part of our State.

In addition to his many other interests, Dr. Wood used his influence to procure legislation prohibiting the adulteration of foods and drugs. It was due to his efforts in that direction that Colonel Wharton J. Green introduced, on January 18, 1886, in the Congress of the United States, a bill entitled "To Check Frauds in the Make-up of Articles of Diet, Drink and Medicine." Though this bill was reported adversely by the
Judiciary Committee it was the entering wedge towards legislation which is now conceded to be of vast importance.

In spite of the apathy on the part of both the medical profession and the laity of the State, Dr. Wood continued to urge the necessity of better public health work, and, though no new line of work was taken up by him after 1889, the plans already set forth were steadily carried forward under his wise leadership. The following excerpt is taken from a review of Dr. Wood's work, published at the time of his death, which occurred August 22, 1892: "Indeed it may be said that he gave his life for this cause, for it was in making a tour of inspection of the convict camps of the western part of the State, while climbing a steep mountain side with a heavy valise—an accident on the railroad rendering it necessary—that he felt the first intimation of the disease (aneurism of the aorta) which caused his death. * * * When for the treatment of his fatal malady it became necessary for him to keep his bed for twenty months, during those anxious days his interest did not flag, but his eye was ever on the watch for rocks and breakers, while his hands still held the wheel that directed the ship in its progress."

CITY MILK PROBLEMS

By Edward B. Beasley, A.B., M.D., D.P.H., Baltimore, Md.

Nothing will contribute more extensively towards the ultimate solution of city milk problems than a comprehensive grasp of the milk situation by the public. Health laws are of uncertain value unless they are backed by public sentiment and the best way to obtain this is a fair statement of facts.

Housekeepers form the most important part of public influence when the question of foodstuffs is considered. A refusal by them to purchase milk of inferior or uncertain quality will do more to right the wrongs of the dairy business than many excellent laws aimed at correction. City milk problems will become less numerous when trusted health departments set reasonable milk standards and the results of all milk tests made are then published in a manner sufficiently interesting enough to attract the attention and the cooperation of housekeepers.

No enlightened individual can deny that a wholesome milk supply is a most essential factor in the good health of any community. This conclusion has been forced on us by the fact that over five hundred epidemics of communicable diseases have been traced to infected milk. These epidemics have consisted mainly of typhoid fever, scarlet fever, diphtheria and tonsillitis. In addition to these diseases, the summer intestinal disorders, which are so common amongst infants, are often traceable to dirty milk; while certain types of tuberculosis sometimes owe their origin to infected milk.

During the winter of 1912, three cities (Chicago, Boston and Baltimore) were visited by epidemics of "septic tonsillitis" and in each city, milk proved to be the medium through which the disease was spread. "Septic tonsillitis" differs from ordinary sore throat since it is capable of not infrequently causing death, producing severe complications and
occasionally leaving permanent traces with those individuals it has afflicted. This disease adds another serious menace to be reckoned with in our municipal milk supplies.

It is far from a simple matter to run a dairy farm even if the necessary funds are at hand. To buy one hundred cows free from tuberculosis is an almost impossible task. Indeed so difficult is the proposition of purchasing cows free from disease that progressive dairy farmers have started to breed their own herd from healthy stock which is used exclusively for this purpose. The proper construction of cow stables, dairy buildings, etc., together with the necessary care of the cows and the constant supervision of the milkers are conditions which require expert knowledge. A failure on any one of these points is sure sooner or later to bring disaster to some consumer of the dairy's supply.

If the milk of our large cities came exclusively or principally from dairy farms, the outlook for clean, safe milk would be bright; but the bulk of any large city's supply comes from ordinary farms. Now the average farmer cares little about the quality of milk he ships to market, as it is what he has left over and above the amount required for home consumption that finds its way to the city. His main attention is given to other foodstuffs from which he derives his income. So long as the production of milk is merely a "side issue" with the farmer, we cannot expect great improvement unless a money premium is placed on clean milk. But even if the sale of milk should become more profitable, it is very questionable if the ordinary farmer could meet and successfully cope with the many difficulties encountered in producing clean, safe milk.

A healthy herd of cows does not necessarily guarantee safe milk as sanitary conditions prevailing on the farm have everything to do with the final condition of the milk from even healthy cows. It seems most unfortunate that milk is so easily contaminated and that its quality is so absolutely dependent on the circumstances under which it is produced. At milking time, on the common farm, the flanks and udders of the cows are usually in a filthy condition and no apparent attempt is made to cleanse them. The dust and dirt in the air of the average cow-shed are generally plentiful and they form ample sources for a thorough contamination of the milk. The hands of the milkers are often very dirty, although this is scarcely to be wondered at since milking frequently occurs from 2:00 to 4:00 a.m. and this period—especially on wintry mornings—can hardly be considered an ideal time for manual ablutions. The use of milk pails with wide tops is still common, and of course such pails admit the maximum amount of dust and dirt to the milk. The abundance of flies found about most farms is also a contributing source of milk infection. Failure to cool the milk promptly adds greatly to its rapid deterioration. The big milk cans which are received by the farmers are, as a rule, sterilized by live steam just before they are shipped from the city contractor's plant. In a fit of spasmodic cleanliness, some farmers rinse these cans with water which is frequently contaminated. This custom may be the starting point of a typhoid epidemic.

The gravest danger, however, to which milk is exposed is from the
presence of some communicable disease on the farm or at the home of any individual who helps in the handling of the milk. Most epidemics of milk-borne diseases owe their origin to this cause. Dipped or loose milk in the cities is exposed to a similar danger from those who sell it. Any procedure which would eliminate the danger at these phases of the milk problem would be an immense life saver.

It is a matter of deep regret that in the homes of even intelligent consumers milk and milk bottles receive disgraceful attention. The milk is often exposed to heat of the sun's rays for long periods in a window or at a door. Souring of the milk is of course apt to occur and then the milk dealer is unjustly blamed. Frequently, milk is poured out of the bottle into some receptacle and if all of it is not consumed, it is poured back again. This process of pouring may be repeated several times. Consumers must understand that the chances of contaminating milk vary directly with the number of times that the particular milk is handled. Instead of rinsing out milk bottles, as soon as they are empty, they are often left for hours and not infrequently they are returned to the dealer unwashed. In some homes the empty milk bottles are used as temporary "waste baskets" — in direct violation of laws which prohibit such usage of milk bottles. Anyone who visits a large dairy plant is apt occasionally to see in the returned bottles objects ranging from scraps of paper, paint, turpentine, match sticks, stumps of cigars and cigarettes to a dead mouse. And yet the same housekeepers who permit this misuse of milk bottles expect scrupulous care on the part of all individuals employed in the milk trade!

City milk problems form this complex chain of conditions which extends from the farms to the consumers' tables and in order to regulate the handling of the milk, in its complicated career, most municipalities have in force a number of ordinances. Due to these regulations, the use of preservatives and coloring materials has practically disappeared, since the tests for these frauds are rapid and accurate; so that it is easy to obtain the conviction of any dairymen who has been tampering with the milk in either of these ways.

It must be said in justice to the dairymen that the regulations, requiring a minimum percentage of butter-fat in all drinking milk, seem somewhat unfair. Skimmed milk is nutritious and wholesome and is therefore not injurious to health. The amount of butter-fat present of course influences the amount of nutriment contained in the milk; but a variation in the quantity of an important ingredient of any foodstuff naturally causes a diminution of an increase in its nutritive value. A fairer course to the milk trade would be to require a label guaranteeing the percentage of butter-fat in the milk offered for sale. There is, however, one argument against this scheme which is the fact that many ignorant mothers would feed their children on milk almost free from butter-fat — as it would of course be cheaper — and consequently there might be an increased danger of these children from "rickets" or some other form of malnutrition.

When it comes to regulating the numbers of bacteria contained in milk, most cities have not been stringent enough. The number of bacteria in milk is a good index either of the original dirt-content or of
carelessness somewhere in the handling of that particular lot of milk. It is most unfortunate that, at present, no quick, reliable method for estimating the number of bacteria in milk is available. The most accurate method now in use requires about forty-eight hours in order to obtain definite results. After this lapse of time naturally the milk—a sample of which was used for testing—has been distributed and consumed. The city can only tabulate such results and prohibit the sale of milk which contains large numbers of bacteria over certain intervals, until it has shown the necessary decrease.

The carelessness of city milk inspectors constitutes another problem to be met. Too often these men are appointed on account of political influence and not because they have any knowledge on the subject of milk. As a result, their insanitary ways of testing the milk's temperature and of taking samples are often an added source of contamination which may cause harm unless the sampled milk is pasteurized.

As far back as 1892, a movement was started to obtain better milk by educating the producer in dairy methods and offering greater compensation for this milk. This agitation was responsible for the production of "Certified Milk" and later it resulted in the marketing of "Inspected Milk." The introduction of these two classes of milk was a tremendous sanitary advance and their influence has been reflected in the many admirable milk ordinances adopted, since that time, by various cities.

Certified milk is produced under the supervision of a medical commission, consisting of a physician, a bacteriologist, a chemist and a veterinarian. Sometimes a practical dairyman is included on the commission. A contract is made between the commission and the producer and the producer must live up to the contract or else the commission refuses to certify the milk. Each member of the commission has certain duties assigned him. Some of the stipulations in the contract are: the number of bacteria must not exceed 10,000 to the cubic centimeter of milk (this amount of milk is equivalent approximately to fifteen drops); the amount of butter-fat and of total solid ingredients must not fall below a set percentage; the milk must be promptly cooled and bottled but not in the cow-shed; the delivery of the milk to the consumer within a certain definite time after milking; the proper cleaning of the cow-shed; the regulation of the feeding, exercising and housing of the cows and their periodical examination by the commission's veterinarian; minute attention to the health of all the farm's employees, in order to prevent a possible infection of the milk from this source; and finally great care in seeing that the dress and hands of the milkers are scrupulously clean at milking time. Indeed, when all the requirements are observed, certified milk is as near the ideal raw milk as can be produced with our present dairy knowledge.

Inspected milk must not contain more than 100,000 bacteria to the cubic centimeter. The other regulations under which it is produced are also less stringent than the corresponding ones for certified milk. In comparison to even good grades of raw market milk (which is neither certified nor pasteurized) inspected milk is a tremendously superior product.

Raw market milk varies greatly in quality. Some cities will not
allow milk to be sold for drinking purposes which contains more than 500,000 bacteria to the cubic centimeter. These cities are unfortunately very scarce and it is a matter of deep concern that many municipalities have set no limit to the number of bacteria allowed in their milk supply. Therefore in certain localities, it is not unusual to find milk, in the summer time, which contains, to the cubic centimeter, seventeen or more million bacteria—plain filth diluted in a little milk. Such enormous numbers of bacteria indicate rank carelessness or utter indifference on someone’s part. Milk of this type is unfit for human consumption and every board of health should have power to destroy it or see that it is sold for other purposes than drinking.

There is just one other class of milk left and that is pasteurized milk. Pasteurization is a process which consists in heating milk to a certain temperature for a varying period of time. Two methods of pasteurization are in common use, namely: “perfect pasteurization” (holder process) and the “flash” method. In “perfect pasteurization,” the milk must be heated to and held at or above 140 degrees F. for twenty of more minutes. In the “flash” process flowing milk is raised to a temperature of 155 degrees F. or more for forty seconds or longer.

It has been known for several years that milk raised to 140 degrees F. and held there for twenty minutes is rendered safe for drinking purposes although it may have contained disease-producing bacteria prior to its pasteurization. This temperature and amount of time must be accurately maintained if the pasteurization is to accomplish its aim. On the commercial scale, it would be unsafe to allow this minimum temperature and time, and consequently many board of health require higher temperatures and longer exposures. The best recommendation is to enforce a temperature of 145 degrees F. for twenty-five minutes—thus providing a margin of safety in both temperature and time. The “flash” method of pasteurization is inferior to the holder process (“perfect pasteurization”).

Objections have been raised to pasteurization on the score that it “kills the life or vitality of the milk” and that it is an unnatural process. As far as the first objection is concerned, it can be emphatically stated that only a few ferments in the milk perish when pasteurization is properly done and these few ferments—so far as our present knowledge goes—are not necessary for the digestion and assimilation of the milk; nor does their absence decrease its nutritive value. Pasteurization at much higher temperatures for longer intervals does change slightly the composition of the milk, but the milk is still left a safe, wholesome food. That pasteurized milk is one of the causes of “rickets” has yet to be proved. A consideration of the second argument against the pasteurization of milk, leads to a frank confession that it is an unnatural or artificial process. However, we must remember that calves are weaned very early so that cows’ milk can be fed to infants. Therefore, the consumption of cows’ milk by persons is just as unnatural or artificial as pasteurization.

One can see that the control of city milk problems is a gigantic task and in order to accomplish good results, health departments need the
cordial cooperation of the public and all individuals engaged in the handling of milk. Public sentiment makes sluggish progress along any line unless stimulated by some appalling disaster. Fortunately, many of our best milk dealers have not waited for public opinion to compel changes, but they have gone ahead with improved methods and ideas, until today the best dairy plants are models in nearly every respect.

Back on the farm, however, conditions are improving very, very slowly and it takes but a glance to see that it will be many, many years before we can regard the milk from most farms as safe for human consumption. Certified milk, with all its safeguards, has had epidemics of disease traced to it. On the average farm sanitary inspection takes place only occasionally if at all. Cities, of any size, draw from too many farms to permit a frequent inspection. (New York City receives from approximately 45,000 farms of which about 6,000 are outside of the State of New York.)

Now the great question to be settled is what can be regarded as the sanest and safest procedure by which a city's milk supply can be rendered inert as a source of disease? The best answer to this question is the scientific pasteurization of all drinking milk under the supervision of competent municipal officials. It is not meant to replace by pasteurization the efforts which are, at present, being made to obtain cleaner and safer milk. But, while we are awaiting the results of these efforts, pasteurization is recommended as a process which will help to solve city milk problems by preventing thousands of deaths until the time arrives when milk is produced under "Utopian" conditions.

THE COUNTY TUBERCULOSIS DISPENSARY

By W. S. Rankin, M.D., Secretary North Carolina State Board of Health, Raleigh, N. C.

The dispensary is a weapon that is proving most effective in the local fight against tuberculosis. Twenty counties will be able to support a dispensary where one can maintain a sanatorium. In the writer's opinion a county dispensary should always precede or accompany the establishment of a county sanatorium or hospital. The larger part of a tuberculous population, and the part of this population most needing treatment, will be reached by the dispensary and not by the sanatorium. The dispensary carries the sick man's medicine to him; with the sanatorium he must go after it.

The equipment of a dispensary should consist of a dispensary physician, dispensary nurse, and means of transportation for nurse; offices, and supplies, such as window tents, medicines, and probably a small fund with which to obtain proper food for the more indigent cases.

The qualifications of a dispensary physician should be an altruistic spirit, ability to make a thorough physical examination, and tactfulness. As about eight hours' work a week will be required of the dispensary physician he can probably be obtained for a flat salary of $500 dollars a year. If the county is not too large and the county superintendent of health is not employed for his entire time and has the necessary qualifications, the duties of dispensary physician might be
included among the official duties of the county health officer. In this way the expense of a dispensary physician would be saved.

A dispensary nurse need not necessarily be a graduate nurse. An intelligent laymen who has had several months experience as an employee, in a good sanatorium, say as an orderly, could be easily trained to do this work fairly well. The advantages of a male over a female nurse in such work would be, less difficulty in traveling from one part of the county to another and that this work might be combined with quarantine and disinfection in the county health work. The nurse would cost probably $75 a month, or $900 a year. The means of travel for a nurse would also be an item of expense that must be taken into account, and this item would probably approximate $400 a year. Either a horse and buggy or one of the smaller and cheaper automobiles, depending largely upon the conditions of roads in the county, could be used in getting about from one section of the county to another. Here a large part of this expense could be saved if this work could be combined with the county superintendent of health’s work. The county superintendent of health in a county of any size would be able to increase the efficiency of his work a hundred per cent with a cheap assistant to do the routine work of the office and to look after the enforcement of quarantine and disinfection. In those cases where the county health work and dispensary work could be combined, the total expenses of the nurse would probably not exceed $500 a year.

The offices of the dispensary should be located as near the center of the population of the county as possible. At least two small rooms would be needed for this purpose. The furnishings should be simple and need not be costly; probably the most expensive item would be a microscope, which the dispensary physician should have available for his use in those cases in which microscopic examination is necessary. Offices can be obtained in most county towns at a cost of not over $200 a year, and in nine counties out of ten this expense can be saved either by the offices being provided by the county or by some philanthropically inclined real estate man loaning the offices.

The supplies will probably not exceed $300 a year. Perhaps the most expensive item would be a certain number of window tents, which the dispensary might own and loan to its poorer patients. For the very indigent patients it might be found necessary to supply eggs and milk and other food at certain times. The expense for supplies could be reduced in many counties by appealing to various charitable organizations, as women’s clubs and lodges for contributions for this purpose. We may, therefore, tabulate the equipment and cost of a county dispensary as follows:

<table>
<thead>
<tr>
<th>Items</th>
<th>Max. cost</th>
<th>Min. cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispensary physician, a year</td>
<td>$500</td>
<td></td>
</tr>
<tr>
<td>Dispensary nurse and transportation, year</td>
<td>1,300</td>
<td>$500</td>
</tr>
<tr>
<td>Dispensary offices, a year</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Dispensary supplies, a year</td>
<td>300</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2,300</strong></td>
<td><strong>$600</strong></td>
</tr>
</tbody>
</table>

The minimum cost will depend very much upon how much of the dispensary work the county health department will assume. In all probability, only those counties that are sufficiently appreciative of
their responsibilities to the public health to employ a health officer for his entire time would be in a position to assume any part of the expense of a dispensary.

The average death rate from tuberculosis in the registration area of the United States is 1.6 deaths per year for every 1,000 of the population. There are also about eight times as many people sick in a given population from the disease as die from it. A county of 50,000 population would, therefore, lose 80 lives a year from tuberculosis and have about 650 people sick with the disease; a county of 20,000 would lose 32 lives a year from the disease and about 250 of its citizens sick with the disease. For the sake of convenience, let us take as an example an average county that would lose about fifty lives a year from tuberculosis and have 400 of its citizens sick, more or less, with the disease. A large part of this tuberculosis population would seek treatment from private sources and a few would probably enter the State sanitorium. We would probably be safe in assuming that the county dispensary would look after one-fourth of the sick, or about 100 tuberculous patients.

The patients would probably average twenty-five visits a year to the dispensary. These visits would be divided as follows: The first two weeks of their treatment two visits per week; the next two weeks, one visit per week; the next five months, two visits a month, and the last six months, one visit a month, making approximately twenty-five visits a year, or, for 100 patients, a total of 2,500 visits to the dispensary each year.

The dispensary would receive the patients on two days a week, and on each day, say Tuesday and Friday, be open for four hours, say from eight to twelve. There would then be 100 four-hour dispensary periods a year, which would mean that an average of twenty-five patients would be present at each period. According to this estimate there would be one new patient and twenty-four old patients at each dispensary period; to the new patient the dispensary physician would give approximately one hour in making his thorough initial physical examination and records; to the twenty-four old patients he could give seven and one-half minutes each. Each patient would be given a little book properly arranged for him to keep a diary of his disease. In this book he would note, daily, the number of hours spent in the open air, temperature, pulse, weight, conditions of cough, expectoration, appetite, etc. The dispensary nurse would receive the patients at the dispensary and properly chart the items noted in their diary, thus facilitating, to a great extent, the work of the physician. The nurse could also instruct a class in regard to the disease, and every patient for the first six or eight weeks of his treatment should be required to belong to this class and to recite with it.

During the time that the dispensary is closed the dispensary nurse should spend her time visiting the homes of the dispensary patients. There she would not only educate the individual consumptive, but educate the family and, in a general way, the neighbors. Of course a county with a large number of square miles would make the work outside of the dispensary somewhat burdensome, but the average patient would probably not require more than ten visits, which would give the
nurse for the 100 patients, 1,000 visits a year, an average of about three a day. By properly grouping the cases and by arranging to have living quarters in three or four section of the county this could be easily accomplished.

**REASONABLE RESULTS.**

The effect of the dispensary work will be cumulative for a number of years until the tuberculosis death rate is reduced to a comparatively low figure, from which point a further reduction in death rates will proceed more slowly. For the first five years' work, however, we have a right to expect a rapid reduction, and possibly after the lapse of that time a slower reduction; but no matter how great the reduction after the work has proceeded for several years, the dispensary will more than justify its existence in simply maintaining a low death rate.

Let us lean strongly to the conservative in making our estimate, and, therefore, presume that only two lives are saved in the first year's work. That is, instead of the average number of deaths that has obtained for a number of years, say 50, we get 48; if this drops to 44 the second year, to 38 the third year, to 30 the fourth, and to 25 the fifth year, this would mean cutting the death rate of the disease half in two for the county, and a total saving during during the five years of 65 lives. If this death rate was reduced no lower but simply maintained, there would be a saving of 25 lives every year as a result of the dispensary. As we know, there are two bedridden consumptives for an entire year for each death from consumption. This reduction in deaths would, therefore, mean the prevention of 130 cases of sickness that would be bedridden for an entire year, or the prevention altogether of 47,000 days of illness.

Sixty-five lives saved, valued at $3,000 apiece instead of $5,000, the usual economic value given to a life taken by tuberculosis, would mean the saving of $195,000 on an investment for the five years of not over $10,000. This would mean a community investment in human life which, disregarding all the humanitarian aspects of the matter and neglecting to include the sickness prevented in our account, would give a community dividend of approximately 2,000 per cent in vital assets.—*Journal of the Outdoor Life.*

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**PREVENTIVE MEDICINE**

**By M. J. Rosenau, Professor of Preventive Medicine and Hygiene, Harvard University.**

A charm hovers about the words "preventive medicine." The idea is attractive because it represents one of the noblest of ideals. Preventive medicine is not a theoretical dream, but a practical study. It is easier to prevent some diseases than it is to prevent accidents or to prevent crime.

"An ounce of prevention is worth a pound of cure" is a fine old saying, full of good, plain common sense. During all ages it has been accepted as a fundamental truth, but only in our own day has sanitation taken a place among the sciences.
The old books that dealt with sanitation and hygiene were filled with curious guesses and wild speculation. Such books now seem to us made up, for the most part, of a loosely-hung chain of fads and fancies. They could not be otherwise until the great discoveries were made that have placed the sanitary sciences upon the solid base of fact on which they rest today.

Some of the old theories now appear absurd. Yet many of those beliefs, that long ago were shown to be false; remain fixed in the popular mind. Thus many persons still believe the night air is unhealthy, and that it causes malaria. We now know that the night air is beneficial, better, in fact, than the air during the day, for it contains less dirt and fewer microbes. Sleeping outdoors in order to breathe the good night air helps to prevent tuberculosis, and to cure it. Even doctors were at first timid about exposing their fever patients to the tonic action of the cold, pure night air.

