

TRANSACTIONS
OF THE
NORTH CAROLINA
PUBLIC HEALTH ASSOCIATION

TWENTY-THIRD ANNUAL SESSION

THE NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

President

DR. C. N. SISK, Rockingham

Vice-President

DR. F. M. REGISTER, Goldsboro

Secretary

DR. Z. P. MITCHELL, Weldon

RALEIGH, N. C.

MONDAY, APRIL 17, 1933

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NORTH CAROLINA PUBLIC HEALTH
ASSOCIATION

MONDAY MORNING SESSION

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The Twenty-Third Annual Session of the North Carolina Public Health Association convened at ten-ten o'clock in the Ball Room of the Sir Walter Hotel, Raleigh, North Carolina, Dr. C. N. Sisk, President, presiding.

PRESIDENT SISK: The Twenty-Third Annual Session of the North Carolina Public Health Association will come to order. We will have the invocation by the Reverend Mr. Walker.

REVEREND WALKER: Our Heavenly Father, we thank Thee that we can feel that back of all the trials of human life there is a spirit of work, and we believe in Thy redemptive plan that human life in all of its aspects will be changed and made better.

We thank Thee that we can have a part in that plan and join hands with Thee in co-working for the betterment of human beings, and we pray Thee as this session opens that those who take part may do so with the sense of Thy heart calling us servants not only of their fellows but of Thine.

And we thank Thee that we can serve Thee in so many ways, and we thank Thee for the limitless service that is rendered by men like these, as they gather in their meetings to discuss those things that will be for the relief of suffering and the saving of human life and the satisfaction of human need and relief of human pain. Bless then this meeting, we pray Thee, and go with it in all of its sessions.

In Jesus' name I ask you. Amen.

PRESIDENT'S ADDRESS

DR. C. N. SISK, Rockingham

The application of knowledge of the bacterial cause of disease has increased life expectancy from thirty years at the time our country gained its independence to sixty years at the present time.

Realization of the preventability of disease brought into being the practice of preventive medicine which is now established as a public function and responsibility.

The final report of a committee of forty-eight members created in Washington in May 1927 for the purpose of making a five-year study of

the cost of medical care, and numbering among its membership twenty-five outstanding physicians, is indicative of the attitude of the medical profession toward public health service. In this report we find as follows: "Public Health Service should be adequately supported. All parts of the country should be provided with the basic public health activities, namely: (a) the collection of vital statistics; (b) the control of water, milk and food supplies; (c) the control of sanitation; (d) the control of communicable diseases, especially tuberculosis and venereal diseases; (e) the provision of laboratory service; (f) popular health instruction; (g) the promotion of maternal, infant and child hygiene, including school health service; (g) the organization of other special services when needed for the prevention and treatment of malaria, hookworm and other diseases which constitute special health problems.

The committee makes the following recommendations: "Public health service should be extended under full time trained health officers, employed by local or state government to all areas which are now without such service, as rapidly as qualified personnel are available. The tenure of office of health officers and their staffs should depend entirely upon administrative and technical competents."

A committee of this size considering a subject of such magnitude could not be expected to reach a unanimous conclusion, consequently a minority report was submitted by eight physicians from private practice and one layman. The favorable expression toward public health service in the minority report is even more emphatic than that of the committee as a whole. In the minority report we find this statement: "We are in full and hearty accord with the majority in its recommendations for the strengthening of the public health service. We emphasize especially the following points: (1) the need for more adequate training of medical students in public health matters; (2) the elimination of politics from public health administration; (3) improved standards in public health services to make them more attractive to able men; tenure of position should be more secure and remuneration should be increased."

It has been said of North Carolina that she was a valley of humility between two mountains of conceit. She had the potentialities in natural resources and good citizenship, however, to assume a position of progressive leadership when circumstances permitted. Awakening from her lethargy she began a march of progress and today we are all proud to claim her as our native state.

The particular activities that have advertised her to the world are her accomplishments in schools, roads and public health.

One had to live in rural North Carolina previous to and during the first few years of the present century to appreciate the poor school facilities for operating a three or four months free school, frequently taught by very incompetent teachers, the impassable roads often requiring the

rural dweller to lay in supplies for the winter before travel became impossible.

Improvement in education since that day has been phenomenal. We still rank far from the top, however there are now several states to be thankful for. We have a wonderful system of consolidated elementary and high schools in every county in the state, representing an investment of \$110,000,000.00 in buildings and equipment. The state will finance an eight months free school with an enrollment of 866,000 children, 250,000 of whom are transported a total distance of 118,000 miles each school day in 4,400 school buses. Twenty-four millions of dollars have been spent in building our state institutions for higher learning and over \$5,000,000.00 have been spent annually in their operation. Our State University is one of two southern universities holding membership in the National Association of Universities. Its standing was illustrated to me recently by a statement from a teacher in a highly endowed northern college that his school accepted students without examination from only four colleges. Three of the schools named by him were outstanding eastern universities and the fourth was the University of North Carolina.

We are justly proud of our State Highway System, representing an investment of \$190,000,000.00 and comprising over 10,000 miles of first class roads, nearly 6,000 miles of which have some type of hard surfacing. In addition there are 45,000 miles of lower class roads maintained in good condition by a very efficient State Highway Department.

At the present time the state has practically complete control over our schools and roads and is administering them more efficiently, more economically and more uniformly than could be done by each individual county.

The present state appropriation for health work exclusive of the State Laboratory of Hygiene is \$290,000.00 as compared with \$16,943,000.00 for common schools and \$18,160,000.00 for roads. Our revenue commissioner recently made a statement in an article in the *United States Daily* that 31.3c of each tax dollar was spent for education, 20c for highways, exclusive of debt service and .7 for public health.

I am not critical of one penny spent in the development and operation of our schools and roads. It does seem to me, however, the importance of public health work demands more equitable support from our state government.

Public health may be spoken of as the forgotten man of the triumvirate.

North Carolina pioneered in the development of full time county health work and for a number of years out-ranked all other states in this capacity. Today she stands 10th in percentage of rural population under full time health supervision.

There are thirty-three of the one hundred counties comprising 40% of the area and 55% of the population receiving the benefits of a full-time health department of some dimension and sixty-seven counties with 60%

of the area and 45% of the population without full-time health work of any kind.

Local control may be responsible for delay in expansion and many of the short-comings apparent in its practice.

Whether or not a county has a health department, as well as the type it has, reflects the sentiment of the controlling political influence. As a result two-thirds of our counties do not have a health department and some so-called are of little value when measured by the standard of approved public health values.

North Carolina was the first state in the union to promote public health work as a full-time practice. Having no precedent to guide us, we established a policy of permitting the practice of medicine by health officers for county charges and outside poor under the safeguard of public welfare approval. In some county units this practice has resulted in injustice to the health department, the private physicians and by pauperization to many who receive free medical care. It has practically destroyed their usefulness as institutions for the prevention of disease. Much of this work does not merit charity nor the condition justify the time of the health officer. This practice is not permitted in any other state in the union, however, if properly controlled the institutional practice and a limited amount of outside work can be done in small counties without disrupting the health program.

Public health work is a specialty requiring workers fitted by natural endowment and special training. The field of public health has limitations governed by the rights of the professions and subject to abuse by the illogical reasoning of a misinformed public.

The policy of the State Board of Health in delegating direction of county health units to county boards of health, while making financial contribution under a contract limiting the activities is in effect dual lack of control and fails to furnish much needed and greatly desired moral support and leadership from a higher authority in executing a legitimate program of health work.

Our county boards of health are composed of leaders in the community, but the majority influence is the viewpoint of the layman. The membership is generally without time or inclination to make sufficient study to grasp the intent and purpose of a health department as understood by the trained health worker.

The State Board of Health is the only medium through which universal and standardized health work can be administered.

Methods of communication and travel of ages now in the dim past necessitated the division of our state into small political units. Her one hundred counties vary in area from Chowan with 165 square miles to Roberson with 990 square miles, and in population from Dare with 5,202 to Guilford with 133,000. There are sixty-one of our counties with less than 30,000 population and twenty-three with even less than 15,000.

Many of our counties are too small and too poor to warrant a complete health unit. Inequality in area and population difference in tax rates and fluctuation of political control are some of the reasons why a plan of combining two or more counties into a health district is not practical, unless workers whose time is divided between counties are paid entirely by the state.

There is only one way under existing conditions to make public health work a universal standardized commodity, with justice being done to the interested professions and with assurance of satisfactory working conditions and permanency of office to deserving health workers.

The establishment of health districts based upon area and population, each district to be under the supervision of a well trained health officer and manned by subordinate employees up to a certain minimum, employed, trained, paid and discharged by the State Board of Health. Ability to deliver a spellbinding oration or write an attractive paper on a technical public health subject are desirable accomplishments, but a well-trained health officer must be able to take a hammer and saw and build an approved privy, inspect a dairy and rate it within a fraction of that of an expert from the U. S. Public Health Service, inspect a hotel or restaurant and give it an accurate rating. Personnel must be sufficient to intensify the work to a degree to merit public approval. The rarefication of work in some of our units because of insufficient workers has caused unjust criticism and lack of appreciation, of public health work. It is better to have no health department than one charged with full responsibility which is impossible to accomplish. The health department program should be purged of all extraneous duties, such as the practice of curative medicine, bedside nursing, garbage collection, etc.