THE "POISONOUS" NIGHT AIR.

The bad name of the night air was due to the fact that the dreaded malarial mosquito is nocturnal in its habits. Like many another wild animal, it sleeps during the day and prowls about at night in search of its victim. In malarial countries, the natives who go out at night often drape light scarfs or mantillas over their heads in such a way as to cover the mouth and nose. They do this in order to filter the "poisonous" night air. Meanwhile, the malarial mosquito injects its poison through the exposed skin of the forehead or hands!

Sewer-gas has long been needlessly dreaded. It is now definitely known that sewer-gas is not the cause of diphtheria, typhoid fever, or any other infectious or contagious disease. It can hardly be more harmful than the similar gases to which a farmer is exposed when he works on his manure pile.

Since the great work of Pasteur, we have learned, first, the particular germs that are the true causes of most of the communicable diseases, and second, the methods by which these diseases are spread. Moreover, we know how to prevent them. So precise has our knowledge become that it is possible to live unscathed in the midst of a raging plague. During the great epidemic of cholera in Hamburg, in 1892, none of the doctors or nurses contracted the disease, although they were in close contact with it. That epidemic was one of the most severe in modern times; it killed about eight thousand persons, and there were nearly seventeen thousand cases in a few months. It is possible also to protect ourselves against typhoid fever, smallpox, plague, diphtheria, and many other infections.

One reason why prevention has not made faster progress is because it lacks dramatic interest. When we prevent disease—nothing happens! There is nothing very exciting about that. To cure a disease or to stamp out an epidemic fills the eye and appeals to the imagination. A brave general or a gallant admiral is the object of universal admiration, but where is the monument to those who have prevented war? Again, if disease is prevented, there is always a lurking suspicion that perhaps it would not have occurred anyway. This skepticism, which is born of ignorance, is one of the most powerful brakes upon the chariot of progress.
The results of cure are positive—the results of prevention seem negative. Cure is real, active, evident; prevention seems mysterious, quiet, uncertain. For instance, the fact that the effects of prevention are not plain enough for every one to see is one of the obstacles against which vaccination has always had to contend. If Jenner had discovered a cure for smallpox instead of a preventive, and if that cure had been half as effective as vaccination, every civilized nation in the world would do him homage.

If babies were often scalded to death by falling into boiling milk, immediate measures would be taken to prevent such dreadful accidents, but just because babies are poisoned with infections in milk, the facts do not strike the popular imagination, and little is done to protect them from the danger. That is a good example of the difficulty of arousing the public against invisible foes like bacteria, although they may be quite as deadly as bullets. When babies are poisoned by impure milk, the relation between cause and effect is not very evident; people are loath to believe that an innocent-looking and savory glass of milk sometimes contains hidden dangers of a serious nature.

IN THE CANAL ZONE.

The time has long since passed when every man can be his own sanitary. Even the skillful physician is not necessarily versed in the sanitary sciences. Sanitation and hygiene are specialties. There is as much difference between a doctor of public health and the family doctor as there is between the surgeon and the dentist. This is an age of specializing, and preventive medicine has become one of the most highly developed and technical of the special arts—yet its field is broad, for it uses the fruits of many sciences.

It is becoming evident that boards of health, made up as they sometimes are of merchants, real estate agents, good ward workers, and possibly, undertakers, are not the proper persons to be entrusted with the care of the public health. Furthermore, it is almost as absurd to have a board of health as it would be to have a board of generals to command an army, or a commission of admirals to direct the movements of the fleet. Authority for the public health should be vested in one competent person—a man who knows the sanitary sciences and who possesses administrative ability. In no other way can there be efficiency and economy. The old methods were good enough in their day and served a useful purpose; but now we face problems that require concentration of authority and responsibility.

As a rule, health officers receive their training after they have been appointed to office. This school of experience is admirable, but the education is obtained at a price that the public cannot afford to pay. Some of our more progressive universities have recognized this condition of affairs, and have established schools for the training of health officers. At Harvard the degree of Doctor of Public Health is now conferred after a prescribed course of study in medical biology and sanitary engineering. The University of Michigan, the University of Pennsylvania and the University of Wisconsin also offer the degree of D. P. H.
A wide field of usefulness is open to the Doctor of Public Health. He may go into the field as a health officer, or he may devote his time to the science of public health in the laboratory, or he may make use of his knowledge as an adviser or teacher.

The health officer has many difficult duties to perform. His principal work does not consist, as many people imagine, in abating nuisances. First of all, the modern health officer is the bookkeeper of humanity. He collects vital statistics and edits them, in order that we may know the number of births, deaths and marriages, as well as the progress and history of disease.

He must supervise the food supply so as to guard the public against adulteration, and what is still more important, against unwholesome articles of food. He must look after the sanitary conditions of markets, dairies and bakeries. He must study the great subject of infant mortality. He must realize that the workman is entitled to clean and wholesome surroundings, good air, and other conditions that prevent disease. The health of teacher and pupil is a part of the pressing problems of the public health.

The health officer has to look into the purity of the water supply; sometimes he has to undertake the disposal of sewage, garbage and waste. He must have a laboratory where he can study the carriers of bacilli and diagnose disease. He must know what the best disinfecting processes are, as well as how and when to use them. Moreover, he must see that his regulations are faithfully carried out. A health officer must inspect the slums and housing conditions, and wage a relentless warefare against flies, mosquitoes, rats and vermin.

**Civic Pride and the Health Record.**

Civic pride should encourage a constructive and progressive program. Cities will soon learn that a good health record is one of their most valuable possessions. It invites trade and travel. The constant effort to pare down the appropriation for the health department is poor economy. The time is fast coming when some one should be held responsible for preventable diseases just as some one is now held responsible for preventable accidents.

It is sometimes said that preventive medicine has for its object the saving of life. In one sense we cannot save life—all we can do is to prolong life. The one inevitable end awaits us all; but an untimely death is unnecessary, and it can be avoided. To die from typhoid fever, or from tuberculosis, or some other preventable infection is wasteful, as well as heart-breaking to those who love us. It is, however, part of the philosophy of many men that it is useless to prolong life unless we can make it better, healthier and happier.

The nineteenth century saw greater material improvements than any other period in the annals of the world's history. But the achievement that stands out above all others is the conquest of communicable disease.—*Youth's Companion.*
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The material of this Bulletin was sent to E. M. Uzzell & Co., State Printers, on April 4th; its proof was received April 11th; corrected and returned on April 14th; second proof received April 18th; returned April 18th. Cuts called for were not furnished printers until May 1st. Page proof received April 29th; returned May 1st. This Bulletin should reach the reader not later than May 15th.
In the following table there is a message of hope to those who have wagered their time and energy on the possibilities of state sanitation. Let us briefly examine the tabulated facts.

**TABLE SHOWING SIGNIFICANT DECLINE IN DEATH RATES.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Death Rate per 1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>18.7</td>
</tr>
<tr>
<td>1911</td>
<td>18.3</td>
</tr>
<tr>
<td>1912</td>
<td>17.3</td>
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</table>

<table>
<thead>
<tr>
<th>Preventable Diseases</th>
<th>Death Rate</th>
<th>Nonpreventable Diseases</th>
<th>Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUBERCULOSIS</td>
<td>1911...233.0</td>
<td>HEART DISEASE</td>
<td>1911...134.2</td>
</tr>
<tr>
<td></td>
<td>1912...234.0</td>
<td></td>
<td>1912...135.3</td>
</tr>
<tr>
<td></td>
<td>1911...70.8</td>
<td>CANCER</td>
<td>1911...52.3</td>
</tr>
<tr>
<td>TYPHOID FEVER</td>
<td>1912...42.0</td>
<td></td>
<td>1911...54.3</td>
</tr>
<tr>
<td></td>
<td>1911...166.0</td>
<td>BRIGHTS</td>
<td>1911...98.7</td>
</tr>
<tr>
<td>DIARRHEAL DISEASES</td>
<td>1912...140.0</td>
<td></td>
<td>1912...104.1</td>
</tr>
<tr>
<td></td>
<td>1911...82.6</td>
<td>ALL OTHERS</td>
<td>1911...970.0</td>
</tr>
<tr>
<td>CONTAGIOUS DISEASES</td>
<td>1912...53.4</td>
<td></td>
<td>1912...970.0</td>
</tr>
</tbody>
</table>

First, as to the accuracy of the figures: These figures are gathered under a State law. This law was enacted by the General Assembly of 1909, and it requires that all deaths occurring in towns and cities of North Carolina with a population of 1,000 and over, according to the last decennial census, shall be registered. Under this law one-sixth of the population of the State is required to register their deaths. Now, the only point as to the accuracy of the figures that can concern us here is whether the death rates given in the table are based upon an equally complete registration for the several years given in the table. A sufficient margin of safety to justify us in accepting the figures as accurate for the several years mentioned in the table is the fact that, with the death rates incomplete for any of the years, the probabilities are that the figures are less complete for the first years, when those responsible for the execution of the law—the local registrars in the various towns and cities—were less familiar with its requirements; therefore, if the death rates for the first years were more complete, that is, higher, the decline in death rates would be even more marked than the table indicates.

Second, as to the meaning of the tabulated facts: If the figures collected from one-sixth of the State's population can be used as a vital barometer for the entire State, there were 18.7—18.3 = .4 less deaths per thousand of the State's population in 1911 than in 1910, which, when applied to the 2,250,000 people, means 900 deaths less than in the previous year. For the year 1912 there were 18.3—17.3 = 1 less deaths per thousand than in 1911, or 2,250 deaths less than in the preceding year. A committee of experts, after a careful examination, arrived at
the conclusion that there were 700 days of sickness to each death; therefore, if the decline in sickness in the State was commensurate with the decline in deaths there were $2,250 \times 700 = 1,575,000$ days less sickness in 1912 than in 1911.

The remainder of the table was prepared to answer the question whether the decrease in death rates was the result of mere chance or the result of sanitation. If the decline in general death rates indicates the influence of public health work, and not mere chance, then the decline in the death rates for particular diseases should be apparent only for those diseases known to yield to public health work—the preventable diseases—and not for the nonpreventable diseases. Comparing the preventable and nonpreventable diseases and groups of diseases, we see that the declining death rates involve only the preventable diseases.

Finally, we are free to confess that the facts here shown do not make out an absolutely clear case for us, but we do submit that all the evidence is our way and nothing against us.

**DO NOT TELEPHONE PRESCRIPTIONS.**

The other day a doctor in Norfolk telephoned a prescription to a drug clerk, prescribing as one of the ingredients of the prescription “mild chloride of mercury,” but the druggist understood him to say “bichloride of mercury.” Mild chloride of mercury is calomel, and a dose varies from one-half to ten grains; bichloride of mercury is corrosive sublimate, and a dose is from one-sixty-fourth to one-eighth of a grain. Bichloride is a dangerous poison. The druggist compounded the prescription with two grains of bichloride, where there should have been two grains of calomel. The medicine was prescribed for a little boy four years old. The child lost his life as the result, first, of a doctor telephoning a prescription instead of writing it, and, second, on account of a druggist who was willing to risk the life of his patron by receiving such a prescription.

We should have laws prohibiting prescriptions by telephone. Let some candidate for the next General Assembly take notice. He may make himself useful by saving a human life.

**WANTED—A PHYSICIAN.**

A physician is wanted at High Falls, a mill town of 250 population with good surrounding farming country in the northern part of Moore County. We mention this that those who are interested may know just the situation. High Falls is situated between two railroads, the one on the south being two miles from the village, the one on the north being seven miles from the village.

Any physician desiring further information in regard to High Falls, as a good opening for the practice of medicine, should communicate with W. E. Woody, superintendent of High Falls Manufacturing Company, High Falls, N. C.
THE GENERAL ASSEMBLY.

The General Assembly has come and gone. Like its predecessors, the major part of its time was given to county and township legislation. Local laws relating to the running at large of stock, local laws protecting game, local laws prohibiting the depredations of chickens in certain places, local laws incorporating churches and schoolhouses, and many other local laws, too numerous and tedious and insignificant in their bearing upon the welfare of the State to mention, consumed the time of the law-makers. In the General Assembly of 1913 the counties and townships were well represented, the State poorly represented—too many representatives and too few "State's"-men. The great Ship of State, laden with two and a quarter million souls, had to wait until the rowboats and private yachts could be looked after, and then, in the short time remaining, was hastily overhauled and started upon her course around the sun.

This North Carolina custom of bringing home problems from county to state councils for solution is one of the most serious and most fundamental drawbacks to the progress of this State. With the flood of local matters to consume their time and energy, our representatives cannot possibly investigate thoroughly state-wide problems; they must, therefore, cast their votes in many of these weightier matters more from their confidence in friends than from their own personal knowledge.

The leaders in the State and in the dominant party have spoken against this practice of making the General Assembly a clearing-house for local—county and township—legislation. By all the principles of democracy, such legislation belongs at home. North Carolina has grown large enough to have sufficient problems to occupy the time of her General Assembly, and the counties of the State have had experience enough in self-government to be trusted with the handling of their own affairs.

STATE LEGISLATION.

The principal State-wide measures that statesmen and public sentiment piloted and forced through the mass of local legislation were:

1. Six-months School Law,
2. Compulsory Attendance Law,
3. Vital Statistics Law,
4. Optional Torrens Land Registration,
5. Corrupt Practice Act,
6. Arrangement with Railroads for Better Freight Rates,
7. Search and Seizure Law,
8. Township Bonding Law for Roads,
10. Anti-Trust Law,
11. Traveling Library Law,
12. Child-labor Law (only slightly improved).

2—May
NEW HEALTH LAWS.

POSITION OF GENERAL ASSEMBLY ON PUBLIC HEALTH COMMENDABLE.

The interest of the State Board of Health and the health interests of the State in general was centered in five bills which were passed upon by the recent General Assembly. Two of these bills in slightly amended form became state laws, and three of the bills failed to pass. As we shall have something to say at another time and place about the bills that were killed, we shall only refer here to the two bills that were enacted into law.

In the first place and in a general way we desire to say that the State Board of Health is satisfied with its treatment at the hands of the recent General Assembly; the Board feels that, notwithstanding the loss of three of its bills, it obtained through the enactment of two of the bills 90 per cent of what it asked of the General Assembly.

The act requiring the registration of all births and deaths occurring in the State of North Carolina is probably, with one or possibly two exceptions, the most important health law ever enacted by a North Carolina General Assembly. This law was drafted from what is known among federal and state registration officials as the Model Law. The Model Law has been prepared by representatives of the different states, now twenty-six in number, requiring the registration of births and deaths, and the United States Census authorities. Every state that has adopted a registration law since the Model Law was prepared has adopted this law in its entirety or in a slightly modified form.

The vital statistics law, or the law requiring the registration of births and deaths, has three distinct values:

First, it is of great value as furnishing a complete and permanent family record. For example, when a permanent record of the birth of Governor Craig, when and where he was born, the name of his father and mother, etc., and the death of ex-Governor Aycock, the time and place of death, the name of his parents, etc., are made State records and filed away in fire-proof vaults where these records will remain for all time, and when this service, which the State does for these two of its great men, is extended to every citizen in the State, this law, for permanently recording the births and deaths of each member of every family in an official form that will never be lost or destroyed, should appeal to both the sense and pride of every intelligent citizen. The law permits any family to record births and deaths occurring before the law is to be put into operation on October 1, 1913, on the payment of fifty cents for each birth or death recorded, that is, to have the births and deaths of their children, parents, or friends permanently registered; and the law requires, after the 1st of October, 1913, that all births and deaths occurring in North Carolina shall be permanently and officially recorded.

Second, the law is of great value to the courts in the proper execution of other laws. For example, in determining (a) legitimacy, (b) the
duty to attend school under compulsory educational laws, (c) the right of manufacturers to employ children, (d) the marriage privilege, (e) the duty to pay taxes and to hold office, (f) the right to apply for life insurance and to enter into contracts and partnerships, (g) to determine the "age of consent?" (h) to determine the age that jury service and military service may be required, (i) to furnish official and indisputable record of death in the determination of insurance claims and the disposition of inheritances.

Third, the law is of great value and of fundamental importance to public health work. Under this law it will be known (a) where the death rates in North Carolina are high, and, therefore, where health work is needed; (b) which diseases have excessive death rates; (c) the effect or measure of health work by the comparison of the death rates for two or more years; (d) the efficiency or inefficiency of health officers in their communities as indicated by changes in the death rates, and (e) the relative standing of different counties and towns as indicated in death rates, thereby creating a healthy rivalry between neighboring towns and counties in maintaining low death rates.

The other bill which became law was known as the general amendments bill. This bill made several important amendments to the existing laws which the experience of health officers had found were needed in the county health work.

The principal amendments were (a) to place quarantine entirely within the hands of the county and municipal authorities; (b) to change the title of the county superintendent of health to that of county physician or county health officer, according to whether the employee of the local board of health simply looks after the county dependents in the jail, convict camp, and county home, or whether he spends the major part of his time in efforts to prevent disease rather than to treat existing disease; and (c) an increase of the general appropriation for the State Board of Health from $18,500 to $26,500. The increase in the appropriation to the Board was found to be necessary to meet the growing demands of the public for advice regarding preventable diseases, for a larger amount of work by the State Laboratory of Hygiene, and to maintain the work of the Hookworm Commission on its present basis.

DO YOU KNOW—

That the expense of maintaining our National Government is $1,000,000,000 a year, or $10 per capita?

That the expense of your State Government is about $4,000,000 a year, or $1.76 per capita—only about one-sixth of the per capita expense of the National Government? That North Carolina, as compared with the Nation, is not so very extravagant?

That about half of our National expense is for wars past and wars anticipated—that is, for pensions and the upkeep of the Army and Navy? That the National Government spends $115 for war (Army and Navy) to every dollar it spends for public health? That apparently as a nation we are 115 times more anxious to kill than to save?
That the entire annual expenditure of the National Government for saving life is about one-fifth the cost of one battleship?

That one modern battleship costs $12,000,000, and that it costs $800,000 a year to maintain it for the twenty years of its life? That the Congressional Library—the finest library in the world—was built for a little more than half the price of a battleship, and that it is maintained for about three-fourths of the cost of the maintenance of a battleship? That for the price of one modern battleship 50 manual training schools could be built and equipped for teaching 75,000 young people useful trades and arts? That 2,800 churches, at a cost of $10,000 each, could be built for the cost of the construction and maintenance of a battleship of the North Dakota type? That for eight years following the Spanish War the expense for our Army and Navy was $60 per family?

That it costs on the average of $15,000 to kill a man in war, and in the Boer War that the cost was $40,000 for every man killed?

That the sanitary work carried on in the Canal Zone has shown that lives can be saved for $2.43 each? That if a live man is worth more than a dead man, and it costs $15,000 to kill a man and $2.43 to save him, that we should spend more on public health and less on war?

THE DANGERS OF THE SEASON.

SUMMER COMPLAINT, TYPHOID FEVER, AND MALARIA.

"A prudent man foreseeth the evil, and hideth himself; but the simple pass on and are punished."—SOLOMON.

One-fifth of all deaths occurring in North Carolina between June first and December first are due to three diseases: summer complaint or diarrheal diseases of children under two years of age, typhoid fever, and malaria. Four thousand citizens of our State die every summer from these three largely unnecessary diseases.

THE ORDER OF THEIR ATTACK.

Summer complaint or diarrheal diseases of children under two years of age leads the deadly triad both in the time of its attack and in the large number of its helpless and innocent victims. This disease begins its period of prevalence in May, reaches its greatest height in July or August, and declines with the cooler nights of September. Eighty-seven per cent of the deaths from this disease occur in the summer season. This disease kills very probably three or four times more children during the summer than all the other children's diseases combined. During the five or six months of its prevalence it takes the lives of 3,000 babies, causing one-seventh of all the deaths that occur between the months of May and November.

Typhoid fever follows summer complaint in point of time and the number of its victims. This disease gets its start in July and reaches
its greatest prevalence in September. One thousand North Carolina citizens die of typhoid fever every year; ten thousand others have the disease and recover. Eighty-four per cent of the deaths and cases of sickness from typhoid fever fall within its season of prevalence, which begins in June and terminates in December. During this time one-twenty-fifth of all deaths are the result of typhoid fever.

Malaria, the last of the three fates of summer, begins its attack in August and reaches the period of its greatest prevalence in October, and withdraws from its ravages as the cooler weather of late fall and winter drives the mosquito into hibernation. During its season of prevalence it causes about five hundred deaths and fifty thousand cases of chills and fever.

NORTH CAROLINA FAR AHEAD.

Look at the tables and see for yourself. We know long rows of figures are tiresome, but the following tables are worth just a pinch of fatigue to the pride of any patriotic North Carolinian.

### NUMBER OF PERSONS TREATED FOR HOOKWORM.

<table>
<thead>
<tr>
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<th>1910</th>
<th>1911</th>
<th>1912</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Alabama</td>
<td></td>
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<tr>
<td>Arkansas</td>
<td>3,330</td>
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<td>Kentucky</td>
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<td><strong>Totals</strong></td>
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### NUMBER OF PERSONS MICROSCOPICALLY EXAMINED.

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A PRAYER FOR THE BABIES.

O GOD, since Thou hast laid the little children into our arms in utter helplessness, with no protection save our love, we pray that the sweet appeal of their baby hands may not be in vain. Let no innocent life in our city be quenched again in useless pain through our ignorance in sin. May we who are mothers or fathers seek eagerly to join wisdom to our love, lest love itself be deadly when unguided by knowledge. Bless the doctors and nurses, and all the friends of men, who are giving of their skill and devotion to the care of our children. If there are any who were kissed by love in their own infancy, but who have no child to whom they may give as they have received, grant them such largeness of sympathy that they may rejoice to pay their debt in full to all children who have need of them.

Forgive us, our Father, for the heartlessness of the past. Grant us great tenderness for all babes who suffer, and a growing sense of the divine mystery that is brooding in the soul of every child. Amen.—WALTER RAUSCHENBUSCH, The Survey, Sept. 7, 1912.
SUMMER COMPLAINT, OR DIARRHEAL DISEASES OF YOUNG CHILDREN.

Under the same conditions that have always prevailed in North Carolina, 3,000 cooing, prattling, curly-haired, rosy-cheeked children, such as the Master said made up the hosts of heaven, stand condemned to die during the next six months.

Some of these fatal conditions can be changed. The following facts suggest one of the most needed changes: Of the 3,000 babies that may die, 2,000 of them will be under one year of age, and 1,800 of the 2,000 will be bottle-fed babies; only 200 breast-fed babies under a year of age will die. The other 1,000 babies will be over one year of age, and will have been weaned if they have been properly raised. It is, therefore, perfectly clear that the baby at the breast is safe and that bottle feeding is one of the greatest dangers of infant life. Ten times as many bottle-fed children die as breast-fed children; hence the baby's first right is its birthright—its mother's breast.