The chief reason for establishing health districts is the small population of many of our counties which if furnished individual health officers alone would cost enough to provide very creditable personnel under a district plan. The salary demanded by a health officer does not justify his engagement in the execution of health measures that can be done as effectively by someone whose training does not demand as large a salary. The work of the health officer should be largely administrative. A capable man can supervise health work for a population of 100,000 or more, whether in one county or several.

The division of our state into thirty districts would give an average of 1,600 square miles and approximately 100,000 population per district. The state's contribution of the basic employees of a health officer and clerical assistant for each district, a sanitary inspector for each 50,000 and a nurse for each 20,000 population can be had under present salary scales for \$500,000.00, or 16 2/3c per capita. On this basis a county or district with 100,000 population would receive from the state, a health officer, clerical assistant, two sanitary inspectors and five nurses. This does not approximate the amount of personnel required to meet the

accepted standard of public health service. It would form a stable and effective nucleus during this time of economic distress when it is absolutely and appallingly necessary to reduce expenditures to a minimum. The wealthier cities and counties should and would furnish additional personnel for special sanitation, increased nursing service, school dental hygiene and laboratory service.

Records will show that the State Board of Health and thirty-four counties are now spending \$250,000 for field service, in no instance in excess of what would be received under this plan and in very few instances is this personnel now equaled. The addition of the modest sum of \$150,000.00 to what is now being spent would give this very excellent service to every part of the state.

A few debatable policies are responsible for disapproval of the whole scheme of public health work by many members of the medical and dental professions.

An equitable program of activities should be adopted and a united front presented in the expansion of public health service.

The establishment of health districts under state control would automatically place the practice of medicine for county institutions and outside poor in the hands of the private physicians. It should be done by the doctors throughout the county by assignment according to convenience of location and limited to the helpless and destitute, for once a pauper, always a pauper.

The operation of public health work as a state function will promote the interest of the medical and dental professions and postpone the day of state medicine. It will assure tenure of office, provide better training and attract more capable workers. It will permit the standardization of programs with closer contact between workers and will pay its cost over and over in lives saved and in the reduction of repeating in schools.

Let us work together for a new deal and we will see North Carolina regain her prestige as leader in the field of public health.

SECRETARY MITCHELL: Mr. President, I have a report here, but as a matter of fact the Secretary's report at this time is rather a perfunctory sort of thing and if it pleases the Association I am going to move that it be dispensed with. You will find the whole of our proceedings in the volume of the Transactions of the Medical Society of the State of North Carolina, and they not only print our proceedings, but they furnish us a reporter, a registrar, and edit the copy, without any of us being bothered with it in any way, and have done this now for twenty-three years, and paid all the expenses connected therewith. Rather fine of the State Society—yes, I would say magnanimous. Don't you agree with me?

PRESIDENT SISK: It is moved and seconded that the reading of the Secretary's report be dispensed with, and the thanks and appreciation of

this organization be extended to the State Medical Society for its magnanimity and co-operation as above mentioned.

. . . The motion was put to a vote and carried . . .

PRESIDENT SISK: Appointment of Committees: On the Committee on President's Address I will appoint Dr. Epperson, Dr. Armstrong, and Dr. Hege.

For the Committee on Visitors and New Members I will appoint Dr. Carlton, Dr. Williams, and Dr. Harding.

For the Committee on Resolutions I will appoint Dr. Bulla, Dr. McGeachy, and Dr. Britt.

The first paper on the program is "Midwife Control," by Dr. G. M. Cooper, of Raleigh.

DR. COOPER: Mr. President, Ladies and Gentlemen: Before I present my brief, formal paper I want to read an abstract that I ran across last week in the Journal of the American Medical Association from a Japan correspondent. The title of the paragraph is "Proposed Changes in Midwifery."

"The present law regulating midwives was made in 1899; since then there has not been any change, and yet medicine has made remarkable progress in the last thirty years. The proposed new law would raise the position of midwives and also license them to give hypodermic injections, make perineal repair and give injections in case of asphyxia of new-born babies. The midwife school should be raised to a higher status, taking in those who have finished the better girls' schools."

—From a Japan correspondent, *Journal A. M. A.*, April 8, 1933.

MIDWIFE CONTROL

By G. M. COOPER, M.D.

There is no argument about the necessity of midwife control in the State of North Carolina. About one-third of the women in the state are delivered exclusively by midwives. In other words, for one-third of the women in North Carolina every year there is no prenatal service of any kind and no attention at the time of labor, except the assistance that may be obtained from a midwife.

Between the years 1922 and 1929, as a result of Federal funds available under the Sheppard-Towner Law, the State Board of Health spent approximately \$50,000 a year in an effort to improve the status of midwives and to promote in general the better care of infants and mothers. During the years mentioned there were four district nurses employed by the Board of Health, under a whole time director of maternity and infancy work. These nurses and the director made an effort to secure the adoption of special rules and regulations governing the practice of midwives by the county boards of health in a number of counties. All told, a total of forty

counties adopted rules and regulations prepared by the State Board of Health and permitted it under the State Law.

On the first of September, 1931, when Dr. Parrott assigned to me the duties of directing the maternity and infancy work for the State Board of Health, with no funds to carry out the inspection service, my first effort was to ascertain, through the medium of the school nurses employed under my division, the present effectiveness of these rules and regulations. We found that a number of counties in which the rules and regulations had been passed, midwife classes held, and an effort made to improve the service, that there had been changes in the county boards of health personnel and that the county officials, including the part-time county physicians, did not even know that they had ever had rules and regulations. In a number of other counties, where the same officials were still in office, the rules and regulations were found to be a dead letter, no effort having been made toward enforcement since the discontinuance of the district nurse work in 1929.

During the spring and summer of 1932 we did a great deal of work in trying to make personal contact with the midwives in a large number of such counties, including some counties that had never had any rules and regulations promulgated. Among other things the nurses found that in a majority of cases the midwives are growing old; their numbers are not being recruited from the ranks of intelligent young healthy women. In some instances they have found a few trained nurses interested in taking up the work, and in a few counties they have found midwives of a high order of intelligence. With a few exceptions, we have found that all of them have an honest desire to know more about their business and to serve their patients better. We found also that in a very large majority of cases the midwives are poorly paid, when they collect at all, for their services, but that more frequently they are paid nothing but promises.

We have found the physicians to be divided into three classes: The first is the class that would repudiate and rule out all midwives all over the State and allow none of them to practice in any way or for any class, no matter how poor. The second class comprises those physicians who do not want to be bothered with the midwife problem, who care nothing about the midwives one way or another, who do not want to be troubled with the poverty-stricken class of patients that depend on the midwives; in short, midwives mean nothing to them one way or another. The third class of physicians we have found to be sympathetic to our efforts to improve the midwife's status, tolerant and generous toward the midwives, who realize that the midwife is a necessity, and that she always will be for a certain class of people, and who manifest a desire to help them in any way they can.

After all these years of experience we concluded last winter that it would be better for the State Board of Health to ask the General Assembly for a law giving the State Board of Health the identical power now held

by each and every county board of health, in which it is stated they have power to make such rules and regulations as they deem necessary for the protection of the public health in their counties. This is one of the most beneficial sections of any law ever passed in any state anywhere at any time. So far as I know, it has never been abused.

The bill which the State Board of Health prepared and had introduced in the House of Representatives by the only physician member of that body is quoted at the bottom of this article. The bill received a favorable report from the Health Committee. The action was unanimous. It was defeated on the floor of the House by a vote of 31 to 28 out of a membership of 120. One member of the House, after voting against the bill, was heard to turn to his neighbor and ask him to please tell him what a midwife was anyhow. I suppose, because the bill was introduced by a physician along about the time other medical measures were coming up in the House, that some of the members got the impression that it was a bill to forbid the practice by midwives and to force people to employ physicians and to pay the regulation fees for such service.

We still have the same opportunity we have always had of undertaking to get rules and regulations adopted in all the counties and effectively carried through. These rules and regulations should simply undertake to see that the midwife has a reasonable knowledge in the primary essentials of antisepsis, experience and judgment in such work, and that she comply with the simple requirements necessary for the safety of the mother and the baby. Unless such a woman can comply and also satisfy the authorities in any county that she is free from communicable diseases such as syphilis and otherwise in good health, she should be debarred from practice.

The three things the State Board of Health has tried to impress on all the midwives are: *First*, a non-interference attitude in which they refrain from undue handling of the patient; *second*, close observance of danger signs and a knowledge when the patient is beginning to deviate from the normal course; and *third*, when such signs and symptoms appear, to insist upon the family immediately calling a physician.

The rules and regulations will be worthless, as they have proved to be in so many counties, unless the county health officer, or rather the part-time county physician, is in hearty sympathy with the efforts put forth and will recognize his responsibility at all times for executing the rules and regulations.

Following is the bill which the House of Representatives defeated. We hope that the next General Assembly will be more favorable to health legislation in every way and that this bill, or some similar one, may then become a law.

A BILL TO BE ENTITLED AN ACT TO PROTECT THE HEALTH OF
MOTHERS AND INFANTS AND TO REGULATE THE
PRACTICE OF MIDWIFERY

The General Assembly of North Carolina do enact:

Section 1: The State Board of Health is hereby authorized, empowered and directed to adopt, promulgate and enforce rules and regulations governing the practice of midwifery in this State.

Section 2: No person shall practice midwifery in this State, except upon a permit granted and issued by the State Board of Health, under rules and regulations which it shall adopt with respect thereto, and upon forms which it shall prescribe.