But some mothers cannot nurse their babies? Only a very small per cent of mothers are unable to nurse their babies. An extensive investigation carried on among the members of the Minnesota State Medical Society, and among the members of the Section on Diseases of Children of the American Medical Association, has shown that only about 20 per cent of physicians' wives fail to nurse their children for three months or longer, while about 80 per cent of them nurse their children three months or longer. Moreover, it is an established fact among professional men that the per cent of mothers nursing their children is very much higher among mothers under the supervision of the better qualified class of physicians than among mothers under the care of less well qualified physicians. Jacobi, one of the greatest authorities on diseases of children, expresses this last fact in these words: "The attentive doctor and diligent midwife know that our women, poor and rich, suffer from no organic mammary degeneration."

I want to ask every mother, to whose attention this article comes, to read the article on "Maternal Feeding," by Dr. Sedgwick in this Bulletin, and the short article on "Bottle Feeding," before giving up the idea of nursing her baby.

MATERNAL FEEDING.*

By J. P. Sedgwick, M.D., Minneapolis.

Breast feeding may not succeed, because the mother herself is not properly considered. She must, of course, have the advantage of good nourishment and care during the whole of her pregnancy. She should have the assurance that almost every mother can nurse her child. She

*Note.—This article is part of an address delivered by a high authority on diseases of children, before the Third Annual Meeting of the American Association for the Study and Prevention of Infant Mortality, in Cleveland, Ohio, in October of last year.
THE STORK BRINGS THE BABY
must be made to understand the importance of maternal feeding for her
babe's life and growth. She must be given facts to neutralize the effect
of stories told by well-meaning, but ignorant, busy-bodies. Shortly
after the child is born she will receive circulars, very shrewdly worded,
which laud the ease and safety of substitute feeding. The danger of
such ideas, and interestedness of those supplying them, must be made
clear to her.

Nursing must be made as little a burden to the mother as possible.
We have all seen mothers who have been directed not to eat vegetables
or meat, sour things or sweet things, and so on until they ask, with jus-
tice: "What is there left for me to eat?" Many a breast nursing has
gone to wreck because the mother's appetite rebelled against a diet made
up almost exclusively of gruels, cocoa, and beer. We now know that the
nursing mother can eat what is proper for any woman, with an increase
of food value, and reasonable addition of fluids to cover the loss through
the milk. The knowledge that pickles do not sour the milk will give
many mothers an entirely new view of the subject. After such infor-
mation it should be explained to her, of course, that no one advises a
diet largely made up of pickles for any woman.

The mother's comfort should be considered. By lengthening the in-
terval of feeding, the mother is greatly relieved. Very rarely is an in-
terval less than three hours necessary and more often a four-hour inter-
val is best employed. We frequently hear that the baby stays at the
breast from one-half to one hour, and even all night. This is very try-
ing to the mother and of no real service. Often the only way to convince
the mother of this is to determine the amount taken in fifteen or twenty
minutes by weighing the baby before and after nursing, and then, by
putting the infant back for five minutes, and weighing again, she can
be shown that very little, if any, milk is obtained by the baby in the
last five minutes. Prolonged nursing is a common cause of fissured
nipples. With the longer intervals it may be necessary to give both
breasts at one feeding. Longer intervals and shorter nursings will often
change an unsuccessful and burdensome lactation into a real pleasure.

Night feedings should be avoided as much as possible. Frequently,
what appears to be a necessity is only a habit, and two or three nights'
training will give rest for both mother and babe in the future. Men-
struation, even if the baby is temporarily restless, is no reason for tak-
ing the child from the breast. Pregnancy is not an indication for imme-
diate weaning.

Contagious diseases, such as scarlet fever, and diphtheria, and even
the usual typhoid (I am speaking from personal experience, as well as
from reports of others), are not sufficient ground for weaning the young
baby. There may not be enough milk for a time, and the temporary
addition of some artificial mixture may be necessary, or even during a
severe fastigium, it may be advisable to take the baby from the breast
for a short time altogether; but with the convalescence, the reapplica-
tion of the baby to the breast will bring the milk back and the lactation
will proceed normally. Open tuberculosis in the mother is a contra-
indication to breast feeding.

The fundamental requirement for the stimulation and continuation of
the milk flow is the complete and regularly repeated evacuation of the
breasts. Specific preparations for the production of the flow of milk are of value principally because of their mental effect. The sucking of a strong healthy baby stimulates the breasts to increased output. It has been recently shown that the milk supply can also be kept up by diligent, artificial evacuation of the breasts, by the pump or hand. If the mother’s own babe is weak, the strong child of another woman may be put to the breast to stimulate the milk flow.

From the baby’s standpoint, as well as from the mother’s, it is well not to nurse it at less than three-hour intervals. A large number of babies do well on three and a half or four-hour intervals. The infant’s stomach, as well as that of adults, should be allowed a period of rest. Most of the so-called “colic” will disappear with longer intervals. Likewise, it is best for the babe not to let it lie at one breast too long. Fifteen or twenty minutes are almost always enough. After that length of time the child gets little or nothing.

If but one breast is taken at a feeding, they should, of course, be offered alternately. If both are required each time, the nursing should be begun at one for the first feeding, and at the other for the next feeding, and so on alternately.

The nipples may be cleansed with boiled water; antiseptics are not necessary, and may be harmful. The mouth of a normal baby should not be washed, as this practice is often the means of implanting thrush or other infection, and the mechanical injury may cause Bednar’s Aphthæ or simple stomatitis. Cracked nipples should receive care and protection, preferably by nipple shields, as by furnishing an opening for infection they may be the cause of inflammation of the breast proper.

If the baby does not gain in weight it is rarely, if ever, because the “breast milk does not agree with it,” but usually because the quantity of milk is insufficient. When the baby is taken from the breast because the milk is supposed to be poor in quality, it is a mistake in nearly every case. Poor milk cannot be recognized by looking at a few drops or a glassful expressed from the breast. The rough method of milk analysis by hydrometer and creamometer has been the cause of many deaths through depriving babies of breast milk on the ground of incorrect determinations of the contents. Accurate analyses by competent chemists are of little clinical value, as the variations shown from the normal are so slight that they do not, in the present state of our knowledge, warrant weaning.

If the infant is well otherwise, but still does not gain at the breast, it is not because the “mother’s milk does not agree with the baby,” but because it does not get enough. This can be determined by weighing the baby before and after each feeding for twenty-four hours. If the amount is found to be insufficient, regularly repeated complete evacuation of the breasts, patiently persisted in, will usually bring the amount up. The mother’s health and nourishment should, of course, be looked into. If the quantity is found to be definitely deficient, sufficient additional or complemen tal feeding may be given after each nursing to nourish the child properly all through the lactation, or until the breast can supply enough. The fact must not be lost sight of, however, that the repeated complete evacuation is the essential. The mother is often led to believe that she has not enough for five nursings, and drops
one breast feeding, putting in its place a bottle feeding, hoping to have more for the nursing that she does give. This does seem to be the case at first, but the breast soon adjusts itself and there is really less milk, as she has transgressed the law of repeated, complete evacuation.

There is general agreement that weaning should be begun in the last quarter of the first year, and carried out gradually. First, one breast nursing should be supplanted by an artificial feeding, and when the breasts have adjusted themselves, a second nursing should be dropped, and so on until all are given up. This should require three weeks or longer.

What are the difficulties practically experienced in carrying out the technique of nursing? Among the questions sent out to the physicians by me, was one asking the reason for discontinuing the breast feeding in each case, if done before the end of the ninth month. We have here the means of studying not one man's experience, but that of many in the field. Let us consider the various causes of failure as to the number of times they occur, their justness and remedy.

Insufficient quantity, as one would expect, is most frequently put down as the reason for discontinuing the breast feeding. This is given as the reason with 228 babies of the Minneapolis list, and 48 times in the answers from the list of the members of the Pediatric Section of the American Medical Association. Insufficient quantity is, in most cases, an indication for mixed feeding, that is, a complementary feeding with the breast, not replacing the breast, a supplemental feeding. . . . Included with the reason of "insufficient quantity" should probably be the answer, "No Milk," 54 times for the Minnesota list and 11 times for the American Medical Association list. It is generally considered, to-day, that there is no such condition as complete agalactia. "No gain in weight," which appears for 25 babies, should probably appear with insufficient quantity as an indication for mixed feeding rather than weaning.

In the larger list the "mother's condition" was given as a reason for discontinuing, 90 times for 46 mothers and 19 times for 13 mothers in the shorter list. Little competent criticism can be made of this reason, except that it appears much oftener than in Schwarz' series, and one suspects that in some of the cases the babe's right to the breast milk and the dangers of artificial feeding were not given sufficient consideration in the decision.

In the light of the modern understanding, the next reason, "Poor quality of the milk," which appears 83 times in the Minnesota list and 13 times in the A. M. A. list, would, with rare exceptions, be considered as no reason, but simply a misinterpretation of some illness of the baby, or trouble caused by some error in the technique of breast feeding.

"Colic," which is given as a reason five times, does not appear in the list of the babies that were fed with an interval of three hours.

Menstruation appears as a reason but five times, which is probably five times too often.

Mastitis appears but eight times, and troubles with the nipples four times. This shows how rarely it is that this, at times adequate reason for giving up the breast feeding, cannot be overcome. Other scattering reasons are given, but none of importance for the matter in hand.
BOTTLE FEEDING.

AN EARNEST REQUEST FROM THE STATE HEALTH OFFICER OF MOTHERS WHO CANNOT NURSE THEIR BABIES.

When bottle feeding is, of necessity, adopted, the mother should fully recognize the risk assumed for her child. Ten times as many bottle-fed as breast-fed babies die. Many mothers—10 to 15 per cent of North Carolina mothers—take the risk, and are justified in doing so; but, no mother who can read is justified in adopting bottle feeding for her helpless infant without thoroughly posting herself as to approved methods of bottle feeding, the dangers incident to bottle feeding, and the means of avoiding such dangers.

The State Board of Health stands ready, upon the receipt of a post-card, to place, without cost, in the hands of any mother the necessary literature, literature that it will not take more than half an hour to read, for instructing her as to the best methods of bottle feeding.

Now, the writer is not going to have anything further to say about this, except to ask you, in the name of your baby, to read what Rev. Milton Barber has to say about the sin of presumption in the article following.

SOME WAYS IN WHICH THE SIN OF PREJUDICE IS BEING MANIFESTED IN THE WORLD TO-DAY.

From a sermon preached in Christ Church, Raleigh, by the Rector, Rev. Milton A. Barber.

Let me give a few practical and concrete illustrations of what I mean: (a) A young lady whom I knew was suffering from a severe cold, and was ordered by her physician to remain indoors until her cold was broken. But she wanted to go to a dance in the country, so she drove through the cold night air four or five miles, danced until a late hour, and returned home. What do you suppose was the result? What result was to be expected?

She contracted pneumonia and died. The devoted mother was heartbroken over the death of her only daughter, and, strange to say, seemed to feel bitter towards God for “taking her daughter away from her.” Poor, foolish mother! Did she expect God to suspend the laws of the universe and work a special miracle to save her daughter, who had willfully and deliberately invited her own death?

I would not say that it was God’s will that that girl should ignore and treat with contempt the laws of health, and, against the advice of her physician, contract pneumonia and die. I should say that it was decidedly contrary to His will. Her death was due to the deliberate violation of His wise and merciful laws.
(b) Again, take the diseases and suffering which follow as the result of drunkenness and dissolute living—sins which men bring upon themselves. Are these in accordance with or contrary to God's will? In one sense, they are in accordance with His will, and in another sense, they are contrary to His will. They can be in accordance with His will only in the sense that they are the result of His own inexorable law of cause and effect. He certainly can take no pleasure in the sins and suffering of any one. And death came by sin. "I have no pleasure in the death of him that dieth, saith the Lord God."

He warns us at every step. As has been said, "His laws have put lighthouses on every headland, buoys on every shoal." And yet men utterly ignore them.

Do you suppose it was God's will that the men in charge of the Titanic should ignore the warning given against icebergs, drive that splendid ship heedlessly on in the darkness of the night at full speed until it crashed into a great floating mountain of ice and went down with its precious cargo of human lives to the bottom of the sea—I say do you suppose this was God's will? To me such a thought is unworthy of a Christian. That awful disaster was due to the presumption, the pride and arrogance of man.

(c) Once again, here is a city or community smitten with some pestilence or epidemic, like typhoid fever. Many good, pious people will cry out that it is a special visitation of God upon the people because of their sins. Prayers are made to Him in the churches that He will of His goodness remove this affliction from His people. But such epidemics are due in nine cases in ten to a breach of God's physical laws, and frequently a high-handed breach. Contaminated water, filthy streets, foul alleys—these and other unsanitary conditions are not to be changed by prayers in the church, but by busy men outside the church. It is presumption to trample God's sanitary laws under foot, and then expect Him to save us from sickness and suffering. He works according to law and order. It is evident, then, that we have matters largely in our own hands as regards our physical (and I might add our spiritual) condition here and hereafter.

According to this view, what we call physical laws are divine, and disobedience of these laws becomes moral disobedience. What we call natural and supernatural laws are closely linked together, and are expressions of a personal, intelligent will, orderly, just, and good. And the willful, deliberate violation of revealed law in either the physical or spiritual realm is sin.

To call upon God to preserve us in the deliberate breach of His physical or spiritual laws, to see how far He will allow us to disobey His laws and yet save us from the consequences of such disobedience—this is to tempt Him. And "It is written," said our Lord, "man shall not tempt the Lord thy God."
SOME PUBLIC ENEMIES.

With felicitous and concise ingenuity, Health Commissioner Powers of San Francisco catalogues what he terms the "enemies of children" under thirteen heads:

1. Doctors who don't report their cases of contagious diseases.
2. Dirty milkmen.
3. Flies.
4. Tubercular cows.
5. Persons who conceal contagious diseases.
7. Reckless automobile speeders.
8. Violators of quarantine.
9. Manufacturers of adulterated candies.
10. Manufacturers of adulterated foods.
12. Parsimonious taxpayers who place the hoarding of money above measures for the protection of child life.
13. Mothers who needlessly deprive their babies of mother's milk.

To these might be added two more:

14. School boards that neglect air, light, and sanitation.
15. Venders of soothing syrups and other "doped" nostrums.

The list is worthy of being posted in every household. Properly interpreted and digested, it will do more good than much medicine.—McClure's Magazine, April.

SANITATION OF THE MIND.

"Finally, brethren, whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report, if there be any virtue, and if there be any praise, think on these things."—Philippians, 4:8.
THE FLY'S MULTIPLICATION TABLE—POSSIBILITIES OF REPRODUCTION.

May 1, one fly egg hatches one maggot, which becomes a female fly; May 25, the female fly lays 120 eggs; June 5, 120 adult flies issue, of which 60 are females; June 19, the 60 female flies lay 7,200 eggs; July 1, 7,200 flies are hatched, of which 3,600 are females; July 14, 3,600 female flies lay 432,000 eggs; July 25, 432,000 flies issue, of which 216,000 are females; August 14, 216,000 female flies lay 25,920,000 eggs; August 24, 25,920,000 flies issue, of which 12,960,000 are females; September 18, 12,960,000 flies lay 1,555,200,000 eggs, which on October 4 bring forth 1,555,200,000 flies.
THE PRACTICAL MANAGEMENT OF THE FLY PROBLEM.

WHAT CAN BE DONE BESIDES TALKING ABOUT IT.

The evidence against the fly, both as a nuisance and a danger, that has already been presented to the court of public opinion is convincing. The fly has been declared guilty on the following counts:

(1) The fly is a nuisance. The fly is born in manure and is nothing more than a maggot disguised. When he leaves the open privy for the dining-room and kitchen, he does not wipe his feet.

(2) The fly conveys those disease germs that are found in excrement to the food and drink of careless people and helpless infants. A large amount of typhoid fever, summer diarrhea, and cholera infantum of children, and dysentery, are caused in this way.

(3) The fly, according to a careful estimate, is responsible for not less than 2,000 deaths, 100,000 days of sickness, and a monetary loss of $3,000,000 in North Carolina every year.

NOW IS THE TIME OF ELECTION FOR FLY FIGHTING.

The truth of this statement is at once evident on the examination of the life history of the fly which is illustrated on page 36 of this Bulletin. The illustration shows the life cycle of the fly. Starting with the egg which hatches in eight to twenty-four hours after it is laid, we have in orderly sequence the larval or maggot stage lasting five days, the pupal stage lasting five days and terminating in the sexually immature fly, which, after ten days, is succeeded by the sexually mature fly. The sexually mature fly can deposit eggs within four days after reaching this last stage of its development. A fly lays one hundred and twenty eggs at a time, and lays four batches of eggs during the summer. In this climate there are about nine generations of flies each summer.

Now, as each generation springs from the preceding generation and multiplies it somewhere from five to sixty times, it is perfectly clear that in fighting the fly the fight should begin before the fly has begun to multiply rapidly. Therefore, do not become discouraged because you cannot catch as many flies in the trap or kill as many in May as you can catch or kill in June or July. One fly killed in May is equivalent to one hundred flies killed in June, or possibly one thousand flies killed in July.

A large part of the success in getting rid of flies depends upon the time of beginning the fight against them.

HOW TO FIGHT THE FLY.

Under this heading it is important that we shall recognize that there is quite a difference in the practical management of the urban and rural fly problem. The writer appreciates the fact that he is a little unorthodox in this statement, but from long personal experience as both a rural and urban resident, he is convinced that his position in this matter is correct.
THE URBAN FLY PROBLEM.

Under this heading are included all populations of such density that the flies produced in one person's horse stable may pester and endanger a neighbor's home, or any community where there are several barns in four or five hundred yards of a number of homes.

Under these conditions the fight on the fly should be directed against his breeding place. Stables should be so constructed as to permit the complete removal of manure every two weeks between the middle of April and the middle of October. The word complete is the key-word to the accuracy of the last sentence.

Now, the best way to get this done is, first, for the municipality to require a license for the maintenance of every horse stable, cow stable, or hogpen, and refuse to license stables that cannot be completely cleaned; second, to require the owner of such stables or pens to pay a sufficient license fee to compensate the municipality for cleaning the stables and pens. This fee would be very small, as the sale of the manure to neighboring farmers would pay a large part of the cost of removal. If the owner of the stable wanted to use the manure, he should be allowed to do so, (a) if he spreads the manure every four days on his land in such a way that the sun will thoroughly dry it, or (b) if he will keep the manure in a fly-tight bin.

It is right and just that a municipality should protect the many from the annoyances, the unnecessary cost of screening houses, and the danger from flies produced by a comparatively few stable owners. The insuperable obstacle to this bit of idealism is that sacred, constitutionally guaranteed "personal liberty" of the microscopically visioned individualist. When the property rights of the few are in conflict with the human rights of the many, it ought not to be hard for men of intelligence and a fair amount of courage to decide the issue promptly and justly.

However, there are municipalities where suitable regulations are more distasteful to the liberty-loving populace than the annoyance of flies and the suffering from unnecessary sickness. Here the urban fly problem is very much the same as the rural fly problem, with this exception: the rural resident is annoyed by nobody's flies except his own; the urban resident usually suffers from the flies that somebody else produces.

THE RURAL FLY PROBLEM.

In the country it is impracticable to attack the breeding places of the fly. The prevention of flies, therefore, is out of the question. The problem in the country is to kill the fly. The farmer cannot dispose of his stable manure every week or twice a week. The application of the following remedies, begun promptly in May and persistently followed through the warmer months, will keep the rural home fairly free from flies:

Remedy No. 1: Buy one pint of formalin from your druggist. It will cost you about fifty cents. Keep it tightly corked. Every other day add two tablespoonsful of the formalin to a half-pint of water; place the water, with an equal quantity of sweet milk, in saucers or plates, about the barn. A crust of bread dropped into the plate will
furnish something for the fly to light upon. Replenish the mixture in
the saucers or plates every other day, or as often as necessary to keep
some of the liquid standing in the plates or saucers. The number of
plates or saucers to be kept at the barn will depend on the size of the
building. The plates should be placed where the flies will easily find
them, that is, in some well-lighted place. The amount of liquid is not
sufficient to poison anything that might drink it. This mixture placed
in a dairy barn was known to kill six quarts of flies within three days.

Remedy No. 2: Make a box $4 \times 2 \times 1\frac{1}{2}$ feet. Make the two sides of
the box, which will be $4 \times 2$ feet, of eighteen-mesh wire screen; make
the top, bottom, and ends of the box of any wood, preferably white pine;
through the bottom of the box cut three round holes about six inches
in diameter; over these holes, before closing the box, of course, fasten
three cones of the same wire that composes the sides of the box; the
opening in the little end of the cones should be about three-fourths of
an inch in diameter; through either the top or one end of the box an
opening with a sliding trap door should be made for removing the con-
tents of the trap; tack two strips $18 \times 1\frac{1}{2} \times 1\frac{1}{2}$ inches at the end of
the box on the bottom, so that, when the box is placed upon a floor or
level surface, the cone-covered openings in the bottom of the box will be
about $1\frac{1}{2}$ inches from the surface on which the box is resting.

Fig. 1.

You now have one of the very best fly-traps that can be made. Figure
1 shows such a trap. Place the trap just outside the back door or near
the window or door of the house where the flies congregate in largest
numbers. Place it close to where the slops are kept. Put sugar, mo-
lasses, clabber, or, best, when available, fish heads for bait just beneath
the bases of the cones. The flies in leaving the bait will fly upward towards the light into the cones and crawl through the small opening into the trap.

After a number of flies have been caught ignite a newspaper or some straw or grass and pass the trap through the flames and the wings of the flies will be singed. The sliding door in the top or end of the trap should then be opened and the flies emptied out on a piece of paper and burned.

Figure 2 shows a pile of flies (note relative size of teacup and pile of flies) caught in this way.

Fig. 2.

Remedy No. 3: Screen the house, kitchen and dining-room, if nothing else, with eighteen-mesh wire gauze. Larger mesh will permit the entrance of mosquitoes, and it costs but little more to get the eighteen-mesh, which will serve to keep out both flies and mosquitoes.

Remedy No. 4: Use plenty of fly-paper in the house, especially in the kitchen and dining-room, and let the children earn their Sunday-school money by killing the flies that the fly-paper fails to get. In killing flies, the children should not handle the dead flies.
THIS BULLETIN WILL BE SENT FREE TO ANY CITIZEN OF THE STATE UPON REQUEST

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OF THE

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THOMAS FANNING WOOD, M.D.,
First Secretary of the North Carolina State Board of Health, 1877-1892
THE WHOLE TIME COUNTY HEALTH OFFICER

WHY YOUR COUNTY NEEDS A WHOLE TIME HEALTH OFFICER

Let us assume that your county, from a standpoint of population and wealth, is one of the ablest counties of the State to afford a whole time health officer. If our assumption is correct, your county has a population of 30,000 or more, and taxable property to the value of $10,000,000 or more.

Now, if we look at things from a standpoint of human life, rather than from a materialistic standpoint, we must realize that your county is not primarily so many square miles of land with fields, woods, cotton, and corn, not so much property, but 30,000 human lives, more or less.

The chief asset of these people is their health and life. If health conditions in your county are what health conditions in the average North Carolina county are, then there occur in your county 540 deaths a year. Of these 540 deaths, 200 of them are from preventable causes; 78 deaths are due to consumption; 15 deaths due to typhoid fever; 15 deaths due to contagious diseases; 8 deaths due to chills and fever; and 45 deaths of children under two years of age are caused by summer complaint. In addition to this, there are 1,100 people sick in bed in your county every day in the year; there are 225 consumptives in your county, many of whom, in absolute ignorance of the effects of careless spitting, sneezing, and coughing, are going about distributing the deadly seed of this disease to another crop of White Plague victims; there are every year in your county 120 cases of typhoid fever; 145 cases of contagious diseases; and if your county is in the Piedmont or eastern section of the State, there are from 500 to 1,000 cases of chills and fever.

If this sickness and death is predetermined and due to natural causes over which you have no control as an individual or a citizen, the facts above set forth impose no responsibility upon your conscience. If a part of the above sickness and death is of a preventable nature, it does impose upon your civic conscience one of your gravest responsibilities. Can you deny this fundamental premise? Answer. That a large part of this disease is preventable is attested by the fact that the whole world accepts the fact of the preventability of disease, as is evidenced by the enactment of laws and the establishment of health departments by all civilized governments. Such action by the civilized world would be the height of folly if the fact was not established that disease, to a large extent, is of a preventable nature. This fact is proven beyond the shadow of a doubt by the actual accomplishment of health departments in reducing death rates from these preventable diseases as shown by the United States Census reports. To any one who doubts this basic fact, the preventable nature of disease, the State Board of Health will be glad to supply the details of proof on request.
THE COST OF A WHOLE TIME COUNTY HEALTH OFFICER

Your county can obtain a whole time county health officer for the salary of $2,500 a year, and have as a condition in the contract that the health officer shall own and maintain an automobile. This is important, as a health officer with a machine is equal to two health officers without a machine.

Your county cannot afford it? Let us be reasonable and honest, and not afraid to look at the facts. This is not a big financial proposition like the building of a graded school or voting a school tax or road bond issue. It is, from a county's viewpoint, a small financial consideration.

When we begin to talk about the cost of a thing we must also keep in mind the value of the thing that is to be purchased—in this particular instance the value of human life. Now, what is your baby worth, in dollars and cents? Well, then, if you cannot think of your own child that way, perhaps you can think of the financial value of the other fellow's baby. Experts in the study of values, in the study of cost and production, have investigated the animal value of human beings. But, before giving an expert opinion I may remind you that it has not been so many years since we did put a financial value on man as an animal. You will recall that we sold them at from $750 to $1,500 apiece, and this was an unskilled man, the cheapest form of labor. It is a fact, too, that the United States Government places a financial value on the average immigrant of $875. He is worth this much to us—this man that cannot speak our language, and has not yet learned the meaning of patriotism—because of the tax that he pays and of the property which he makes on which somebody else pays tax; the direct and indirect tax that the immigrant is responsible for is equal to the interest on a principal of $875: Now, world-recognized experts on values, men of the type of Irving Fisher, Professor of Political Economy, at Yale University, have figured out the financial value of the average American citizen at the following figures:

<table>
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<tr>
<th>Age</th>
<th>Net worth of a person, in dollars</th>
<th>Age</th>
<th>Net worth of a person, in dollars</th>
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<tr>
<td>0</td>
<td>90</td>
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They find that the lowest value of the average American, that is the most conservative estimate, is $1,700.

The 200 preventable deaths occurring in your county annually at this figure cost your county $340,000. Suppose blind-staggers among the horses of the county cost this much money every year, do you not know that the county commissioners would be willing to spend $2,500 a year to stop the loss in horse life? Then, why not a little bit for human life? Consumption alone costs your county $125,000 in human values each year.
Suppose, now, that your whole time county health officer reduced your death rate just one per 1,000 in two years' work (the chances are that he will reduce your death rate one per 1,000 the first year), this would mean the saving of 30 human lives which, at $1,700 a piece, would have a financial value of $51,000. This does not include the commensurate amount of sickness that would be prevented along with this saving of life; nor does it include the doctors' bills, druggists' bills, and undertakers' fees that will be saved. Now, in all seriousness, can your county invest in anything that promises a bigger return to the county than this small investment of $2,500 a year in the health and life of your people?

Let us look at this in another way: If your county is an average county, it has one murder per year. Think how much you spend for court officers, sheriffs, and lawyers to prevent this one murder as compared with what it would cost you to prevent the needless death of something like 200 of your citizens. Be sensible, be humane, and come across.

The health officer's salary at $2,500 a year will cost your county two and one-half cents per $100 worth of taxable property; will cost your people 8 cents per capita, or 50 cents per family. Can they afford it? Probably, if the county almshouse is not over-crowded. To invest the $2,500 advocated, in the life of your county, is no greater financial burden than to build a mile of macadam road, or about three miles of sand-clay road.

This is not a question of whether the county can afford this small investment in human life or not. The question is, can the county afford not to do it, and it ought not to take long to answer this question.

THE WHOLE TIME HEALTH OFFICER MUST SHOW RESULTS

The General Assembly of 1913 enacted, as one of its most important pieces of legislation, a law requiring the registration of all deaths, along with the sex, age, nativity, and the cause of death of the decedent. Under this law we will know the number of deaths per 1,000 of the population from all causes, and from certain special causes, as typhoid fever, tuberculosis, contagious diseases, etc., per thousand of the population. These facts will enable us, by comparing the death rates of the different counties with each other, and the death rates of the different townships in the same county with each other, to know the healthy and unhealthy counties and townships in our State. The greatest value of this law, however, will be to make health departments more responsible to the people than any other department of their government. Health work is acknowledged by all health officers to mean, if it means anything at all, the prevention of disease; if disease is prevented the results of disease, deaths, will also necessarily be prevented, and this simply means that the efficiency of the health officer can be and must be measured entirely by the effect he produces on his death rates. Health work that is real, that is worth even the small amount above advocated, must show its influence in a reduction of death rates, that is to say, the death rates must decline from year to year. We see, therefore, that a health officer is of all officials most responsible to the people. An intelligent citizen may not know whether he has a good insurance department or
educational department, but he should know the standing of his health department, because all that is necessary is that he shall know the death rates when the health officer took charge and at the time of the investigation. It will, therefore, be seen that the people can require results at the hands of their health officer.

Another factor to make the health officer responsible to the popular will, and that will go far to insure efficiency in the county health work, is a policy adopted by the State Board of Health relative to the county health work. The State Board of Health proposes to put an officer in the field who will spend at least half of his time visiting the ten or twelve counties in the State that have whole time health officers, for the purpose of correlating and improving the work of the county health departments. This field agent will study the methods of health work in each county, and will keep the ten or twelve whole time county health officers informed as to methods being pursued in the different counties that are giving results. In this way the county health work will be developed to a very high standard of efficiency. Moreover, the State Board of Health proposes to each county board of health a uniform standard of monthly reports, agreeing to furnish each county that will adopt the system of monthly reports a copy of the reports of the other counties. The results of these reports will be so tabulated that each county board of health can see just how the work of their county health officer compares with the work done by other county health officers. The county board of health, that is to say the people of the county, because this tabulation could be easily published in the county paper, would, therefore, be able to judge the work of their health officer to his credit or discredit, as the case may be, by a true standard of accomplishment set by his fellow workers.

It is, therefore, evident that a man elected to do county health work, if his county board of health will cooperate with the State Board of Health (and there would seem to be no difficulty in the way of this), could be compelled to deliver the goods.

Some of the ways by which the whole time county health officer would earn his salary

His work in connection with the schools: Extensive investigations carried on among school children in different parts of the United States, and school children living under different industrial, social, and climatic conditions, have revealed the fact that 20 per cent of all school children have some defect of vision, 5 per cent, some defect of hearing, and about 5 per cent adenoids. Many of the children with these defects are healthy looking, making good grades, and to all appearances are well, and the question naturally arises as to what value an investigation would be that would find such a child defective. I will answer this question with a concrete example. I knew a family in which there were three girls. The two oldest girls dropped out of college in their first and second years on account of failure of their eyes. They did not quit school until their eyes had given them considerable trouble and pain. These two girls while in school from their sixth to their sixteenth year were as healthy looking as any children in school and were just as
happy and were making as good grades as their classmates. But, if the schools which they attended had been under a system of medical inspection, the physical defects of these two girls would have been detected before their eyes were overstrained and permanently elongated and weakened; suitable remedies applied in time would not only have conserved their vision, but made it possible for them to pursue their education to the end. Many of these defects undetected, even though they do not develop and force out of school their possessors, become responsible for nervous diseases later on in life.

The school work of the whole time county health officer would be carried on as follows: He would notify every teacher, or principal of each school, some ten or fifteen days in advance of his visit to their school, and would supply the teacher with three simple tests which could be used to select from her forty or fifty pupils the eight or ten possibly defective children, so that on his arrival he would have to examine only those needing the examination and not the entire school. It has been shown by the testimony of expert oculists and aurists, and by the practice of school teachers in other states, that the average school teacher can easily master the simple test for picking-out possibly defective pupils. In the same letter notifying the teacher of the date of his visit to the school, the health officer would enclose a number of placards to be given to the pupils and distributed by them to their homes and throughout the neighborhood. These placards would notify the neighborhood and the parents of the school children that on the same date on which the county health officer would visit the school for the inspection of the children he would speak in the school house in the evening, giving an illustrated lecture with slides and lantern on the subject of preventable disease, pointing out to the people the means of preventing the spread of consumption, typhoid fever, contagious diseases, etc., in their neighborhood and in their homes. At the evening lecture he would ask the parents of those children that he had found defective in the condition of their eyes, ears, or throat to remain for a few minutes after the lecture, and he would then tell them exactly the condition of their child, and advise them in regard to the need of treatment. In this way the county health officer would handle the whole school population, children and grown-ups, in a single day, and in about 80 days of such work would cover the entire county in the way indicated.

The establishment of public dispensaries: Another important work that the whole time health officer could perform would be to set aside regular days each month on which he could be found at certain places in the county (the number and location of these places to be chosen for the convenience of the people), where any citizen could come and be vaccinated, free of charge, against smallpox, against typhoid fever, or examined for hookworm disease, and where any citizen could receive a cursory examination for beginning tuberculosis, oncoming Bright's disease, degenerative diseases of the arteries and heart, cancer, etc.

The advantages of such consultations the writer can best illustrate by citing two concrete cases: Some time ago a man of national reputation was considering the advisability of entering a closely contested political campaign for a high office, and, having had some little physical trouble
during the year or two preceding the beginning of the campaign, he decided that it would be wise to first consult a physician in regard to his physical ability to make the fight. The consultation showed that the gentleman in question had a blood pressure within the arterial tubes of one-third more than the normal or average person, and it is a physiological fact that during work or excitement the blood pressure would rise still higher. Now, everyone knows that a vascular tube has its limit of pressure, and when that limit is reached the tube must burst. The vascular tubes under high pressure usually break in the brain because the consistency of the brain is soft and does not support the walls of a blood vessel like a muscle or a piece of bone. When the vessel breaks in the brain, the blood gushes out in the brain box and the person usually drops instantly, either paralyzed or dead. The doctor that was consulted advised his patient as to his condition and the danger that he would assume by entering into the excitement and work of a political campaign. The patient and his friends, however, believing that the political conditions of the time demanded that he become a candidate, ignored the physician’s advice and before the campaign was well started the man dropped dead while making an address.

There are so many cases of approaching age where if the signs of the condition were detected in time and proper changes made in the routine of our daily lives, life could be greatly extended without the loss of either comfort or efficiency.

Now, another concrete example: A lady, the wife of a gentleman of broad acquaintance and broad influence, some time ago consulted a surgeon for symptoms of a mild and un alarming nature. The examination showed an inoperable cancer, and the surgeon had to tell the husband that his wife was in an absolutely incurable condition, and had but three or four months, at most, to live. Think of the meaning of such a finding! Think of what it would mean if, through the lectures in the school room, it was pointed out to men and women that after the age of forty they should be on their guard to observe the danger signals of cancer, because about one-seventh of all deaths occurring beyond forty years of age are due to this cause. Think of what it would have meant to the family of this lady if her attention had been directed to these facts, and if she, being on her guard, had consulted a physician at an earlier stage of the disease before her condition became incurable.

The importance of such examinations would be pointed out to communities in the public addresses in the school rooms, as above indicated, and thus the people would be encouraged to make use of the public dispensaries. Of course, the health officer would not treat the cases of disease that he found, and could not, from a point of time, make a thorough examination, but he would make such cursory examination as would suggest the advisability of advising the consultant to go to his own physician for a more thorough examination and treatment. This would be the direct value of the public dispensaries. The indirect value of these public dispensaries would probably be even greater, because during the health officer’s meeting in the dispensary with the people of a whole section of a county, and meeting them time and again, he would be educating them in regard to the sanitary needs of their community.

*Reporting and following up cases of tuberculosis and typhoid fever:*
The county board of health, under a State law, has the right to require that physicians report all cases of tuberculosis and typhoid fever to the county health officer. After receiving reports of cases of these diseases the county health officer in many instances could make a personal visit to the home and instruct the family in regard to taking the necessary precautions to prevent the spread of the disease to other members of the family. In cases that he could not visit on account of pressure of work or bad weather, he could, by having a suitable letter multigraphed, with very little cost, if any, to the county, write each family a personal letter giving the necessary instructions and furnishing popular literature on the disease in question, and in that way circumvent the spread of the disease.

Quarantine: Through the educational work of the county health officer in the public school lectures, and his personal talks at the dispensaries with those consulting him, a healthy sentiment could be developed in support of the enforcement of efficient rules and regulations governing quarantine. The cooperation of the people could, to a large extent, be obtained in the suppression of contagion and in the reduction of death rates from this class of diseases.

Looking after the county dependents: In addition to the aforesaid important duties, the whole time health officer could carry out the work that is now performed by your county physician, namely, the medical treatment of the inmates of the jail, of the almshouse, and convict camp. This last duty is curative medicine, not prevention, not health work, and yet, it constitutes 90 per cent of what your county is now doing as health work.

What have you to do with this?

That all depends on how you look at things. Just in so far as you are concerned with what makes for the welfare of your fellow citizens are you a good citizen. You have got to agree with me in this; there is no way around it.

It is recorded, that at the first death God, Himself, was acting as coroner, holding an inquest, and that at that time and place man put his first question to his Creator in these words: "Am I my brother's keeper?" The good citizen will answer this primal question in the affirmative. We hope this gets you. If it does, you can do something to bring about the whole time health officer in your county. You are not responsible for anything more than that something, and when you have done that little something you have done your duty, but, until you have, you have not done your duty, and you are one of the fellows that are keeping the whole time health officer with his life-saving power out of your county. Now, suppose, just for once, and right now, you promptly resolve in your mind that this one thing you will do, namely, to either go personally to see your county commissioner, or write him and enclose this article to him, and tell him where you stand on this matter. We think too much of you to think that you would be against it. Here is an opportunity for you to serve your county and State.
RICHARD HENRY LEWIS, M.D., LL. D.,
Second Secretary of the North Carolina State Board of Health, 1892-1909
DEVELOPMENT OF THE STATE BOARD OF HEALTH

Dr. Lewis' Administration

By Mabel Parker Massey.

Dr. Richard Henry Lewis was elected a member of the North Carolina State Board of Health, to succeed Dr. Whitehead, in 1885, from which date he became an active force in the health work of the State. On September 7, 1892, Dr. Lewis was elected secretary and treasurer of the Board, to succeed Dr. Wood, and the office was moved to Raleigh.

Feeling that, though the State Board of Health should be merely advisory in its functions and that the principle of local self-government should be maintained as far as possible, with as little government of any kind as would suffice for the preservation of law, order and health, he at the same time saw that the State should provide the means of protecting an immense majority of her children from the carelessness, indifference and meanness of a few. To this end his first efforts were to secure a law requiring the reporting of contagious and infectious diseases to the county health officer and making it obligatory upon that official to see that such diseases were "properly quarantined and isolated."

In order to awaken an interest in the necessary health legislation a conference was called of all persons interested in public health. This conference met in Raleigh on January 24, 1893, under the auspices of the State Board of Health, to consider "the best method to prevent the introduction of pestilential diseases into the State, the method of fixing the salaries of County Superintendents of Health and other matters relating to the general health of the State." A bill, drawn up by this conference, was introduced into the General Assembly and the first Legislative Health Committee in the history of the State was appointed to consider the same. This law, ratified March 1, 1893, had many excellent features bearing on the better protection of the health of school children, the protection of the drinking waters of the State and regulating common carriers. The appropriation to the work of the Board was augmented by removing the limit of $250 on printing and by increasing the emergency fund from $2,000 to $5,000. The term of office of the members of the Board was reduced to two years, five of whom were appointed by the Governor, thus the balance of power was taken from the State Medical Society.

The amended law made it obligatory upon the secretary to issue instructions for quarantine and disinfection, and a pamphlet on that subject was issued by Dr. Lewis in 1893. The public press of the State was called on for the first time to lend its influence toward the furthering of the cause of public health by publishing this pamphlet.

At the annual meeting of the Board on May 15, 1894, it was decided to hold three public meetings each year in different parts of the State, the object being to stir up the interest of the people in sanitary matters. The first of these meetings took place in Salisbury, on September 13, 1894. The session was called to order by Dr. H. T. Bahnson, the
A hot summer day; two small voices conversing in the malodorous excreta of an open privy; two Typhoid germs, (Mutt and Jeff) separated for a time, are renewing their broken acquaintance.

What were they saying? It is worth your knowing. For the infinitely small are more destructive than the visibly great; and these minute forms of life are destructive through your ignorance and carelessness. Let us hear, then, what they said.

Mutt: Hello, Jeff! I haven't seen you in a coon's age. Where have you been and what have you been doing? You're looking fine—fat as dead rat!

Jeff: I've been in clover, as the fools say, since I saw you last. You remember how we first came to meet here?

Mutt: Sure! We met as Brownies. That is, that fellow Brown, who had had Typhoid fever, deposited us here, when he was visiting his friend Smith. Though he recovered, we had hid in his in'ards, and he carried us around until we were finally dislodged into this sweet-scented old insanitarium.

Jeff: Oh, I'll never forget the time. It was the first day of the blue-skied June. The next day it rained, and I was fortunately washed away from you. I was sliced into a neglected well, into which I tumbled heels over head—into a watery grave. I thought I was passing in my checks. But it wasn't long before a bucket came down. I got in and went out, and somebody carried me to the house. Mrs. Smith took a cool drink of water, and gave me a better home.

Mutt: What did you do then?

Jeff: I raised a family, of course, gave the old lady fever, and—sent her to the grave-yard. But before she went, she cast me out. The Smiths believe only what they can see. They could'nt see me; and so they didn't believe what the Doctor told them about me. I was set in a jar on the back porch—set there not disinfected, as the doctors say...
Typhoid Germs

until our airship, the house-fly, came for his dinner. I clung to his foot and he carried me to a glass of milk at Jones's. Jones's little daughter drank me along with the milk.

Mutt: That was fine! "Home again, jiggety-jog." What did you do then? Go on.

Jeff: Same old story. She was taken with fever July 12th; and three weeks later the preacher said, "The Lord giveth and the Lord taketh away: blessed be the name of the Lord!"

Mutt: That's good. But what else?

Jeff: Before the girl died, they fetched her aunt, a dairyman's wife. She didn't believe in disinfection either. One day she changed the sheets from under the girl and bathed her. I got on her hand and hid. When she ate her lunch, I went in on her bread.

Mutt: Fine again—that's luck! How did you manage her?

Jeff: Oh, the same old way! They hauled her back to the country, and I rusticated with her; I raised a family, put her out of commission, and let her friends find consolation in what they call religion. The dairyman and his daughters were attentively kind to the good mother; but every time they went from their ministrations they carried some of our kind on their hands. The dairyman carried me. Without disinfecting his hands, he filled his milk bottles for delivery. I got into a bottle of milk that came to Smith's house—I and scores of my children. The old man himself swallowed me, and passed me out here a few minutes ago.

Mutt: Is the old man sick yet?

Jeff: Not yet: I'm trusting the kids to do the work for him. But I hear the good news of an epidemic of Typhoid in the city—

Mutt: You're a honey, Jeff. Let's pray for a rain or a fly, or both—above all, for the continued reign of ignorance, unbelief and uncleanness:

FLIES OVER NEXT DOOR TO JONES - THROUGH AN UNSCREENED WINDOW AND DEPOSITS THE GERM IN A GLASS OF MILK
President of the Board of Health. The Conference was an unequivocal success, there being a large attendance and much interest shown, and similar "Health Conferences with the People," as they were officially known, were held for several years. It was before this meeting that Dr. Lewis read a paper on "Drinking Water in Its Relation to Malarial Disease," which attracted much attention and was one of the chief influences towards the use of driven wells instead of open, shallow wells in the eastern part of the State.

Having been appointed to membership on the Board of Directors of the Western Hospital at Morganton and feeling that he could in that capacity best serve his State, Dr. Bahnson resigned from the State Board of Health in 1894 and was succeeded, as president, by Dr. George Gillett Thomas, of Wilmington. Dr. Thomas served the Board in that capacity until June, 1911.

In 1894 the circulation of *The Bulletin* was increased from eight hundred to twelve hundred and the subscription price, hitherto fifty cents a year, was reduced to twenty-five cents. It might be well to mention that at that time there were but fifty-three paid subscribers and that *The Bulletin* was shortly after this made a free publication.

The General Assembly of 1893 appropriated twenty thousand dollars for the establishment of a model quarantine station at Southport, provided the city of Wilmington appropriated five thousand dollars for the same purpose. That municipality, however, refused to contribute to the quarantine station, but asked that the United States Government take charge of the work. The trust was accepted by the Marine Hospital Service and the station at Southport was established.

A bill was introduced in the General Assembly of 1895 to repeal the "Act Relating to the Board of Health," but public sentiment had become too strong in favor of health work and the Committee recommended that "This bill do not pass."

At the annual meeting of the Board held May 15, 1895, the Secretary was allowed, in view of the increasing work of the Board, two hundred dollars for clerical services. At this meeting Dr. Albert Anderson and Dr. W. T. Pate were appointed bacteriologists to the Board, the work to be carried on in the private laboratories of the appointees.