Section 3: Any person who shall practice midwifery in this State without such permit from the State Board of Health, or who, in such practice shall violate any of the rules and regulations adopted and promulgated by the State Board of Health, shall be guilty of misdemeanor, and, upon conviction, shall be subject to a fine of not less than Ten Dollars (\$10.00) nor more than Fifty Dollars (\$50.00), or imprisonment of not more than thirty (30) days.

Section 4: All laws and clauses of laws in conflict with this Act are hereby repealed.

Section 5: This Act shall be in full force and effect from and after its ratification.

DISCUSSION

PRESIDENT SISK: Dr. E. M. Harding, of Lumberton, will lead the discussion of Dr. Cooper's paper.

DR. E. M. HARDING (Lumberton): Mr. Chairman, Ladies and Gentlemen: What our President has just said and possibly what Dr. Cooper has brought out in his paper illustrates the need for public health supervision of midwives in every county in North Carolina. The fact that one-third of all the children born in the state are delivered by midwives I think is ample argument for better supervision.

We all know who the midwives are and the type of work they do and we know that in most instances there is no restriction and no supervision whatever as regards their work.

We have had a law, practically the same law that Dr. Cooper read to you, in our county almost as long as we have had a health department. Our midwives have been organized into classes. These classes meet several times each year and receive instruction from the County Nurse and the County Health Officer. Their bags are checked over to determine whether they are carrying the standard equipment which they are required to carry, and we find out whether they have any cases to report and any cases that have not been reported, and get a check on how well they are reporting, and all that.

In this way we have been able to keep up with the midwife situation fairly well in our county.

We are endeavoring now to get as many younger women into the work as we possibly can as some of the older ones die out or drop out for one reason or another, and we have been able to recruit several young women of the better and more intelligent type in the last few years.

I think that is one of the things we all need to do. Frankly, I can't see how we are going to get rid of the midwife problem during our generation unless there is a more radical change in public health education in this country than I see now.

Our midwives I think are fairly competent as midwives go. The main thing we must do, of course, is to try to teach them to recognize danger signals and try not to interfere in a pernicious way, and to let Nature take its course. Then, too, we have tried to impress upon them the necessity of proper reports to the Health Department and I think we have been successful in that, as Dr. Cooper will bear me out from the reports that come into the State Health Department from our county. In fact, the majority of our midwives report their cases more promptly than the majority of the physicians do. They not only report the labor at the time but a great many of them report pre-natal cases on a little form that we furnish them.

Of course, I think, just like Dr. Cooper says, no matter how much work has been done on this midwife situation in a county, if it is just turned loose and the Health Department allowed to go down and there is no further supervision, in a few years we won't have a great deal to show for it. It is something that requires constant supervision. You have got to keep everlastingly at it in order to get results. (Applause)

PRESIDENT SISK: Is there any further discussion?

DR. R. S. MCGEACHY (Greenville): I don't wish to discuss this paper, Mr. President, but we have a gentleman with us that we ought to extend the courtesies due. I refer to John A. Ferrell, M.D., President of the American Public Health Association.

PRESIDENT SISK: Dr. Ferrell, we are certainly glad to have you with us and extend to you the privilege of the floor. We shall be glad to hear from you at any time. (Applause)

DR. JOHN FERRELL (New York City): Mr. Chairman, Fellow Health Officers: I am intensely interested in this paper by Dr. Cooper. About the only contribution I am able to make is to circulate over the country and pick up gossip and pass it on.

I have been tremendously interested in the efforts being made in North Carolina toward improvement in quality and competency of midwives. Of course, it is a serious problem. We all recognize that the midwives are not the type of people who ought to be entrusted with the care of women and babies.

In this state one of the County Health Officers several years ago was glad to observe a well-trained colored nurse who had had some special training in midwifery giving instructions to a class of midwives, and further to observe that the county authorities had entered into an agreement to compensate a physician called in by a midwife to deal with any complicated case which might be encountered.

In Great Britain midwifery is a very different thing from what we have in this country. For example, there are definite courses of study which have to be taken involving extensive practice in the delivery of women. In this country there is a movement under way to introduce midwifery on a plan that is being practiced in Great Britain and certain other countries. In fact, a school of midwifery has been opened in New York City.

The nursing profession seems to be exceedingly anxious that in the introduction of midwifery in this country the first requirement be that of the graduate nurse and that the obstetrical or midwifery training be supplemental to that background. They claim that the record of deliveries of midwives compares very favorably with that of physicians.

They would like, of course, for the nurses to have their field of activity broadened to include midwifery.

There are those who oppose this plan of development, however, because they say that if a nurse is given additional training as a midwife and goes out ostensibly to serve the indigent, the poor people who ordinarily now in the South use midwives, it would be only a question of time before they would move out of these poor communities and stick up their shingles in the cities to compete with physicians.

Further opposition to the idea comes from the medical profession on the ground that if the public will supply money enough to pay a graduate midwife, say something like \$2500 a year, if that money is allocated to a liquid fund for the use of the Health Department, that a larger number of confinements can be attended by physicians at a nominal cost than the trained midwife will be able to attend in the course of a year.

That is merely the discussion. I am not presenting any opinion on the subject one way or another. I do know that at least two Southern states, in an effort to improve such midwives as they now have and to restrict the practice of those who are recognized in the beginning as incompetent, are taking steps to send a nurse to the school of midwifery, where there will be special training in midwifery work, in the expectation that that nurse will return to the State Health Department and give supervision in better training the midwives in the field and aid the State Health Department in the formulation of regulations for the control of the practice of midwifery. Gradually, in this way, a more competent group of women will be brought into the field.

I thank you very much for the privilege of being here. I always consider this as my home and this group as the group with which I entered the field of public health and I can assure you that it is a pleasure to be here. (Applause)

PRESIDENT SISK: I can assure you, Dr. Ferrell, that we are many times gladder to have you than you are to be with us.

Is there any other discussion on Dr. Cooper's paper?

DR. JOHN SYMINGTON (Carthage): Mr. President, I am much impressed by Dr. Ferrell's statements. I am familiar with the school of

midwifery in New York City which he has just mentioned. I believe I have a relation on the faculty. And I had already written to Dr. Hamilton that unless matters were improved in our county I was going to request a trained nurse with a postgraduate training in midwifery just as Dr. Ferrell had talked of, because the problem of obstetrics is a great one in the county from which I come.

I see there is a plan to recompense the doctors that may be called in in such cases and I think that is wise, if it can be carried out.

The infant mortality in this country is probably the greatest in the world. We have to go to India and China to get anything to equal the mortality statistics to be found in the United States of America, and it is a serious problem. How to carry it out, of course, with everything in public health cut to the bone and more maternity cases being thrown onto the Public Health Department, is far too much for one man to handle.

I was talking with a specialist in obstetrics a month or so ago and he told me I was doing more maternity work than a specialist, because these cases can't even get midwives, some of them. They have no money to pay midwives, and the midwives only get, as Dr. Sisk has said, a promise. They don't even get four dollars, and their fee is ten.

The doctors won't go out now on these cases unless they are paid. So we are up against a very serious problem that needs the best brains in the state to settle.

PRESIDENT SISK: Is there any further discussion?

DR. C. C. HUDSON (Greensboro): After several years' experience with midwife control measures such as advocated by Dr. Cooper, I have about come to the conclusion that there is not much we can do with the average midwife that we have at the present time. The service will be poorer. There is no doubt of that. Of course, at the present time, owing to economic conditions, there is practically nothing in it for the midwife.

There is one thing, of course, which midwife control measures do, and that is, they tend to bring more cases, in spite of the evidence that we have expected to the contrary and the idea that some physicians have, to physicians.

From my experience I believe that when we make regulations requiring midwives to call in physicians, for instance, in cases of prolonged labor or where there is any evidence of a diseased condition, and things like that, it tends to make them more careful and to bring the cases to physicians. As evidence of that, for instance, when we first passed our regulations in Greensboro we had been having about one hundred and fifty cases, practically all colored, handled by midwives. The number dropped during the next year to something like one hundred cases—one hundred and five I believe—and it is now under one hundred cases per year that are handled by these midwives.

But, after all, the midwife is only an evidence of a very poorly handled problem from the medical standpoint. As a physician, I regret that it is

necessary for any of our people to have to depend upon midwives, rather than upon physicians for obstetrical service. In the first place, a midwife cannot give the pre-natal care which every expectant mother needs.

Last year we had in Greensboro sixteen deaths from obstetrical causes. Eight of those were cases brought in from the surrounding country that died in hospitals. Eight of them were city cases, six colored, and two white.

Now, the standard, according to the national organization scoring system used in American cities—is that our mortality rate should be less than four deaths per thousand cases. Our white case rate there was about two and a half, two and four-tenths, I believe, per thousand cases. Our colored rate was enormously high. Our case rate there was one to thirty-seven. In other words, obstetrics ranked as a major cause of death with us last year. We had a mortality rate of nearly three per cent, which is entirely too high.

One of those cases was due to abortion in about the third or fourth month, which, of course, we might have gotten by, anyway; two had abnormal postpartum hemorrhages; one or two had infections.

In other words, in connection with a good part of this problem, if we could get the cases into the hands of physicians early, through pre-natal clinics and things like that, we could eliminate practically all those causes of death.

There is no reason for our death rate being higher among colored women than it is among white women. We don't believe it ought to be very much higher. Of course, they have more infections and perhaps there are various things that might lead us to expect the rate to run just a little higher, but it should not be materially different than that of white women.