On May 13, 1896, at the annual meeting of the Board, a resolution was passed requiring "a chemical and bacteriological examination to be made of the municipal water supplies of the State." Dr. Venable, of the University of North Carolina, at that time a member of the Board, offered to make the chemical analyses gratis and Drs. Anderson and Pate took charge of the bacteriological work. A report made October 15, 1896, stated that twelve analyses of samples of water had been made, of which number five showed pollution and three were suspicious. On June 8, 1897, the sanitary engineer of the Board, Mr. John C. Chase, was directed to inspect all the municipal water plants in the State and ship samples to the bacteriologists and chemist for analyses. At the Conjoint Session of the State Board of Health with the State Medical Society in 1896, Dr. G. G. Thomas, the President, called attention to the "need of sanitary control of mineral springs," but the work was not undertaken at that time.

The prevention of tuberculosis, now conceded by all to be of vast
importance, was first taken up in 1906 by the distribution, “broadcast from Cherokee to Currituck” of ten thousand copies of a pamphlet by Dr. S. Westray Battle, entitled, “Suggestions on the Prevention of Tuberculosis as We Know It Today.” This pamphlet was first sent to all the State newspapers.

The General Assembly of 1897 amended the Act relating to the Board of Health so as to place the election of the County Superintendent of Health and fixing his compensation, hitherto in the hands of the County Board of Health, among the duties of the Board of County Commissioners and at the same time reduced the term of office of the County Superintendent of Health from two to one year. At this session of the General Assembly bills were presented for the Prevention of Blindness, Compulsory Vaccination, and for the Protection of Public Water Supplies. A report on these bills, made at the time, reads, “The first named was stillborn, the second was promptly defeated and the latter was favorably reported by the Committee on Public Health, but, alas, that was the end of it.”

A most serious epidemic of typhoid fever occurred at the State Normal and Industrial College at Greensboro in the fall of 1899, which brought home to the people in a most impressive manner the “dangers that walk abroad with contagion and that lurk in impure drinking water.” The State Board of Health was called upon to render assistance and Dr. Lewis gladly responded, lending his aid in investigating the cause of the epidemic.

In view of the rapid spread of smallpox during the latter part of February, 1899, President Thomas called a meeting of the Board of Health in Raleigh, on March 5, in order that a definite plan for combating the scourge might be drawn up. It was decided to call for the first time, for the Emergency Fund, appropriated by section twenty-nine of the Act Relating to the Board of Health. This fund the Governor willingly placed at the disposal of the Board and Dr. Henry F. Long was employed under the title of Smallpox Inspector, to “visit infected points, decide doubtful diagnoses, interview local health officers, explain to the county and municipal authorities the gravity of the situation and the best means of meeting it, and impress upon the people the overwhelming importance of vaccination.” Dr. Long took up the work but found his private practice would not admit his continuing it. Therefore his resignation took place May 31, 1899, and Dr. Joshua Tayloe was appointed his successor. When smallpox became well known by the medical profession throughout the State the office of Smallpox Inspector was discontinued.

After a great deal of tribulation Dr. Lewis succeeded in getting a law through the General Assembly of 1899 entitled “An Act to Protect Water Supplies,” which law furnished the necessary machinery for preventing the infection of the public water supplies, if the city authorities and the water companies really desired to do so. At the annual meeting of the Board on May 22, 1900, the Secretary asked that the Board of Health call upon the Board of Agriculture for assistance in executing the above law, as the Board of Agriculture had an equipped bacteriological laboratory and proposed to employ a bacteriologist for his entire time. Resolutions bearing on the matter were drawn up and presented
to the Board of Agriculture at their meeting in June, 1900. The request of the Board of Health was promptly and cheerfully granted.

The General Assembly of 1901 enacted a law creating the State Board of Embalming, which enabled the State to take an advanced position with other progressive states in the matter of properly regulating the transportation of dead bodies, especially those dying with contagious and infectious diseases. This Board was composed of three members of the State Board of Health and two practical embalmers. The same session of the General Assembly restored the term of office of the members of the State Board of Health to six years; the County Sanitary Committee was created, which body was composed of the Board of County Commissioners and two physicians; and the term of office of the County Superintendent of Health was again made two years.

Dr. C. W. Stiles appeared before the Conjoint Session of the State Board of Health with the State Medical Society in 1903 and called their attention, for the first time, to the great prevalence of hookworm disease in the State. In the fall of that year Dr. W. S. Rankin offered the Board a month of his time, without charge, to be used in making a personal investigation bearing on the prevalence of the disease. The examination of feces was taken up by the laboratory.

Upon the concurrence of the State Waterworks Association the Act to Protect Water Supplies was amended, in 1903, to allow the Board of Health to charge five dollars for each analysis of water. This placed at the disposal of the Board sufficient funds to pay one-half of the salary of the bacteriologist of the Board of Agriculture. In its report to the American Public Health Association, at the 1901 meeting, the Committee on Water Legislation placed North Carolina, with only three other states, in the fifth class, and as the act of 1903 was a very great improvement, North Carolina's place in the fifth rank was assured. In this report the states of Georgia and Rhode Island were placed in the first class, which represented only the crudest and earliest attempts to prevent the pollution of water, being the only states that had no laws bearing on the protection of drinking water other than to make it unlawful to poison a well.

A pamphlet on School Hygiene, written by Dr. Lewis in 1904, called attention to the very unsanitary condition of the school buildings in many places and was instrumental in materially improving those conditions. A pamphlet entitled "Causes and Prevention of Tuberculosis," issued the same year, was distributed throughout the State, one hundred and twenty thousand being issued. The Secretary also wrote popular articles on preventable diseases for publication in the newspapers of the State. The clerical services to carry on the work of the Secretary made it necessary to employ a stenographer and on June 1, 1904, this addition was made to the office force.

At the meeting of the Board on May 23, 1905, the question of the purification of sewage from the Eno Cotton Mills, before being discharged into the Eno River, from which the municipal water supply of Durham was taken, was brought before the Board, and it was decided that, according to the Act to Protect Water Supplies, it was necessary to install some form of sewage purification. This case was taken into the courts of the State and the law above cited was there sustained.
The State Laboratory of Hygiene was established by an act of the Legislature, ratified March 4, 1905. Through error the word annual was omitted from the law, hence instead of having an annual appropriation of twelve hundred dollars the Board received but one payment of twelve hundred dollars. Under these circumstances the Board of Agriculture was asked to continue their support of the laboratory, allowing the Board of Health to render what financial support they could through an annual tax of sixty dollars imposed upon all municipal water supplies, by the act above cited. To this request the Board of Agriculture complied. In June, of 1905, it was found necessary to add a chemist to the laboratory force.

The Secretary called the attention of the Board, at their meeting on May 29, 1906, to the fact that he had never been required to give bond as treasurer of the Board or as ex officio treasurer of the State Laboratory of Hygiene and expressed the opinion that as a matter of business he should be made to give a proper bond and formally requested that it be required of him. On motion the treasurer was ordered to execute a bond for five thousand dollars.

At this time there was a great deal of interest awakened throughout the State in the prevention of tuberculosis, and a committee was appointed by the State Medical Society to draw up a suitable constitution and by-laws for an anti-tuberculosis association. On May 30, 1906, the North Carolina Association for the Study and Prevention of Tuberculosis was organized, with Dr. M. L. Stevens, as President. Further evidence of the interest in this branch of public health work was made manifest by the passage by the General Assembly of 1907, of a law establishing the State Sanatorium for Tuberculosis. This institution was opened for patients in November of 1908, having a capacity of thirty-four. It was located in the sand hills of Cumberland County.

The Legislature of 1907 placed the State Laboratory of Hygiene on a permanent basis by appropriating two thousand dollars, annually, to the work, in addition to a tax of sixty-four dollars, annually, on every municipal water supply. At the meeting of the Board on June 12, 1907, Dr. C. A. Shore was elected Director of the State Laboratory of Hygiene, to take office January 1, 1908. This Legislature also passed an act Providing for the Separation of Tuberculous Prisoners from Other Prisoners; an Act Authorizing the State Board of Health to Provide for the Preventive Treatment of Hydrophobia and an Act Requiring Railroads to Keep Their Passenger Cars and Toilet Rooms Clean and Decent.

A paper read by Dr. E. J. Wood before the Conjoint Session of the State Board of Health with the State Medical Society called attention, for the first time, to the prevalence of pellagra in our State. As a result of this paper on June 16, 1909, a Commission for the Study of Pellagra was appointed, composed of Drs. Edward Jenner Wood and Harlee Bellamy.

The necessity for supervision of bottled waters was strikingly shown by analyses made in the State Laboratory of Hygiene in 1908. Of sixty-one samples of bottled waters bought on the open market from twenty-nine springs thirty-two were found infected with colon bacilli. Based upon the results of these analyses, Dr. Lewis had a bill intro-
duced in the General Assembly of 1909 requiring the analyses of all waters sold in bottle or other package in the State. Immediately upon the passage of this law there was a marked improvement in these waters. The work of the Laboratory was thus so increased as to necessitate the employment of another bacteriologist.

The only vital statistics in the State prior to 1909 were those collected by some twenty-odd towns in such various and manifestly, in some instances, imperfect ways, that they were practically worthless. After a careful consideration of the subject Dr. Lewis decided that any attempt to collect reliable vital statistics from the State as a whole would be useless. He, therefore, asked Dr. Cressy L. Wilbur, of the Bureau of the Census to draw up a law applying only to cities and towns of one thousand or more population. This request was complied with promptly. The law, as amended by Dr. Lewis by the insertion of an original feature making the mayor of the town or city responsible, under penalty, for the enforcement of the law and by some slight changes to make it better fit our conditions, was ratified on March 6, 1909. This law was declared by Wilbur to be, "The first practical vital statistics law enacted in the South."

At the suggestion of Dr. B. E. Reeves, of Alleghany County, regarding the advisability of placing a supply of diphtheria antitoxin at the disposal of the State, for use by the indigent, Senator R. L. Doughton applied to Dr. Lewis for assistance in preparing such a bill. The bill as prepared passed the General Assembly and was ratified February 26, 1909. There was not a dissenting vote, though the bill carried an appropriation of five hundred dollars.

The General Assembly of 1909 amended the Act Relating to the Board of Health so as to create an executive committee to take charge of any important matters that might arise which could not await the attention of the entire Board of Health at its annual meeting. This Committee was composed of the President, the sanitary engineer member of the Board and one member to be elected from those composing it.

At the June, 1909, meeting of the Board, Dr. C. A. Julian was elected Assistant Secretary for Tuberculosis.

The annual appropriation for the work of the State Board of Health had been but $2,000 since 1885, but a bill, ratified March 8, 1909, increased the appropriation to six thousand dollars and required the secretary to give his entire time to the work. It further provided for the election of a secretary from the medical profession of the State, not necessarily a member of the Board of Health. Dr. Lewis, realizing that the great importance of the work demanded all the time of a competent secretary with ample assistance and believing the time to be auspicious for a forward movement, had the bill prepared which if enacted into law, while legislating him out of office, would bring that about. As Dr. Lewis was unwilling to abandon his profession—that of an oculist—he offered his resignation as secretary on March 30, 1909, to take effect July 1, 1909. Though regretting to lose the leadership of one who had proved himself so capable the Board could but accept the resignation. Dr. Watson Smith Rankin was elected his successor. Dr. G. G. Thomas expressed the feeling of the whole State when he said, in speaking before the Conjoint Session of the State
Board of Health with the State Medical Society: "This Conjoint session marks a period in the history of the State Board of Health of North Carolina, which to us is very significant. It is the end of the service of Dr. R. H. Lewis, for so long the efficient secretary. Following Dr. Wood, the pioneer of sanitation in North Carolina, he took up the work with zeal and enthusiasm, which he has guided and carried on by his wonderful judgment to its present high state. To Dr. Lewis belongs the spread of sanitary knowledge in the State of North Carolina, and the present influence of the Board of Health in the commonwealth. All of you are aware that the steps towards the commanding position it now holds have been slow and faltering, but the State at large has come to realize that the State Board of Health has done good work for it, and its recognition, I think, is thoroughly voiced in the action of the last Legislature, in largely increasing the fund for its support, at the suggestion of our Secretary, Dr. Lewis, which is the prime evidence of the confidence which has followed his work, which is as well based upon the character of the man. He has gained not only our confidence and respect, but that of the gentlemen who represent the different constituencies throughout the State. I say then, when this good man feels that he must lay down his work, not because he is feeble or infirm, I assure you of the contrary, it is because he cannot relinquish his active professional work to take up the work of the State Board of Health exclusively, it is time to feel grateful for the work he has done for the State and for the medical profession."

The high esteem entertained by the great health officials of America for Dr. Lewis is shown by the recognition accorded him in having made him president of the two leading health organizations of the country. In 1905 Dr. Lewis was elected president of the National Conference of State and Provincial Boards of Health of North America. A New York health official stated that ninety per cent of the tuberculosis campaign carried on in that State was based upon the plan laid down in Dr. Lewis' presidential address before this Conference. In 1907 Dr. Lewis was elected president of the American Public Health Association. It was, therefore, very evident that Dr. Lewis was a national figure in public health work.

The following resolutions, drawn up by a Committee appointed for that purpose by the Medical Society of the State of North Carolina set forth the appreciation of the medical profession of Dr. Lewis' work:

Whereas, Our former and most efficient Secretary of the Board of Health, Dr. R. H. Lewis, has decided it necessary to resign from the position; and, whereas, for the long period of nearly seventeen years of most arduous and difficult labor, he has accomplished so much, by unfaltering zeal and devotion, for the upbuilding and honor of the profession, both of the State of North Carolina and of the Nation; and, whereas, he has so carefully safeguarded the people against the threatened inroad of disease as to save innumerable lives, the suffering incident thereto, and great pecuniary loss; and, whereas, during these strenuous years we have seen and appreciated the results of his great labors; now, wishing to express the esteem in which he is held, not alone by the profession, but by the laity, be it hereby

Resolved first, That this Society expresses its conviction that he has done more, both in his official and individual capacity, than would have been possible for any other one to have done.
Resolved second. That we with reluctance accept his resignation, realizing that we lose in some measure his great capabilities and farreaching influence.

Resolved third. That he, having been such a potent factor with the Legislature, has saved us from impending adverse legislation and secured such salutary measures as are responsible for our present advanced position in sanitary work.

Resolved fourth. That we earnestly implore him to give us yet his wise counsel and help in time of difficulty and threatened legislation.

Resolved fifth. That it is our sincere wish and prayer that he, having done so much for sanitation and the health of others, may himself be blessed with many future years of vigorous health and abundant enjoyment of the blessings and happiness of life.

The University of North Carolina gave expression to its appreciation of the work of its honored alumnus by conferring the degree of Doctor of Laws on Dr. Lewis on May 8, 1912. Dean Raper of the graduate school, in presenting Dr. Lewis for the degree, voiced the sentiment of the people of the State in the following words, "I have the honor to present for the degree of Doctor of Laws, Richard Henry Lewis, Secretary of the North Carolina Board of Health, 1892-1909; President of the National Conference of State and Provincial Boards of Health of North America in 1906; President of the American Public Health Association in 1908; distinguished for a rare charm of personality, for excellence as a physician and teacher of medicine and above all for a long and valued service in the promotion of public health."

At a meeting of the Wake County Medical Society held December 12, 1912, that organization, composed of the first men in the county, put on record an appreciation of the signal service rendered by Dr. Richard H. Lewis, of Raleigh, in the securing of health legislation and the enforcement of laws that have brought North Carolina's State Board of Health into the position of leadership among such boards in the South. The resolutions are as follows, and will be endorsed by the laymen as well as the professional men not only in Wake County, but in all North Carolina:

Whereas, The Wake County Medical Society, in regular session, wishes to put on record its appreciation of the services of Dr. R. H. Lewis in behalf of public health and high standards for the medical profession in North Carolina. Therefore, be it

Resolved, That the following statement be put upon our minutes and published in our city papers:

Feeling that we should honor while they are alive the men who best serve society and their fellows, the members of the Wake County Medical Society hereby wish to extend their thanks to Dr. R. H. Lewis for the great services he has rendered during the last twenty-five years in improving medical laws of the State and putting North Carolina well to the front of all the States of the Union in the results obtained through the State Board of Health, of which he was Secretary until June, 1909, when Dr. W. S. Rankin, whom he selected, was placed in charge, and the State Board of Medical Examiners, of which he was a member from 1880 to 1884.

Upon the publication of this resolution Dr. Lewis, with characteristic frankness and regard for accuracy, sent the following reply to the editor of the News and Observer, in which paper the resolution appeared:
To the Editor:

I would be less than human were I not deeply moved and highly appreciative of the more than partial action of my brethren of the Wake County Medical Society in the adoption of the resolution printed in your paper commending my work for the advancement of the public health and the elevation of the medical profession in our State, and of your equally kind editorial comment thereon. But we must be just and keep history straight. I was not the pioneer in this work. The first medical license law was enacted in 1859 and the State Board of Health was born in the brain and nourished in the warm, generous heart of the late Dr. Thomas Fanning Wood, of blessed memory. With an appropriation from the State insufficient to pay postage even, by drafts upon his own slender private means and by zealous and untiring labor, given without further reward than the testimony of a good conscience, he kept it alive and promoted its growth until the health laws were improved and the appropriation was raised to two thousand dollars; so that when I succeeded him as Secretary, upon his lamented death in 1892, the Board of Health was firmly established.

And we must not fail to note and keep in mind the extension and rapid growth of the work, since my resignation in 1909, under the able and energetic administration of my successor, Dr. Rankin; the splendid campaign against hookworm disease directed by Dr. Ferrell with such wisdom and tact, and the advancement of the Laboratory of Hygiene to the first rank by Dr. Shore.

Discovering and securing the appointment of these three young men I consider my best work for the public health of our State.

January 28, 1913.

R. H. Lewis.

Bibliography: Bulletin N. C. State Board of Health; Minutes N. C. State Board of Health; Transactions Medical Society State of North Carolina; Biennial Reports N. C. State Board of Health.

THE PRESENT STATUS OF OUR KNOWLEDGE REGARDING THE TRANSMISSION OF TYPHOID FEVER

By Allen W. Freeman, M.D., Assistant Commissioner of Health of Virginia.

With the possible exception of tuberculosis, there is no disease in all the long catalogue of those classed as infectious which has been more studied than has typhoid fever. Both diseases present complex epidemiology, and in both effective practical prevention has come only after long and arduous study. The epidemiology of typhoid fever has become more complex as our knowledge has increased. The infectious agent of the disease can survive for a long enough time and under sufficiently varied conditions to render the study of its transmission difficult in the extreme.

Prior to the discovery of the specific etiological agent of typhoid fever the studies which were made were for the most part fragmentary and unsatisfactory, and until the time of Budd, whose immortal work has never received the recognition which it deserves, nothing of great value in the specific prevention of the disease had been recorded. Budd, whose researches will always remain a model for pure epidemiology, clearly established the infectious nature of the disease, located the infectious agent in the excreta of the patient, and laid the foundation for our modern ideas regarding the disease. The discovery of the infectious agent, coming shortly after the publication of Budd’s work, gave great
impetus to the prevention of typhoid fever, and from that time to this the history of sanitary science records a continuous series of triumphs over the disease.

At the present time, in summing up our knowledge regarding typhoid fever, we may say without hesitation that it is caused by the *Bacillus typhosus* of Eberth. The work of Metchnikoff and Besredke, together with the results of antityphoid vaccination, have disproved forever the theory so frequently advanced that typhoid fever is of the same nature as swine cholera, and the typhoid bacillus only a secondary invader, the real infectious agent being a filterable virus to be found in the blood.

We may say, too, with certainty that the typhoid bacillus is of much wider distribution than was thought, even up to a few years ago. It is to be found in the discharges not only of the patient, but of many healthy persons, who may or may not have had the disease, and in the discharges of many persons who are sick with intestinal fevers so mild as to bear little or no clinical resemblance to true typhoid fever.

We have learned within the past few years that the typhoid bacillus is disseminated, not only as was formerly thought, by water and milk, and occasionally by other foods, but also by flies and fingers and in fact by almost any material object which comes in contact with human filth, and directly or indirectly with human mouths. We have learned by sad experience that the measure of typhoid fever in any community is the measure of the distribution of human filth in that community, and that the dissemination of human excrement will inevitably result in the spread of typhoid fever.

Water has, of course, long been regarded as the great carrier of typhoid infection, and rightly so. Sometimes in epidemics, sometimes in the continuous infection of a large population, sometimes in scattering single cases, water must be held responsible for a considerable proportion of our typhoid. Without adequately protected or purified public and private water supplies, typhoid prevention is impossible.

Milk has, likewise, for many years been regarded as a most important vehicle for typhoid infection. Epidemics without number have been caused by infection of milk supplies. Experience, dearly bought, has demonstrated that even the most rigid inspection of milk supplies can not prevent the occasional infection of a public supply, and that real protection against typhoid fever from infection of milk supplies is to be purchased only at the expense of pasteurization under municipal supervision.

Other food causes of typhoid infection have received much attention, but in spite of much study little has been learned as to their real importance. We have seen much agitation of recent years in regard to the role played by shellfish, and particularly oysters, in the transmission of typhoid. A careful study of the evidence would seem to show that while an occasional outbreak of typhoid has been found to be due to infection of oysters, in such cases the pollution has been obvious and inexcusable, such as the fattening of oysters in the harbors of large cities or even at the mouths of sewers. We believe that for the most part the average market oyster is not the cause of any great proportion of our typhoid and is in fact about as safe as any of the foods which we are in the habit of eating uncooked.
TYPHOID FEVER IN CITIES AND TOWNS.

The studies which have been made of the prevalence of typhoid fever in the cities and towns of the United States have revealed much that is of value in the prevention of the disease. The relative value of water purification, general sanitation, and food protection has been worked out in detail and the practical prevention of the disease has been made almost an exact science.

Everyone knows that frequent explosive outbreaks of typhoid fever have occurred as a result of the infection of public water supplies. From such supplies the typhoid bacillus has been recovered so frequently as to leave no doubt of the accuracy of the results. It has been proved too many times to admit of further question that the use of an impure water supply by a community will result in a continuously high typhoid rate, and that purification of such a water supply will result in a marked and immediate lowering of the rate.

In cities in the more northern sections of the United States the purification of a public water supply of a city will result in the reduction of the annual typhoid death rate to a figure usually under 20 per hundred thousand. In the South the purification of the public water supply will in the absence of other measures seldom bring the figure below 50 per hundred thousand. In a southern city, possessing a pure public water supply, the sanitation of the city, and by sanitation is meant the complete protection from human filth in the community by perfect sewer ing or by rigid screening and supervision of dry closets, will usually result in reducing the annual typhoid death rate to the figure usually reached by the northern city from water purification alone, namely, 20 per hundred thousand. Unfortunately no figures are available as to the result of the perfect sewer ing of any southern city of considerable size, as, so far as we are aware, such a city is not to be found.