So that there is no doubt we need better obstetrical care. Anything which tends to make that care better, of course, should be approved by all of us. Midwife control tends to improve it somewhat but it doesn't take the place in any sense of physicians' care and we shouldn't in any way teach them that it does, because if we can get a case under a physician's care early and keep the case under his care until some time after delivery, we know that the mother will get the right attention, and the attention which she should receive.

I am in thorough sympathy with all the moves we can make to improve the conditions we have at present and which are, to say the least, rather horrible among our colored people.

PRESIDENT SISK: Is there any further discussion? If not, we will ask Dr. Cooper to close.

DR. G. M. COOPER (Raleigh): Mr. President, I do not want to leave the impression that the situation is a gloomy one at all. We are certainly optimistic about the whole affair, for this reason: Ten years ago there were on record more than nine thousand midwives in this state and so far

as we can gather from the information that is now available there are not over forty-five hundred practicing in the whole state of North Carolina today.

Another thing: the midwives today, with the exception of the older ones who are going out, the dirty and incompetent ones, are more competent than they have ever been before, that is, taking the average through the state.

A third thing is that the infant death rate of North Carolina last year was more than six points lower than it ever had been in the state before, and that bears directly on this whole question.

Those are things that make us look with optimism on the situation, but at the same time, as health officers and physicians, we cannot be content with anything but the very best in this situation.

Just one other thing: until within the last two years there has been an increasing number of women attended by physicians. Last year, in 1932, and also in 1931, there was a slight increase in the number of women attended by midwives as compared with previous years. But the whole situation is optimistic provided we put our best endeavors into the proposition all up and down the line.

PRESIDENT SISK: Our next paper has a very appropriate title, "Hard Times and the Public Health." It will be presented by Dr. R. L. Carlton, of Winston-Salem.

HARD TIMES AND THE PUBLIC HEALTH

By R. L. CARLTON, M.D., F.A.P.H.A.
Health Officer, Winston-Salem, N. C.

From time to time during the last few years some of us have had something to say concerning the relation of the depression to health. A year ago it was evident that the changes in social conditions resulting from hard times had not materially influenced health. We were then in the third year of the depression. We had lost money, were having difficulty in meeting public and private budgets, were hurt in our hopes and our pride, but our death rates did not give evidence that our health had suffered.

Analyzing the death rate, we found that the increase in deaths from certain diseases and at certain age periods had just about been offset by decreases from other diseases and at other age periods. If there had been any tendency toward poorer health it was just about offset by the decline in the birth rate, a lessened proportion of babies and other younger children, and a decrease in the infant death rate.

Another year has passed. We are now in the fourth year of hard times. The proof that the position then taken was correct is more evident.

Meanwhile, there has been a rather widespread effort to use the comparative good health in spite of hard times as an argument against public

health work, and even as against private medical service. It has been said that the experience goes to show that appropriations for public health work can be curtailed without harm, and that sick persons need not call physicians nor go to hospitals. The quarrel that health workers have is with the conclusions that are drawn from the facts rather than with the facts themselves.

There have been fewer deaths. Certain people have concluded that this means there has been no necessity for the expenditures for health protection. To these people, should we not reply with a few questions? Why have a doctor in attendance, since it has been demonstrated by experience that 80 per cent of sick people are going to get well anyhow, whether they have a doctor or not? Why maintain hospitals, since experience has demonstrated that without using the hospitals there is a lower sickness rate and a lower death rate? Why have money spent for preventive measures such as those of public health, since the less we spend and the more we economize in the health department, the lower the death rate? This line of argument is logical and sounds reasonable and appealing to certain people. Their argument has been: "As it has been, it will be!"; that if the sample was good, more of it would be better. If a little relief from hospitals and from doctors and health departments has got us somewhere, as it appears to have done, then more of it would get us still farther.

HEALTH IMPROVEMENT BEGAN PRIOR TO DEPRESSION

What is the answer to the argument? In the first place we have been in the midst of a downward trend of disease for half a century or more—for centuries in fact. There has been a constant trend toward betterment of health conditions, but in the last quarter of a century this trend has been more easily demonstrable, and more readily comprehended. Tuberculosis has been on the decline for about fifty years. The men who are studying the prevalence of the disease, those engaged in the strategy of tuberculosis control, have projected lines into the future based on the experiences of the past and have even predicted dates when the trend line would cross the zero line. This phenomenon would introduce the time when the disease would disappear entirely.

That which we are reaping in the shape of health improvement is the result of forces that began to operate decades ago, in some instances. We are in the midst of the harvest time. The time of sowing was some months, or some years, or some decades ago, and all we can say is that the depression through which we have been passing for several years is calculated to disturb the established trends. That is one of the answers to the arguments of those who have claimed, and still claim, that we can afford to discontinue all kinds of health work, including those of preventive and curative medicine as well; of those who say we will get

well if we wreck the machinery of medicine, and leave the intelligent and educated human beings on their own resources.