No more important addition has been made to our knowledge of the practical prevention of typhoid fever in urban communities than the facts which have come to light regarding the importance of protecting the people of any community against that infection which is not brought in from without the city gates, but which is generated within and disseminated from foci close at hand. When we seek to work out a plan of protection for the citizens of any community against typhoid fever we should classify accurately our sources of infection into two groups. We should first consider those sources of exogenous infection without the city, from which infection is brought in, usually in water, milk, or other food, and which are guarded against by water purification and milk and food inspection. We should by no means neglect those sources of endogenous infection within the city, whence typhoid is distributed by an almost infinite variety of means, and which must be guarded against by what we speak of as general sanitary measures, such as sewerage, sanitary inspection, fly prevention, and, in addition, by the very especial supervision of the known cases of typhoid fever.

TYPHOID FEVER IN RURAL DISTRICTS.

It is to be regretted that our knowledge regarding the transmission and prevention of typhoid fever in rural districts is far from being as complete as that regarding urban conditions. The subject is one which
has been studied but little in this country, notwithstanding the fact that in many of our States typhoid fever is almost entirely a rural problem. We have learned, however, some facts regarding the transmission of typhoid fever in rural districts which are of value in practical prevention. We know that in most cases water infection has but little to do with the spread of the disease; that existing sanitary conditions in rural districts are utterly inadequate for the proper protection against human filth; and that the general dissemination of fecal matter consequent upon the presence of these insanitary conditions is inevitably followed by the presence of typhoid fever.

We know, too, that the country people at the present time have not learned those precautions which are absolutely necessary to prevent the spread of the disease from the bedside of the patient, and that frequently the disease is spread over large areas of country by contact alone. From our knowledge of the transmission of typhoid fever, taking into account the isolation and lack of intercommunication of the country people, we may confidently expect that an improvement in the sanitary arrangements of our farms, specifically in the building of a sanitary privy for every home and a more careful observance of the precautions of the sick room will result in a marked decrease in the prevalence of typhoid fever in rural districts.

**Antityphoid Vaccination.**

The results already obtained indicate clearly that vaccination with killed cultures of the typhoid bacillus confers upon the individual marked resistance to typhoid infection. In military organizations the great value of this method of protection has already been demonstrated, and results are rapidly accumulating to show that in civil populations the method may also be of great service in the prevention of endemic and possibly of epidemic typhoid.

**Summary.**

Summing up, we may say that the essential basis for the prevention of typhoid fever has been laid, and that we are now in possession of the information, biological and technical, necessary for the actual eradication of the disease from the urban communities of the United States. The basis for prevention in rural communities, while not complete, is sufficiently certain to insure a great reduction in present rates. The problem is no longer an investigative or scientific problem, but a problem of administration. When the people of the United States wish to pay for absolute protection against typhoid fever it can be bought with the full assurance that the goods can be delivered.

**Conclusion.**

As physicians and sanitarians, we are most interested in the practical question Can typhoid fever be prevented? We know that it can. We know that our methods are certain, that they will yield the desired result in every case where they are properly applied. The problem remaining for solution is how to convince the American people that protection from typhoid fever is something worth spending money for.
HOW LONG SHALL WE EAT TOGETHER?
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FREE PUBLIC HEALTH LITERATURE.

Are you interested in Health? Here is your opportunity to get some free health literature for yourself, your neighbor, or your friends. The State Board of Health has a limited quantity of health literature on the subjects listed below, which will be sent out, free of charge, to any citizen of the State as long as the supply lasts. If you care for any of this literature, or want some sent to a friend, just write to the State Board of Health, at Raleigh. A post-card will bring it by return mail.

No. 8. Typhoid Fever.
No. 9. Medical Inspection of Schools and School Children.
No. 10. Care and Feeding of Babies.
No. 11. The Plague of Flies and Mosquitoes.
No. 12. Residential Sewage Disposal Plants.
No. 13. Sanitary Privy.
No. 15. Malaria.
No. 18. Tuberculosis Leaflet.
No. 20. Tuberculosis Bulletin.
No. 21. Fly Leaflet.
No. 22. Baby Leaflet.

Anti-Spitting Placards (11 inches by 9 inches).
Anti-Fly Placards (11 inches by 19 inches).
EDITORIAL

NEW MEMBERS OF THE STATE BOARD OF HEALTH.

The closing of the sixtieth annual meeting of the State Medical Society at Morehead City marked the expiration of the terms of office of four out of the nine members of the State Board of Health. Of these four, two were to be filled by the appointees of the Governor and two were to be elected by the Society. Several months ago Governor Craig reappointed Dr. Richard H. Lewis of Raleigh to succeed himself on the Board and appointed Dr. Edward J. Wood of Wilmington to succeed Dr. Edward C. Register of Charlotte. The Society elected Dr. A. A. Kent of Lenoir to succeed Dr. J. W. Ashcraft of Monroe and Dr. Cyrus Thompson of Jacksonville to succeed Dr. David T. Tayloe of Washington.

The present personnel of the Board is as follows:
Dr. J. Howell Way, President, appointed by the Governor; term expires 1917.
Dr. Richard H. Lewis, appointed by the Governor; term expires 1919.
Dr. W. O. Spencer, appointed by the Governor; term expires 1917.
Dr. Thomas E. Anderson, elected by the Society; term expires 1917.
Dr. Charles O'H. Laughinghouse, elected by the Society; term expires 1917.
Dr. Edward J. Wood, appointed by the Governor; term expires 1919.
Dr. A. A. Kent, elected by the Society; term expires 1919.
Dr. Cyrus Thompson, elected by the Society; term expires 1919.

Much is expected from this new Board, and under the guidance and direction of such a body of men as this, health work in North Carolina should advance faster and farther than ever before. All honor and best wishes to the new Board.

W. H. B.

THE PRIZE TITLE.

With the May number of the Bulletin we inclosed a little four-page supplement on flies. Just for the sake of variety, to add a little spice, and to find out how widely the Bulletin is read, we offered a prize of $5 for the best title for the picture of the fly and the baby in this supplement. The results were more than gratifying. For several days our mails were flooded with something like 1,853 suggested titles. Suggested titles, good, bad, and indifferent, came in from doctors, lawyers, preachers, teachers, mothers, children, from other state boards of health, and from all classes of readers. Some were sent in on postcards, some on letter paper, some in typewriting, some in pen and ink, and others in lead pencil.

Titles arrived in every mail. On one occasion near the close of the contest, the early morning slumbers of the Secretary were disturbed by a special messenger. The half-awakened Secretary had visions of an
outbroken epidemic or a dire disaster somewhere in the State, when lo! it proved to be an enterprising contestant bent on registering his suggested titles before the polls closed.

The responsibility of selecting the prize title was intrusted to a committee of three, consisting of the mother of the baby in the picture, a college president, and a woman prominent in club work and health work in the State. The title given on the front page of this Bulletin is the result of their best judgment, and the prize of $5 in cash has accordingly been sent to Mr. O. B. Mitchell, of Pittsboro, N. C., the successful contestant.

So many of the titles so delighted the editor and, in his opinion, made such a strong bid for the prize, that he cannot refrain from giving his readers the benefit of a few of the best ones. From the following list of suggested titles it will be seen that selecting the best title from so many good ones was no easy matter, and we take this opportunity of publicly thanking the judges for their efforts. It is now for the fans to pass upon the decision of the umpires in this work. Did the judges select the best title?

SUGGESTED TITLES.

"Go 'way, ol' fly; you dot some germs on your ol' feets. Where you been 'fore you tum here?"
"Which shall we keep in our home?"
"The guest of the unscreened window."
"Fatal hospitality."
"The wrong kind of company."
"The baby's home companion."
"A dangerous messmate."
"Dangerous chums."
"Baby bye, here's a fly,
Let us swat him, you and I."
"A dangerous enemy."
"A familiar scene."
"Screen! Screen!! Danger ahead!!!"
"An unsuspected foe."
"The two busybodies."
"Kill the fly and spare the child."
"Small in size, but great in danger."
"An everyday occurrence."
"The baby's first enemy."
"A family foe."
"A dangerous companionship."
"An innocent victim."
"The unwelcome guest."
"A dangerous visitor."
"The unbidden guest."
"Dangerous company."
"Mistaken hospitality."
"The uninvited guest."

W. H. B.
MEETING OF THE NORTH CAROLINA HEALTH OFFICERS’ ASSOCIATION.

VALUABLE PAPERS READ AND NEW OFFICERS ELECTED.

Our health workers are getting organized. This is just another one of the little indications of the march for progress and efficiency in the health movement. Two years ago, at Charlotte, the North Carolina Health Officers’ Association was organized on the day preceding the annual meeting of the State Medical Society. The Association is composed of all persons actively interested or engaged in municipal, county, or state health work. On Monday, June 16, the Association held its third annual meeting in Morehead City. This meeting was voted by all present to have been the most successful yet held. Among the most important papers read and discussed were those on “Medical Inspection of Schools,” by Dr. Aldert Root of Raleigh; “Management of Contagions in Schools,” by Dr. George M. Cooper of Clinton; “Changes in the Public Health Laws,” by Dr. L. B. Evans of Clarkton; “Reporting Typhoid and Tuberculosis,” by Dr. B. W. Page of Lumberton; “Fundamental Duties of a Whole-time Health Officer,” by Dr. Charles O’H. Laughinghouse of Greenville; “Combining Municipal and County Health Work,” by Dr. J. T. J. Battle of Greensboro; “The Physician and Vital Statistics,” by Dr. W. M. Jones of Greensboro; “Rational Quarantine,” by Dr. W. S. Rankin, Secretary State Board of Health, and “The Present Tendency in Disinfection,” by Warren H. Booker, Assistant Secretary, State Board of Health. Abstracts from several of these papers will appear in the Bulletin from time to time.

As a little token of esteem for one of the pioneers in health work in this State, the Association presented Dr. Richard H. Lewis, former Secretary and now a member of the State Board of Health, with a goldheaded cane. Dr. George G. Thomas, a lifelong friend of Dr. Lewis, made the presentation speech.

For the ensuing year, Dr. George M. Cooper of Clinton was elected president to succeed the retiring president, Dr. L. N. Glenn of Gastonia. Dr. W. M. Jones of Greensboro was elected vice president to succeed the retiring vice president, Dr. George M. Cooper. Dr. W. S. Rankin was elected to succeed himself as Secretary and Treasurer.

Immediately following the meeting of the Health Officers’ Association, the State Medical Society held its sixtieth annual session.

W. H. B.

In the Philippine Islands 3,500,000 people were vaccinated, according to the United States Army reports, without the loss of a single life, and 6,000 lives a year were saved by it. And yet we still have a few old fogies with us who don’t believe in vaccination or who are afraid of it. If these benighted people prefer smallpox to vaccination they should have their way, but vaccination is growing more popular every day among our intelligent citizens.
THOROUGHBREDS.

DR. L. B. McBRAYER, Asheville, N. C.

I would like to have the attention of the men and women—fathers and mothers—in North Carolina for one moment.

The farmer who desires to start a dairy does not go out and buy a lot of scrub cows that won't give enough milk in a year to more than half pay for their feed, but he buys a herd of thoroughbreds. If he hasn't enough money to do this, he buys the foundation for a thoroughbred herd and breeds them up. How does he do this? About the first thing he does is to test out his cows, find which ones are good milkers, and cut out those that do not give a sufficient quantity of milk to make keeping them a paying proposition. He then tests out the milk for butter fat to find out about the richness of their milk, and cuts out all cows whose milk is thin, like blue-john; that is, it does not contain sufficient butter fat to make the milk a paying proposition as regards cream and butter.

Now, he wouldn't think for a moment of raising calves for his dairy herd from those cows who were defective in the amount or the quality of the milk they produce. But with a thoroughbred sire, whose grandparents and other forbears for several generations had been noted for the large quantity and richness of their milk, he would begin to raise calves from these selected cows, again taking only the best of the calves, and when they reached maturity discarding all defectives and again breeding from the selected cows. In this way he would, in a few years, have a herd of cows that were satisfactory from every standpoint, and his dairy herd would be a paying proposition and a joy forever.

Likewise, if you were going to start a poultry farm, you would probably first decide what particular phase of poultry you would use for your money crop. If you decided to make a specialty of selling eggs, you would probably buy the white leghorn. You would be very particular to buy your eggs for hatching from thoroughbred stock. The hen must have a record for having laid twice as many eggs per year as the ordinary hen, and the forbears of the cock must have a like record. Of course, these eggs would cost much more. These eggs would cost you probably $3 per dozen, while your neighbor would sell you eggs at 20 cents a dozen. But you would consider the $3 per dozen paid for the eggs as money well spent. In fact, you would not start poultry raising with the eggs of your neighbor's hens if she would give them to you.

Now, if you were going to depend on the sale of broilers for your money crop, you would probably not select the leghorn strain of chickens, but you would probably select the barred rock or the Rhode Island red, because they grow up quicker and are ready for market in about half the time of the leghorn family, although they do not lay so many eggs.

The same is true of horses and hogs and dogs and all other animals. Yes, and the same is true of fruits and flowers, and vegetables and grasses.

If you are going to raise corn, you don't plant the faulty and rotten grains, for any farmer knows they won't germinate. Nor do you go to the store and buy your seed corn out of a car lot that has just been
shipped from the west; but you buy from Noah Biggs or from some of these corn club boys who have been raising 100 bushels and more to the acre. You pay more for it, of course, perhaps $4 per bushel, when you could have bought the western corn at 75 cents; but you get many times the extra expense of your seed corn out of the increased yield per acre.

If your wife wants to cover the trellis on her front porch with roses, she does not buy a tuberose, but she buys a rambler. And so it goes.

Why all this care about the selection of your cows and chickens and hogs and horses and corn and roses and fruits and flowers and grasses? Why all this study to inform yourself on the habits, the productivity of the animals, fruits, grasses, flowers, etc., that you place on your farm? You will not trust to luck—no, no—it is too important a matter. If you decide to establish an apple orchard, you won’t go out and buy some young apple trees at random. If I ask you, Why? you answer, Do you take me for a fool? Don’t you suppose that I know that we cannot “gather grapes of thorns or figs of thistles”? Do you think I would set out June apple trees or Early Harvest, if I wanted to raise apples that would keep through the winter? Do you think I would run the risk of wasting my good money by buying 1,000 apple trees, not knowing what kind of fruit they would produce? Not on your life. It’s too important a matter. You must take me for a fool, or you are one yourself, else you would not ask such a question.

All good and well; but, father, mother, do you give as much attention to the selection of a husband by your daughter, or a wife by your son? Do you inquire as particularly into his or her ancestry, and into the physical condition of his or her being, as you do when you go to buy your hogs and horses and grain and flowers? If not, why not? If you do not, who is playing the fool? Is not the matter of raising children that are to be “bone of your bone and flesh of your flesh” as important a matter as planting an apple orchard or stocking your farm with cows and hogs? Don’t you know that defects of mind or body are just as surely transmitted from parents to offspring as are defects in hogs or cattle or fruits or flowers? It is true, anyway, whether or not you have ever stopped to think about it. And, thank God, the converse is also true. Strong characteristics are also transmitted in the same way. Strong mentality, strong character, strong bodies, etc., are transmitted from parents to their children, just as the strong points in the hog or cow or fruit are transmitted to succeeding generations. Do you want your child to marry a person who, while apparently healthy, has in him a strain of insanity, feeble-mindedness, or other defects of mind or body or character, and which defect is just as sure to crop out in his offspring as there is a God in Heaven? If not, is it not time that you were giving this matter your most earnest consideration?

It is pleasing to know that we have been of sufficient importance to our people to have them immortalize us in monuments of brass or marble, but the marble will in time crumble and the brass will decay. The only monument worth while, the only monument that will last throughout eternity, forever and forever, is our children.
The so-called Friedmann "Cure" for tuberculosis appears to have been largely a newspaper cure. At least, the Government experts, Dr. John F. Anderson and Dr. A. M. Stimson, failed to find it measuring up to expectations. Not only is the "cure" of little or doubtful value, but it does not appear that Dr. Friedmann has acted with entire frankness either with his patients or the Government officials conducting the tests.

The report is given as follows:

"In November, 1912, Dr. F. F. Friedmann, of Berlin, reported before the medical society of that city a new method of treatment for tuberculosis, consisting of injections with what he described as living, avirulent tubercle bacilli. In the discussion following his paper, a number of scientists whose opinion was regarded as carrying weight supported in greater or less degree his contentions that curative effects were derived from this method of treatment.

"On theoretical grounds, the treatment of tuberculosis by living, avirulent tubercle bacilli, if such could be secured, had been regarded as the most hopeful line along which work could be carried, and for this reason and because of the measure of support which had been given to Dr. Friedmann's methods, the interest of the Public Health Service was attracted to the subject.

"It being one of the duties of the Public Health Service to investigate the diseases of man and their methods of control, correspondence was entered into through the Department of State to ascertain whether Dr. Friedmann would submit details of the preparation and administration of his remedy and its effects on patients to representatives of the Public Health Service, and if so, under what conditions.

"In correspondence Dr. Friedmann expressed a willingness to place at the disposal of such investigators all the facts at his command and afford them every aid to prepare a 'comprehensive and impartial report.'

"Before arrangements could be completed to send an officer to Berlin, advices were received through the State Department that Dr. Friedmann was preparing to transfer his activities to the United States, and notification of the date of his sailing was received through the same source. Preparations were accordingly made to meet Dr. Friedmann on his arrival, with a view to taking advantage of his expressed willingness to have an investigation made of his secret, and a board was appointed, consisting of Surgeon John F. Anderson and Passed Assistant Surgeon Arthur M. Stimson, to carry on the work.

FAILED TO CARRY OUT HIS OFFER.

"At its first interview with Dr. Friedmann the Board ascertained that he was not willing to reveal all the details of his methods, contrary to the offer contained in his previous correspondence. He willingly furnished a culture of the organism, however, which he stated was used in the preparation of his
remedy, but declined to divulge the method of its use in the preparation of the remedy, and he would not make any definite statement as to the antecedents of the culture in question.

"He imposed, as a condition to finally furnishing detailed information regarding the methods of preparation of his remedy, a recognition by the Board of favorable results from the use of the remedy on patients. He specifically disclaimed that his culture was possessed of either curative or immunizing properties against tuberculosis in the lower animals, but had no objection to an investigation of his claim that it was completely avirulent to them. He agreed to administer the remedy to patients for purposes of observation by use of its effects upon them, and to give them such subsequent treatments as in his opinion were necessary to effect a cure.

"The Board in effect found that under the conditions mentioned it would have opportunity only to study a culture of the bacteria said to be used in some way by Dr. Friedmann in the preparation of his treatment, to test its pathogenicity on the lower animals and to observe the effect of treatment by him of tuberculous patients with his finished remedy.

"It will be recognized, of course, that such an arrangement was not satisfactory from a scientific standpoint, but in view of the great importance of the matter to tuberculous patients throughout the country and in the hope that a valuable remedy might have at last been found to not only cure tuberculosis patients, but to prevent the disease, the conditions imposed by Dr. Friedmann were accepted. An additional reason for taking advantage of opportunities to make every study possible was the assurance by Dr. Friedmann of its harmlessness when injected into human beings.

**IMPARTIAL INVESTIGATION.**

"Arrangements were accordingly made with the staffs of Mount Sinai Hospital, Bellevue Hospital, the Montefiore Home and Seton Hospital, whereby patients would be placed at the disposal of Dr. Friedmann for purposes of treatment. Practically all the patients in question had for some time been resident in these hospitals, were under the care of their visiting staffs, and our observations were made conjointly with those authorities, and with their valuable assistance the investigations have been undertaken and conducted in an impartial manner. The reticence and attitude of Dr. Friedmann have in no way been allowed to interfere with our judgment of the effects as observed by us.

"Considerable delay has been experienced in the treatment of cases on account of the repeated absence of Dr. Friedmann from New York, the first patients having received their first injection March 9, and the last of them their first treatment April 6.

"In all ninety-four patients had received the first injection up until April 15, when it became necessary to inform Dr. Friedmann that on account of the halting progress in the demonstration the Board was forced to limit its studies to these patients. Dr. Friedmann was also informed that, in the interest of the demonstration, these patients should be seen by him with a view of giving such additional injections of his remedy as might, in his judgment, be necessary to effect a cure. Up to the present time five of these patients have received a second injection.
MORE TIME NEEDED.

"We believe that at the present time we are not in a position to express an opinion based on the present condition of patients under observation. The disease for which the remedy is used is prolonged and is characterized by periods of advancement and retrogression; it is also one in which psychic influences are a powerful factor. Time is therefore necessary in order to properly evaluate the effect of therapeutic measures.

"We must not lose sight of the possible therapeutic value of this preparation, and, on the other hand, it is necessary to guard against too great an optimism in respect to its merits.

"Without presenting in detail all the condition of patients under observation, we are in a position to state that the effects thus far observed do not justify the confidence in the remedy which has been inspired by widespread publicity. In our opinion harm may have been done by this undue publicity in so far as it has lessened the confidence of tuberculous persons in well recognized methods of treatment or interrupted their use, and we are constrained to advise against any lessening of those well known measures which not only have effected cures, but which have reduced the incidence of the disease.

"Concerning the culture submitted to us, we may state that a series of experiments is under way. The bacillus has been found to be an acid-fast organism having properties quite different from those of any tubercle bacillus with which we are acquainted. It appears to be identical with an organism cultivated from a few loopfuls of the material used for injection which Dr. Friedmann permitted us to place on culture media in his presence. We requested Dr. Friedmann to furnish us with a larger amount of this material for examination, but this he has declined to do. We can state, however, that living acid-fast bacteria are being injected by the intramuscular and intravenous method, although we are ignorant of what medium they are suspended in or what additional substance or substances may be contained in the final mixtures."

John F. Anderson,
Chairman of the Board,
A. M. Stimson, Recorder.

RESOLUTIONS ON THE FRIEDMANN "CURE."

At its recent meeting in Washington, the National Association for the Study and Prevention of Tuberculosis passed the following resolutions in regard to Dr. Friedmann's so-called "cure" for tuberculosis. The resolutions were passed unanimously. The only objection coming from the members was that the resolutions were too mild.

The resolutions were as follows:

"Whereas widespread publicity has been given to the claims of an alleged cure for tuberculosis:

"Resolved, That there is no information before the National Association for the Study and Prevention of Tuberculosis to justify the belief that any specific cure for tuberculosis has been discovered which deserves the confidence of the medical profession or the people; and

"Resolved, That it is the duty of the public to continue unabated all the present well-tried agencies for the treatment and prevention of tuberculosis."

Dr. Charles L. Minor, of Asheville, N. C., spoke against the resolution because it "only went half-way." He scented a plot to result in millions
for the German physician. He intimated that besides Dr. Friedmann, there was a newspaper syndicate or news association and the drug syndicate which bought Friedmann's manufacturing rights in the United States.

NEW YORK CITY BARS FRIEDMANN.

Treatment Thought to be Dangerous—Must Submit to Full Examination, Furnish Specimen, Give Full Data in Regard to Every Point and Receive Permission from Board of Health to Use the Serum.

The New York City Board of Health is afraid of the so-called Friedmann "cure." After careful examination, they find that instead of curing, many of Friedmann's patients have rapidly lost ground. The Board is certainly wise in not permitting the injection into human beings of live tubercle bacilli without having the danger from such an injection thoroughly tested.

The resolution of the New York City Board of Health is here given in full:

"Whereas, in the judgment of the Board of Health, the use of living cultures of bacteria in the inoculation of human beings for the prevention or the treatment of disease may be fraught with serious danger to individuals and to the public health; and

"Whereas the necessity and the harmlessness of such a procedure can be safely determined only by carefully planned and controlled and unbiased scientific measures and observations; and

"Whereas certain tests of the efficiency and safety of an alleged cure for tuberculosis now being made in this city are being rendered unsatisfactory, unscientific, and practically futile through the insistence of the originator of the alleged remedy on conditions which involve inadequate observation, inaccurate methods of administration, and the insistence on secrecy regarding the substances employed in some phases of the treatment; and

"Whereas evidence is already at hand to show that the so-called remedy not only does not fulfill the promises of efficiency and safety under which its use was at first permitted in this city, but, on the contrary, during its administration many patients have suffered serious and unduly rapid progress of their disease; therefore, be it

"Resolved, That the use of living bacterial organisms in the inoculation of human beings for the prevention or treatment of disease shall be and hereby is prohibited in New York City, until after full and complete data regarding the method of use, including a specimen of the culture and other agents employed therewith, and a full account of the details of preparation, dosage, and administration shall have been submitted to the Board of Health, and until permission shall have been granted in writing by the Board for the use of the same."

Vaccinated people are not afraid of vaccination or smallpox, but unvaccinated people are afraid of both.

Modern vaccination is not nearly so dangerous as the common practice of trimming corn. Smallpox, however, is a whole lot worse.
Our death rate from typhoid fever in this State is too high. In the registration area of the United States this death rate ranges from 21 to 23 per 100,000. In some European countries it goes as low as 5 and 6 per 100,000, or even lower. In the registration area of North Carolina (i.e., in towns of over 1,000 population) it was 71 in 1911 and 42 in 1912. This is a shame, a crying disgrace—a blot on the fair name of our State. Why? Because typhoid fever is a nasty filth disease. It cannot be caused unless some of the excreta from some former typhoid victim is taken into the digestive tract of another person. It does not take much of this filth to produce a case of typhoid. The tiniest amount will answer.

Typhoid may be contracted by drinking polluted well water or unfiltered river or creek water when a typhoid victim has polluted the stream, perhaps many miles upstream. Tiny amounts of this dirty, dangerous, disease-producing filth may find its way to our milk, fruit and vegetables, and other food in various ways. Outside of the water route already mentioned, one of the most common ways of transmitting typhoid is by means of flies. There is no longer even the shadow of a doubt that flies, particularly in our Southland, do have a great lot to do with increasing our typhoid fever death rate. The accompanying curve shows how our typhoid deaths have been running by months for the last two years:

Curve showing seasonal variations in the number of deaths from typhoid fever in registration area of North Carolina in 1911 and 1912. Note that the greatest fatality from typhoid is during the fly season, and least when flies are fewest. No flies, little typhoid.

Note especially that the number of deaths occurring each month was low in the winter and early spring months—before the flies became well established—but runs high during the fly season. Why? There is a reason; the answer is Flies.

The curve, it will be noted, runs considerably higher in the summer of 1911 than in 1912. This was due to two or three well defined epidemics occurring at that time. This fact really only strengthens the evidence against flies.
How can we prevent this disagreeable repetition of events this summer? By preventing the fly, by screening our doors and windows, particularly in our dining-rooms and kitchens, by insisting on pure food, fruits, etc., free from fly specks, and by the strict use of sewers where there are sewers and by the more general use of sanitary (fly-tight and water-tight) privies elsewhere.

A VALUABLE IDEA.

INVITES GUESTS, BUT NOT FLIES.

Warren H. Booker, C.E., Assistant Secretary.

Flies tax the ingenuity of man to the utmost. It is folly to talk of exterminating them at this time. The best we can hope to do is to prevent the majority of them from ever being born and keep the rest of them from doing us much harm. Screened doors and windows are the greatest protection a house or food products store can have. But screened doors are not a hundred per cent efficient. This is particularly true where the doors are much used, as around groceries, market houses, fruit and confectionery stores, hotels and restaurants. Such places are usually a veritable Mecca for flies, and, with the doors frequently opened, flies dodge in in liberal numbers.

To overcome just this condition of affairs an enterprising restaurant keeper has evolved a clever idea. He uses the very best kind of close-fitting screen doors, but to keep the flies from coming in when the door is opened he has attached a large wooden blade electric fan just outside and above the door, as shown in the accompanying illustration. The object of this fan is twofold. To some extent it blows the flies away from the door, but, according to the owner of the hotel, by far the greatest value of the fan is in frightening the flies away. It appears that small electric fans, while they really make a much stronger breeze across the screen, do not keep as many flies away as the sight of the large moving wooden blade fan.

How one restaurant keeper invites guests, but not flies. A good suggestion for grocers, bakers, etc.
Upon inquiry of the owner of this restaurant, it appears that after the installation of this fan the number of flies in the dining-room was reduced to almost none. A few flies still persist in entering at the lower part of the screen, but these are comparatively few.

This device has been found particularly valuable from two points of view: First, it keeps the flies out, and, second, it is a splendid advertisement. When people see this fan in operation they are reminded of a cool place to dine without having to eat at the same table with flies.

Grocers, butchers, bakers, confectioners, hotel and restaurant keepers and other food products merchants will undoubtedly find the advertising value of such an arrangement worth considering, and in a short while the general public will be demanding such protection.

**MALARIA AND MOSQUITOES.**

WARREN H. BOOKER, C.E., Assistant Secretary.

Malaria is a mosquito-borne disease. It is a three-linked chain. The perpetuation of malaria requires an infected person, a malarial mosquito, and a victim. The middle link is usually the weakest of the three from a public health viewpoint. It is there that we direct most of our efforts, and with the best results.

The accompanying curve shows in an interesting way how malarial fever varies with the mosquito season in this State. This information was gathered from the vital statistics of the registration area of North Carolina during the last two years. It will be noticed that there are practically no deaths in winter and early spring, but that in the late summer and fall, a month or two after the mosquito season, the deaths run high.

![Graph showing seasonal occurrence of deaths from malaria](image)

Curve showing seasonal occurrence of deaths from malaria, during 1911 and 1912, in registration area of North Carolina. Note that the deaths are fewest during seasons when there are no mosquitoes, and highest during and just after the mosquito season. No mosquitoes, no malaria.

Not every mosquito bite means a case of malaria. Only a comparatively small per cent of all our North Carolina mosquitoes are of the malarial type. Of the malarial type, only the female mosquitoes convey the disease. Even a female malarial mosquito is harmless unless
she becomes infected by biting a malarial person, and then it takes ten
days for the malaria germ to take on new life in the mosquito. The
chances that the mosquito will live that long are thought to be only
about 1 in 10. Then the chances that this malarial mosquito will bite
another person and give him malaria are thought to be about 1 in 20.
This makes a total chance of about 1 in 200 that a case of malaria will
be transmitted.

From this it will be seen that just because one is bitten by a mosquito
is not a sure indication that he will have malaria. If one will take
three grains of quinine a day from early spring until late fall, or when-
ever one is in a malarial section, there is little danger of contracting
the disease. Such a course of quinine will keep the blood in such
condition that malaria cannot develop. This is not a cure for malaria; it
is only a preventive. To cure malaria requires about 30 grains of
quinine a day for five days, followed by 20 grains for the next twenty-
five days. Malaria can be checked by a three days course of quinine,
but the chills and fever are very likely to return at almost any time.
Furthermore, the victim is a continual source of danger to every one
around him, as he is likely to infect the mosquitoes, which may in turn
infect other people.

THE FLY AND THE FARMER.

WARREN H. BOOKER, C.E., Assistant Secretary.

Flies are the weeds of the insect kingdom. Like weeds, no one ever
accuses them of doing much good. Quite a lot can be said against them,
however. They resemble weeds in that they are obnoxious, pestiferous,
easy to acquire and hard to get rid of, and require work and eternal
vigilance to prevent.

The fly problem has several sides. The city dweller objects to the fly
as a guest in his kitchen and dining-room. The farmer has all this
trouble, and the further grievance of flies in the milk-room and on his
live-stock. The latter, the biting variety, are cousins to the ordinary
house-fly, but they all come from the same source—from decaying filth.

Hauling all stable manure out onto the fields, a quarter of a mile from
the house, regularly once a week, is by all odds the best means of pre-
venting flies. Flies can breed in eight days, hence the reason for remov-
ing the manure once a week. In practice, this is claimed to prevent from
60 to 90 per cent of the flies that usually breed around a farmhouse, de-
pending upon the care with which the manure is cleaned up and removed.

Even at that, some flies will insist on being born in spite of you. The
case, however, is yet far from hopeless. Two tablespoonfuls of formalin
to a mixture of a half-pint of water and a half-pint of milk makes a good
fly poison. Make new solution every day. Bread crusts dropped in
saucers of this poison make fine fly bait. Place the saucers around the
stables and milk-room, convenient for flies and protected with coarse
wire netting or out of the way of chickens, cats, etc., and watch results.
Large traps baited with milk, fish heads, etc., help reduce the number
of flies.

But, try as you may, you can’t get all the flies. Even the most careful
and cleanly householder will have too many flies to risk having no screens
on his doors and windows. As for the large majority of farmers, who are as yet unwilling to take the pains to remove the manure weekly and trap or poison the remaining flies, they will have these pests literally by the thousands.

Now, there may frequently be some good excuse for not hauling out the manure, or not trapping or poisoning the flies, but ignorance, indolence, and poverty combined are not enough to excuse a man for not screening his windows and doors. No, it is not expensive to screen your house. It will cost you from 10 to 20 cents each to tack mosquito netting over the outside of your window frames. Is that expensive? If you say it is, at what do you value life and health? Mosquito netting will last for a year, and is really better than wire screen, because the little fibers protruding from the threads make the meshes fine enough to keep out mosquitoes as well as flies. Ordinary wire screen has 12 meshes to the inch. It takes 18-mesh wire screen to keep out the mosquitoes. So far as expense is concerned, when we consider the fly-borne typhoid fever, and the first- and second-year babies that the doctors have been polite enough to say died of summer complaint, instead of fly complaint, we find that we cannot afford not to screen our doors and windows.

Swatting flies is popular sport, but it is slow work and should be confined to well-screened kitchens and dining-rooms. Swat what few flies dodge in at the doors. A good time to swat is just before meal times. If you get tired of swatting, use sticky fly-paper. That catches most of the flies in a room, but swatting gets them all. If you really want to swat something, swat the manure pile. Swat the fly before he is born.

Good fresh pyrethrum or insect powder is effective in a closed room, but it is expensive and covers everything with dust. If good screens have been used, pyrethrum powder will rarely be necessary, as swatters are cheaper, quicker, and make no dust.

VITAL STATISTICS LAW GOES INTO EFFECT.

North Carolina took a decided step forward in public health work July 1st, when our Model Vital Statistics Law went into effect. As this Bulletin goes to press, preparations are being made to get the local county machinery into operation. According to the law, the chairman of the board of county commissioners in each county appoints a local registrar of births and deaths in each township. Ninety days are allowed for the establishment of the local county and township machinery, so it will really be October 1st before State-wide registration is begun. A wise provision in the law, however, permits the registration of any birth or death that occurred at any time before that date, if such registration is desired. Much will depend upon the kind of local registrars appointed. Preferably, the local registrar should be centrally located in his township; he should be a person of more than average intelligence, at least as competent to handle records and details as the local tax lister; and if he is conveniently located on a rural mail route and has a telephone, it will be of great assistance in keeping in touch with his township and getting records of all births and deaths.

In a few years the records obtained from the operation of this law will be one of the most valuable sets of records in possession of the State.
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John A. Ferrell, M.D., Assistant Secretary for Hookworm Disease, Raleigh.
C. A. Shore, M.D., Director State Laboratory of Hygiene, Raleigh.
Are you interested in Health? Here is an opportunity to get some free health literature for yourself, your neighbors, and your friends. The State Board of Health has a limited quantity of health literature on the subjects listed below, which will be sent out, free of charge, to any citizen of the State as long as the supply lasts. If you care for any of this literature, or want some sent to a friend, just write to the State Board of Health, at Raleigh. A post-card will bring it by return mail.

No. 8. Typhoid Fever.
No. 9. Medical Inspection of Schools and School Children.
No. 10. Care and Feeding of Babies.
No. 11. The Plague of Flies and Mosquitoes.
No. 12. Residential Sewage and Disposal Plants.
No. 13. Sanitary Privy.
No. 15. Malaria.
No. 18. Tuberculosis Leaflet.
No. 20. Tuberculosis Bulletin.
No. 21. Fly Leaflet.
No. 22. Baby Leaflet.
No. 23. The Vital Statistics Law.

Anti-Spitting Placards (11 inches by 9 inches).
Anti-Fly Placards (11 inches by 19 inches).

Copy for this Bulletin was sent to E. M. Uzzell & Co., State Printers, on July 5th; the first proof was received July 14th and corrected and returned July 16th; page proof was received, corrected, and returned July 23d. The Bulletin should reach the reader not later than August 8th.
EDITORIAL

THE STATE BOARD OF HEALTH LOSES DR. FERRELL.

Accepts Position with the Rockefeller Sanitary Commission, and Goes to Washington, D. C.

Those interested in the public health service of North Carolina will regret to know that the State Board of Health has lost one of its most efficient officers. To those who have watched the work of Dr. Ferrell and compared the work that he has done in this State with the work of the state directors for hookworm eradication in other states, this announcement does not come as a surprise; they have known, as we have realized for some time, that, with the enlargement of the work of the Sanitary Commission, the Administrative Secretary of that work, Dr. Wickliffe Rose, would need the best assistants that he could obtain, and knowing this, the friends of Dr. Ferrell are not surprised that he should be advanced to the central office of the Commission.

It is our sincere belief that the State of North Carolina has seldom, if ever, had a more efficient officer than Dr. Ferrell. We have watched his work closely from the beginning, and have watched it, not only by itself, but in comparison with health work in general, and particularly in connection with the hookworm work being carried on in other states, and we can say, without the slightest exaggeration and without any reflection on the others engaged in health work, that it will be difficult, if not impossible, to find a man to fill the vacancy left by Dr. Ferrell.

A large part of the credit that our generous friends have given the Board for the health work of the past three or four years is due Dr. Ferrell.

In going to his larger field of service Dr. Ferrell will carry with him the best wishes of the State Board of Health, and the full confidence of the Board of his measuring up to his larger opportunity for service. The people of this State who recognize the meaning of public health work and are familiar with something of the work that has been done under Dr. Ferrell's administration will always be grateful for his able and unselfish service.

CREDIT TO DR. THOMPSON.

"Mutt and Jeff as Typhoid Germs," which is an illustrated dialogue between two typhoid fever germs, appearing in our June Bulletin, was contributed by Dr. Cyrus Thompson. Through some oversight, his name was not subscribed to the article.

This article is one of the best health stories that has come to our notice. If you missed it, you should go back and look it up, or write for an extra copy of the Bulletin. One of the newspapers of the State suggested that we have this put up in plate form and turn it over to the Western Newspaper Union, Charlotte, N. C., and the American Press Association, Atlanta, Ga., for general distribution through the papers. We shall be glad to adopt the suggestion. If you missed the article in the Bulletin, you will probably be fortunate enough to see it in your paper.
COUNTY PHYSICIAN OR COUNTY HEALTH OFFICER—WHICH, MR. COMMISSIONER?

W. S. RANKIN, M.D., Secretary State Board of Health.

There are no more "county superintendents of health" in North Carolina. That official title was a bad one. It has fooled the people of many counties into believing that they were having a certain amount of health work done when, in ninety-five cases in a hundred, there was nothing of the kind going on. Since the first Monday in July, counties have had to choose between the employment of a county physician or a county health officer.

If a county is interested simply in curing, or, perhaps better, treating or drugging its sick convicts and prisoners and its dependents in the county home, in having a few post-mortem examinations made for coroners, and having one or two lunatics examined a year for commitment to asylums, the official employed to do that work will be known as the county physician. The examination of the dead and crazy, and the treatment of disease in the defective and dependent portion of a county's population, is the least important service that a physician renders, and has nothing to do with health work, which is the prevention, not the cure, of disease. A person employed to do the work of a county physician has no more right to the title of health officer than has the coroner, jailer, or sheriff. He does not do health work.

Where, on the other hand, a county employs a man to give 95 per cent of his time to the work of preventing disease, to devising and executing measures to diminish the number of cases of typhoid fever and tuberculosis per thousand of the population each year, to hold down each outbreak of measles, whooping-cough, diphtheria, and scarlet fever to a minimum of secondary cases, and, in short, to decrease the death rate—the number of people dying per thousand of the population each year—such a man will be known as the county health officer.

County physicians are the officials who practice medicine and give what little time is left to looking after almshouses, county jails, and convict camps. In taking care of their own practice and in serving the public there is a suggestion of a man's serving two masters. A large number of county physicians in North Carolina are overpaid.

A county health officer is a man who is not allowed to do private practice. He gives his entire time to the public; his work will be supervised and checked every month by a state official, and the amount of his work compared with the amount of work done by the other whole-time county health officers. The comparative work of whole-time county health officers will be published monthly in the county papers of those counties employing whole-time men. The death rates of a county at the beginning of a whole-time health officer's tenure of office and at the expiration of his term of service will be published, and the people can see whether there has been any decrease in the death rates—that is to say, whether there has been any health work done. The whole-time man serves only the public; he is not serving God and mammon. The whole-time health officers in North Carolina are much underpaid.
Let county commissioners recognize the difference between county physicians and county health officers; employ the latter, and throw away the former; see that some real health work is done in their county. The state laws no longer permit the people of a county to be deceived by that two-faced title, "county superintendent of health," which heretofore has been applied to both county physicians and county health officers.

THE HEALTH OF NORTH CAROLINA.

These tables are compiled from reports of deaths for one-sixth of the State's population; they show the health of the State for the years 1911 and 1912, as compared with the health of the average state in the Union.

The health of the State is shown in the following tables:

DEATH RATE OF NORTH CAROLINA, 1911-1912.

<table>
<thead>
<tr>
<th>Causes</th>
<th>In Registration Area in N. C., 1911</th>
<th>In Registration Area in N. C., 1912</th>
<th>In Registration Area in U. S., 1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>18.3</td>
<td>17.3</td>
<td>14.2</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>232.9</td>
<td>234.3</td>
<td>158.9</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>119.8</td>
<td>88.0</td>
<td>133.7</td>
</tr>
<tr>
<td>Typhoid fever</td>
<td>70.9</td>
<td>42.0</td>
<td>21.0</td>
</tr>
<tr>
<td>Diarrhea (under 2 years)</td>
<td>165.2</td>
<td>140.0</td>
<td>77.4</td>
</tr>
<tr>
<td>Malaria</td>
<td>21.8</td>
<td>34.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Whooping-cough</td>
<td>24.4</td>
<td>28.3</td>
<td>11.3</td>
</tr>
<tr>
<td>Measles</td>
<td>17.0</td>
<td>9.5</td>
<td>10.0</td>
</tr>
<tr>
<td>Scarlet fever</td>
<td>2.7</td>
<td>2.3</td>
<td>8.8</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>10.4</td>
<td>13.2</td>
<td>18.9</td>
</tr>
</tbody>
</table>

ESTIMATED TOTAL DEATHS IN NORTH CAROLINA, 1911-1912.

<table>
<thead>
<tr>
<th>Causes</th>
<th>Occurring 1911</th>
<th>Occurring 1912</th>
<th>Would Occur With Average Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All causes</td>
<td>42,027</td>
<td>40,893</td>
<td>33,563</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>5,805</td>
<td>5,805</td>
<td>3,587</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>2,746</td>
<td>2,746</td>
<td>3,305</td>
</tr>
<tr>
<td>Typhoid fever</td>
<td>1,624</td>
<td>1,624</td>
<td>526</td>
</tr>
<tr>
<td>Diarrhea (under 2 years)</td>
<td>3,812</td>
<td>3,812</td>
<td>2,255</td>
</tr>
<tr>
<td>Malaria</td>
<td>570</td>
<td>570</td>
<td>570</td>
</tr>
<tr>
<td>Whooping-cough</td>
<td>1,201</td>
<td>1,201</td>
<td>255</td>
</tr>
<tr>
<td>Measles</td>
<td>392</td>
<td>392</td>
<td>275</td>
</tr>
<tr>
<td>Scarlet fever</td>
<td>61</td>
<td>61</td>
<td>260</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>239</td>
<td>239</td>
<td>239</td>
</tr>
</tbody>
</table>
THE SANITATION OF SODA FOUNTAINS.

A large amount of disease is contracted at the soda fountain. Small amounts of the saliva of those using the glasses remain on the glasses, and before the washing water is changed it becomes, to variable degrees, adulterated with ordinary spit. It is known that the germs of tuberculosis and the infective agents of measles, whooping-cough, scarlet fever, diphtheria, and occasionally typhoid fever, are carried in the mouth secretions. The soda fountain, as it is ordinarily managed, has for a long time been a source of annoyance to sanitarians. At last, however, it seems that the problem of operating a sanitary soda fountain is solved.

Paper paraffin cups and saucers are now being manufactured and put on the market for a little more than half a cent apiece. These cups in the process of manufacturing are dipped into melted paraffin and are practically sterile; they are put up in stacks, and in using them at the fountain the clerks do not touch the inside of the cup, or the upper third of it. Customers that are served with the sanitary cup drink out of a cup that no one has used, and that has not been touched with human hands or lips. The spoons that are used with the ice-cream are dipped into an antiseptic solution before being served to customers. Fountains using these sanitary appliances do not spread disease. The patrons of soda fountains should patronize those fountains that go to a slight expense in giving the public clean, harmless drinks; this will encourage the more general use of the sanitary cup.

The cut on the opposite page shows the fountain of Dr. T. C. Smith, of Asheville, N. C.

Druggists desiring a supply of these cups should write to the American Water Supply Company, 251 Causeway Street, Boston, Mass.

WANTED—A PHYSICIAN.

We have been asked to call the attention of physicians to Kelford, N. C., as a good location for the practice of medicine. Kelford is a town of 500 people in the northern part of Bertie County on the Norfolk Division of the Atlantic Coast Line Railroad and the Lewiston Branch of the Seaboard Railway. It is located in a splendid farming section. In Kelford there are three dry goods stores, three grocery stores, a hardware store, a bank, and splendid church and school buildings. The people in the surrounding country are prosperous and will pay their doctor's bills. There are no doctors in Kelford, but there are two doctors 2 miles north of Kelford and two 6 miles south of Kelford. Any physician interested in Kelford as a possible location should write to Mr. George T. Parker, Kelford, N. C., for further information.
Differentlyating Effect and Cause.

In his little book on "Latter-Day Saints and Sinners," Edward Ross says that "there will always be room for the goodness which helps the lame dog over the stile, lifts up the stumbling child, and gives a cup of cold water to the thirsty wayfarer; these personal ministrations we must not lose." But he adds: "If the keynote of far-reaching service is prevention, there is perhaps nowadays no high and noble endeavor more holy and precious than this smiting of iniquity. If we ever get our eyes open," he says, "no matter how gentle and shrinking we are, our service is sure to become in time less of a ministration and more of a crusade. . . . One starts out just to clothe the naked, but presently he is grappling with vice caterers and exploiters who, he realizes, turn out more nakedness in a day than he can cover in a year. Another sets forth simply to bear light to those who sit in darkness, but ere long she is astonished to find herself withstanding the exploiters of child labor, rebuking the public school politicians or exposing the text-book grafters. A third fares abroad in the morning with no thought but to minister to the sick, but ere it is noon you find that one hammering away at quacks and bogus medical schools and patent medicine frauds and food adulterers. It is this contact with real life, and nothing else, that is turning ministering angels into armed champions. For the philosophy of goodness, as you find it in the book, the pulpit, or the classroom, has not advanced, and your true saint is still supposed to carry with him nothing but honey and balm."

"The latter-day saint carries a sword at his thigh; because as society develops from the simple to the complex, more and more of woe and misery is chargeable on some one else than the sufferer of it." "Little is to be done for mill children, or factory girls, or shop women, or the workers in the unwholesome trades and the dangerous occupations, or the victims of industrial accidents, save by means of legislation; but such legislation must be fought for, and it is not to be had by those who are afraid to give blows or to take them."—Adelaide Nutting, Boston Medical and Surgical Journal.

Quarantine—Its Ineffectiveness in the Past.

(Abstract from paper read before the North Carolina Health Officers' Association at Morehead City by Dr. W. S. Rankin, Secretary.)

When the problem of preventive medicine first began to absorb the attention of public health workers, thirty or forty years ago, the diseases that appeared to afford the biggest opportunities along lines of preventive medicine were the four common contagious diseases—measles, whooping-cough, scarlet fever, and diphtheria. A quarter of a century ago we were going to "stamp out" these diseases. As the following table will show, they have not been "stamped out"; in fact, their mortality rates have been so slightly affected by a quarter of a century of tremendous progress in the field of preventive medicine that to call public attention to the very slight depression in the mortality rates of these diseases is to beg for saint praise. The interesting table, furthermore,
shows that no advancement in the treatment of the first three of the diseases has been made within the time mentioned; the only one of the contagions showing any marked decrease is diphtheria. The decrease in the death rate from diphtheria amounts, in actual figures, to a saving of 55,000 lives a year in the United States. This, we know, is due to antitoxin, and not, as shown by the lack of any decline in the death rate from the other three contagions, to improved quarantine methods, or other preventive measures.

TABLE SHOWING INEFFECTIVENESS OF QUARANTINE.

<table>
<thead>
<tr>
<th>Cause</th>
<th>1890</th>
<th>1900</th>
<th>1901</th>
<th>1902</th>
<th>1903</th>
<th>1904</th>
<th>1905</th>
<th>1906</th>
<th>1907</th>
<th>1908</th>
<th>1909</th>
<th>1910</th>
<th>1911</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td>13.5</td>
<td>12.5</td>
<td>7.3</td>
<td>9.5</td>
<td>9.8</td>
<td>11.0</td>
<td>7.5</td>
<td>12.1</td>
<td>10.0</td>
<td>9.9</td>
<td>9.6</td>
<td>12.3</td>
<td>10.0</td>
</tr>
<tr>
<td>Scarlet fever</td>
<td>13.6</td>
<td>10.2</td>
<td>13.1</td>
<td>12.6</td>
<td>12.2</td>
<td>10.8</td>
<td>6.7</td>
<td>7.7</td>
<td>10.0</td>
<td>11.9</td>
<td>11.4</td>
<td>11.6</td>
<td>8.8</td>
</tr>
<tr>
<td>Whooping-cough</td>
<td>15.8</td>
<td>12.1</td>
<td>9.7</td>
<td>12.0</td>
<td>15.8</td>
<td>6.5</td>
<td>10.6</td>
<td>15.1</td>
<td>11.3</td>
<td>10.6</td>
<td>9.6</td>
<td>11.4</td>
<td>11.3</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>97.8</td>
<td>43.3</td>
<td>31.0</td>
<td>32.8</td>
<td>31.7</td>
<td>28.3</td>
<td>23.6</td>
<td>25.7</td>
<td>23.6</td>
<td>21.5</td>
<td>20.4</td>
<td>21.4</td>
<td>18.9</td>
</tr>
</tbody>
</table>

THE EXPLANATION OF THE INEFFECTIVENESS OF QUARANTINE IN THE PAST.

The explanation of the lack of progress in the prevention of the four common contagions is that, until very recently, we have misunderstood the very nature of contagions. We have believed in air infection, and based our work, directed to the prevention of the above diseases, on that false belief. The discovery that yellow fever was not air-borne, but always carried by an intermediate host, the mosquito, shifted the attention of advanced thinkers from the air to other means of contagion.

Recent experimental work on measles has shown that that disease is most contagious in the pre-eruptive state, that is, before any one could diagnose the disease; that it is during that stage of the disease, while the patient is well enough to be at school and on the streets, that the disease is spread.

We have known for a long time that whooping-cough is contagious, like measles, before its characteristic symptom, the whoop, appears; but, unlike measles, that the contagious and unrecognizable stages of the disease, instead of being four days, as a rule lasts for two weeks. A recent work indicates that it is during this early stage of the disease that the contagion is most active.

Recent epidemiological work has shown that in many epidemics of scarlet fever there are from three to four "atypical and missed" cases about on their feet, to every typical case confined, by nature, to bed. That is to say, in studying certain epidemics of scarlet fever, the following varieties of cases are seen: One child desperately ill, whose illness begins with vomiting, sore throat, a strawberry tongue, high fever, and a rapidly oncoming and profuse eruption; another child with the mildest symptoms by which text-books describe the least severe cases of the disease; another child, in school, whose parents admit that the day before had a slight sore throat, was a little bit peevish, and had for a few hours a barely noticeable redness of the skin on the chest; another child with a little sore throat, a slight fever for a few hours; another child whose only complaint was a sore throat; and, finally, if we use the mind's eye, as well as the other one, there are a good many
more who, so far as they knew and their parents and physicians knew, were not sick at all, but just out of sorts, but, nevertheless, conveyors of the disease. Chapin, in his book on "Sources and Modes of Infection," says, on page 108: "Newsholme has reported a mild outbreak in which the number of sore throats without the presence of eruption was 215, while the number of typical cases of scarlet fever was only 38. Butler, at Wellesden, studied the incidence of sore throat in families where there was reported scarlet fever, and found that 31.2 per cent of 1,266 persons in such families had sore throats, while only 2.8 per cent of 1,644 persons living in families where there was no scarlet fever had sore throat. In a school with 300 children Thornton found 31 typical cases, 19 cases with no rash and slight sore throat, and 46 cases in which only desquamation was noticed."

In regard to diphtheria: Every one knows that in an epidemic of that disease there is at least one diphtheria carrier walking the streets to every case confined to bed.

You see, therefore, that we do not have to imagine all kinds of unknown, and, as I shall later indicate, unreasonable things about the air to account for the continued existence, with undiminished mortality, of these diseases. Moreover, for biological reasons, it is unreasonable to attribute to the air such a deadly rôle in the causation of these diseases. The germs causing these diseases are, or probably are, strictly parasitic and cannot be cultivated or kept alive for any great length of time outside of their normal habitat—the human body. When, therefore, these germs have been thrown from the body in the secretions of the nose and mouth or in scales, and fall upon the floor and dry, their vitality and their virulence or power to produce disease begins to diminish, and in a short time, being separated from their food supply—the human tissue—they die. It is, therefore, the germs that are fresh and in the full vigor of their disease-producing power, the germs that have just left the human host, and not those that have been spread and dried, or exposed to the sun for some time, that we need to fear and to guard against in the spread of infection.

The case with which infection by the fresh secretions of the nose and mouth is spread is shown by the following experiment: A person washes the mouth and sprays the nose with water containing a nonpoisonous, easily recoverable germ, and then coughs or sneezes, and for five or six hours, by suitable laboratory methods, the germ in the wash or spray water, previously found not to exist in the air of the room in which the experiment is conducted, can be recovered from the air. Moreover, it can be so recovered from 10 to 50 yards from where the person who coughed or sneezed stood. Therefore, when a child with whooping-cough, diphtheria, or scarlet fever goes into a schoolroom, a church, or building where there are other children, and coughs or sneezes, it sprays the whole crowd with fresh virulent germs of its own infection. That this method, and not air infection and the common understanding of that term, is the cause of the spread of the four diseases mentioned, is indicated by the experience of the infectious hospital in the city of Paris. Some years ago they began placing the contagious diseases in the same building, but in different rooms, with the doors open. There were no cross infections. They then went a step further and placed
cases of the diseases mentioned above in the same ward, separated from each other only by screens about the bed, extending 6 or 7 feet above the floor; and lately they have been treating, without any cross infection, the different contagious diseases in the same ward without any separation. In the wards, and in constant supervision of the patients, are nurses who are careful to see that no child coughs or sneezes in the air, and that everything that touches one child or its bed never touches another child or its bed. The technic of these nurses is as careful and minute as that of the most careful surgical nurse. The experience of these infectious hospitals proves, beyond a doubt, that these diseases are not carried by the air itself.

Dr. Doty, the recent health officer of New York, has done something recently that a few years ago would have appeared almost criminal. In handling something like 840 cases of smallpox and typhus fever, two of the most contagious diseases known, he had some 50 attendants on these diseases go in and out of the homes of the sick without using any special covering or clothing, and there were no secondary cases in the families of the attendants, or elsewhere, which shows that the simple precautions taken were sufficient to prevent the spread of the infection by a third party.

In conclusion, we may safely say that the inefficiency of the control of contagious diseases during the last twenty-five years has been due to two things: (1) the assumption that a disease was carried by air; (2) the neglect of precautions against the spread of the disease from the missed and atypical cases and carriers. We have concentrated our attention upon the patient's surroundings, when our attention should have been concentrated upon the patient himself.

THE REMEDY: RATIONAL QUARANTINE.

It has not been many years since there was a general impression on the part of the medical profession that all one had to do to treat diseases was to study a text-book, learn a few groups of symptoms, and know the action of a few drugs, and then, by rule-of-thumb methods, handle patients. That day is forever gone. The medical profession has learned that the rule-of-thumb doctor is anything but a competent practitioner. One must recognize the fundamental principles of pathology underlying diseases, recognize those principles when expressed in a variety of symptoms, and treat each patient individually, not as a class.

The treatment of diseases in the body politic is undergoing a like evolution. Many health officers to-day have the idea that they can learn the rules for quarantining the different contagious diseases and apply those rules as well as anybody else. The more we study diseases of the social organism the more we are impressed with the unreliability of rule-of-thumb methods in managing epidemics.

Now, of course, there are some general principles that must be observed.

The first of these is that restrictive measures do prevent the spread of contagion. Chapin says:

Isolation in Villages.—The efficacy of isolation under such circumstances is well illustrated by the history of outbreaks of the common contagious dis-
cases in the smaller cities, townships and villages of Michigan. The data given in the annual reports of the Board of Health of that state are of great epidemiological interest, and my discussion of the subject on another occasion is here given.

Only those places are considered which have remained free from the disease for at least sixty days, and this, unfortunately, is never true of a city of any considerable size. The outbreaks reported are arranged in groups, one in which isolation and disinfection were both enforced, one in which they were both neglected, and one in which the reports did not state with sufficient exactness what restrictive measures were carried out. The following is a summary of some of the tables in the report:

<table>
<thead>
<tr>
<th></th>
<th>Number of Cases per Outbreak</th>
<th>Number of Cases per Outbreak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typhoid fever, 10 years</td>
<td>5.82</td>
<td>3.13</td>
</tr>
<tr>
<td>Diphtheria, 14 years</td>
<td>11.12</td>
<td>2.11</td>
</tr>
<tr>
<td>Scarlet fever, 14 years</td>
<td>11.95</td>
<td>2.32</td>
</tr>
<tr>
<td>Measles, 11 years</td>
<td>48.30</td>
<td>3.03</td>
</tr>
<tr>
<td>Smallpox</td>
<td>----</td>
<td>----</td>
</tr>
</tbody>
</table>

Isolation Effective.—Several things are to be noted in connection with these figures. In the first place, isolation and disinfection accomplish very much in preventing the extension of all these diseases. The number of facts is so great, the outbreaks of each disease running into the hundreds, and the difference between good and bad sanitation is so manifest in each one of the years for each one of the diseases, that the success achieved must be a very real one. It appears certain that isolation and disinfection as practiced in the smaller communities of Michigan reduce the cases of contagious disease in round numbers from 45 to 95 per cent.

The second general principle is to recognize the part that the school plays in contagion. It is during the school term when measles, whooping-cough, scarlet fever, and diphtheria reach their maximum prevalence. The schools in gathering up children from a large neighborhood and bringing them into an intimate and close contact make the spread of contagion easy. Of course, there are many children under 5 and 6 years of age that are not in school that suffer from the aforementioned diseases during the school term, but in nine cases out of ten a child too young to be in school contracts the disease from the children that are in school. The school teacher holds the key to the solution of a large part of the problem of handling these four contagions. We must make elementary epidemiologists out of our school teachers. They must be made to understand first that 95 per cent, if not more, of the four contagions mentioned are carried by exchanges of the oral and nasal secretions between the children; they must be made to understand how this exchange of secretions takes place—through the drinking-cup, through air sprayed with the invisible moist germs of disease by the acts of coughing and sneezing, by borrowed pencils and shared food, infected.
tops of desks, etc.; second, teachers must understand the existence of carriers and the existence of atypical cases, and during epidemics of the diseases above mentioned the teacher must know on what slight evidences or suspicions of a carrier or an atypical case to exclude the child from school and how long to keep him excluded; and, third, a spirit of rivalry in the teaching profession for conducting schools with the fewest number of contagious diseases during the term or session must be developed among teachers.

The third general principle that health officers must recognize in the management of contagions is the education of grown people, and in that way the securing of their cooperation in the enforcement of restrictive measures. This principle must be put into operation by the health officer's calling a meeting, through the children of the school or through the pastor of the church, of the grown people in the community where an outbreak of one of the contagions has been reported, and at that meeting instructing the mothers and fathers in regard to the disease prevailing. Another way to accomplish this same result is by writing a letter (a multigraph letter, to all appearances a personal letter) to the families in the afflicted neighborhood, inclosing, if desired, a pamphlet or leaflet on the disease, giving them the necessary instructions for preventing the spread of the disease from and into their own families. Another method of publicity that can be used, of course, is the newspaper.

One is struck with the indifference of fathers and mothers of families where there are babies under 2 years of age to the spread of whooping-cough or measles into their homes. Such a mother does not know that the chances, if her baby should contract whooping-cough under a year old, are one in five for it to die, and under 2 years of age one out of seven for it to die; or, in the case of measles, under 2 years of age, one out of every five cases of the disease terminates fatally. All that is needed to interest the people and to secure their cooperation is the truth. When they know the facts they will not only have enough selfish interest in their own children to fear for them, but enough sympathy for other children like their own to heartily support all measures directed against the spread of contagion.

So much for general principles; now a few words in regard to some of the details and variations in the management of outbreaks of contagious diseases:

All restrictive measures should be more rigidly enforced in the beginning of an epidemic than after it has been allowed to spread and is prevailing among the larger part of the population of the community. The reason for this is obvious.

There are schools that should be closed and schools that should not be closed on account of epidemics of measles. In a school, for instance, where nine children out of ten would raise their hands in answer to the question, Have you had measles? you certainly would not close the school; the most radical measure to take there would be to send one-tenth of the children home. On the other hand, in a kindergarten and in the lower grades of a graded school where only one-tenth of the hands would be raised in response to the question, Have you had measles? you might, you probably should—unless you had a teacher that could meet the chil-
children at the door as they came and separate suspicious carriers from the perfectly healthy—close the school. As to whether or not you close a school on account of epidemics depends very largely upon what the teacher knows about the fundamental principles of epidemiology. The sooner the educators or superintendents of graded schools and county superintendents of public instruction get hold of this fact the more successful they will be as administrators of public school policies.

Where the school is large a school nurse to inspect the children, to separate suspicious characters and send them back to their homes, is a splendid investment. I, personally, know of an epidemic of scarlet fever that occurred in a city of 10,000 people during the first of September, and a school that was costing the city something like $2,000 a month, whether open or closed, was kept closed for fear that if it was opened the epidemic of scarlet fever would spread extensively. A school nurse was obtained, the school was opened, and, instead of spreading, the epidemic was gradually suppressed.

On the appearance of the first case of measles in a school, the intelligent teacher would inquire of her children if they knew of any other case in the neighborhood, then she would find out, by having the children raise their hands in response to the question, Have you had measles? the susceptibility of her school to an epidemic of measles; if susceptible—that is, a large number never having had measles and only one or two cases in the neighborhood—she would continue her school for a week, because none of the children would become sick in that time, as the period of incubation, at the shortest, would be at least a week, and then she would disband school for a week; during this time all who were exposed to the primary case would come down with the disease, and come down at home, and not in school, where the infection would spread. Then, by reopening the school and informing herself as to what children to meet at the door and send home, she could go on with her work.

A few cases of diphtheria appear in school: Why not have the physician immunize the other children with a hypodermic of antitoxin and go on with the school work? Why close the school for this reason?

In conclusion, there are so many modifying circumstances associated with all outbreaks of contagious diseases that each outbreak should be handled with ordinary common sense plus an understanding of a few simple principles of epidemiology, and not by an automaton following some rule-of-thumb method.

Finally, if those in authority in the counties and towns of this State will make these contagious reportable diseases, and have their health officer record the number of outbreaks of the four diseases mentioned, and, by the total number of cases occurring, find the average number of cases per outbreak, the people will be able or not to see whether their quarantine officer has any quarantine sense. If he keeps down the case incidence per outbreak to a low average he will have proved to be a good quarantine officer; if he has a high average he will have proved to be a poor quarantine officer. For example: A quarantine officer in a county which has had during the past year 29 outbreaks of the four diseases mentioned, with 6.3 cases per outbreak, is a much better quarantine officer than one who has had, during the last year, 31 outbreaks of the four diseases mentioned with 12.4 cases per outbreak.
ORDINARY DISINFECTION OF LITTLE VALUE.

(Abstract from paper read before the North Carolina Health Officers' Association at Morehead City by Warren H. Booker, C. E., Assistant Secretary.)

Another old theory has been exploded. We used to think we had to "fumigate" or disinfect after each case of whooping-cough, measles, scarlet fever, and diphtheria. Now we are learning better. We used to think that the furniture, walls, books, pictures, etc., gave us all sorts of diseases, even long after the original case of disease had occurred. Now we are learning more about these diseases and the way in which they are spread. Now we know that the disease germs grow only in the human body, and that when they are coughed or sneezed out onto chairs, desks, and walls, they dry up and die very rapidly. It is not the inanimate object that we have to watch. It is the case of disease that should be watched. In the contagious diseases it is the discharges from the nose, mouth, throat, bowels, and kidneys that should be watched. These discharges are what contain the live, active, disease-producing organisms fresh from their breeding places. Here is where attention should be centered. These discharges are what should be disinfected. Wherever at all possible, a handkerchief or a cloth should be held over the mouth and nose in sneezing or coughing, to prevent the tiny droplets, that would otherwise be discharged into the air, from being inhaled directly by other persons.

Here is another very important point we used to overlook. We used to think that when a case of contagious disease was cured there was no more danger from that individual. That is still true in general, but frequently a person will recover from a case of contagion or typhoid and still go around for weeks, months, or even years, coughing, sneezing, or otherwise passing out the live, active germs of his original disease, although he is entirely recovered, so far as can ordinarily be determined. Such people are known as "carriers" because they still carry the disease around with them. Much might be said about "carriers" at this point, but space forbids. The thing we are most interested in is the fact that these "carriers" are the source of nearly all our secondary cases, instead of the furniture, walls, schoolhouse desks, etc. The spray and tiny droplets coughed and sneezed out into the air are teeming with strong, live, active disease germs which are a hundred times more dangerous than old dried-up dead germs that may have been coughed out onto furniture, etc., perhaps days or weeks ago.

The point to be remembered is that the disease germs should be caught and disinfected as they come from the body, and should not be allowed to float about in mist, spray, or tiny droplets to endanger people. After these disease germs have once escaped into the air of a room, settled on the walls and furniture, and dried up and died, there is little to be gained by burning sulphur or formaldehyde candles, or by other forms of disinfection.

Certain sanitarians have held these ideas for some years, and to prove their contentions they have discontinued disinfection in the case of scarlet fever and diphtheria with no unfavorable results. In other words, just about as many secondary cases occurred when terminal disinfection was employed as occurred when terminal disinfection was not employed. The accompanying tables show the number of secondary cases occurring before and after discontinuing disinfection.
In the case of diphtheria slightly fewer secondary cases occurred, and in the case of scarlet fever slightly more secondary cases occurred. As both variations are well within the range of error, it appears that from a practical as well as a scientific viewpoint, terminal disinfection is of little or no value. It costs a large amount of money which could well be spent in other lines where it would do infinitely more good.

As a further proof that terminal disinfection after the recovery of a case of contagious disease is of no value, and that secondary cases are due to "carrier" rather than to infected walls and furniture, it may be noted that where cases of contagious diseases are removed to contagious disease hospitals and returned to their families after recovery there are about as many secondary cases as where the patient has been quarantined in his room, but with terminal disinfection after his recovery. In other words, in both instances the secondary cases are due to "carriers" rather than to infected objects.

As for typhoid fever and tuberculosis, rigid disinfection of bowel discharges and sputa by means of carbolic acid, chloride of lime, fire, or boiling for thirty minutes, should be insisted upon at all times. Ordinary fumigation, however, even in the case of either one of these diseases after recovery or removal, is of doubtful value. Absolute cleanliness, the use of plenty of soap and hot water, thorough sunning and airing of houses, are worth many times more than fumigation, and cost considerably less.

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