Another part of the answer to that assertion is this: That which we have been experiencing since the onset of the emergency is just what we would have experienced had there been no depression. The established trend has not been interfered with. I dare say that Dr. Cooper or any other State Department of Health man who is studying vital statistics would have been quite willing to have told you in the years 1927 or 1928 just about what the death rate would be in 1932. The figures given would not have differed materially from that which experience has determined. Furthermore, in coming to that conclusion, they would not have thought much of what kind of times we were to have, whether hard times or good times. In other words, the trend, the established tendency, the reaping that followed the sowing of years ago has gone on without interruption or change because there has been no great influence from the hard times. In effect that is demonstrable at the present time, and that brings me to the next point.

TIME BETWEEN CAUSE AND EFFECT VARIES

You are exposed to pneumonia tonight and by tomorrow or the next day you have pneumonia. The disease treads on the heels of that which causes it. At the other end of the line, we will say, is heart disease. You have rheumatism and you recover from it, you think, but thirty, forty or fifty years after you develop chronic heart disease. During all the intervening years the cause of the chronic heart disease has been there. It began to operate in childhood but there was no clinical manifestation of the effect of that cause during the whole intervening period. There was a space between cause and ultimate effect of about a half century. The case in which childhood rheumatism is followed half a century later by chronic heart disease represents the extreme of a lapse of time between cause and effect. In but few instances does effect follow close on cause.

We are exposed to tuberculosis in childhood. Long years thereafter, as a result of something else which may be quite unrelated to the first happening, after years of good health, clinical tuberculosis develops. The effect has followed sometimes months, but more frequently years, after the cause that has been responsible for that effect.

Deprivation and want and hunger manifest their effect on different levels. During the World War we had an illustration of the effect of one level. Out of poor nutrition in the German child there came tuberculosis in children and tuberculosis in adults, particularly the adolescent women. That is one level on which the effect of deprivation and want and hard times may manifest itself. Another was that found in Roumania, where there was more suffering, where the contending armies beat back and forth, trampling the people under foot and destroying the resources of the land, causing greater suffering than in any other part of Europe. There

was hunger edema and, as a result, there were various manifestations of lack of resistance to disease. All kinds of diseases eventually increased as the result of nutritional disturbances. Among these was pneumonia in children, as well as in the adult population, though less prevalent there. That is an illustration of an effect of deprivation operating at still another level.

ILL HEALTH EFFECTS OF DEPRESSION BEGINNING NOW

This depression has not been very severe from the standpoint of physical want. We have been hurt in separate ways, in pride, in self-confidence, in the pocketbook, and somewhat in our physical being, but we have been far less hurt on the physical side than many of us consider we have been. Our pride has been so humbled that we are quite certain that we are biting the dust in our every part, although evidence to that fact is not very conclusive. And yet, reports are beginning to come from here, there and yonder that the people in the less favored groups are beginning to feel the effects of these hard times, sometimes in one way and sometimes in another. Evidence that the morrow will hold still more effect, just as we today are reaping the effect of good sowing of a decade or two ago, is not lacking. A decade from now we or our successors will be reaping the poor sowing of this four or five years.

It is difficult to become enthusiastic about a low infant mortality rate when clinicians report that cases of rickets are rapidly increasing. In order to economize, poverty-stricken mothers are nursing their babies as long as possible without supplementing the breast milk with other necessary food. If the health of the future generations must be built upon the rickets, malnutrition and decayed teeth of today, there is every reason for believing that regardless of present morbidity and mortality rates, the depression will sooner or later collect its toll.

Cancer and heart disease appear to show a more rapid increase at least in some communities during the depression than they did during prosperous times. Diabetes, which had a tendency to drop during times when there was enough money in the family to provide insulin and a proper diet for the patient, shows a marked increase in some statistical reports during the past year.

There are reports from some sections of an increased prevalence of pellagra. That this is not yet true in North Carolina we are very grateful. There are other illustrations which might be cited but these are enough to make clear the fact that already over the horizon there begins to appear evidence of trouble ahead. What is going to be our response to the situation? How will our generation and perhaps the succeeding generation respond to the need for public protection and the need for individuals to lead the people into better ways; to train them so they may escape tuberculosis in part; to protect them against tuberculosis but, in greater part, to train them so to live that they will deserve to escape tubercu-

losis. And so with typhoid fever, diphtheria, and nearly every other disease that has engaged the attention of the health workers for the last quarter of a century. There have been results.

PAST ACHIEVEMENTS WORTHY OF PRIDE

The tuberculosis death rate of my city is only one-third as high as it was twenty-five years ago—a two-thirds reduction in the span of a quarter of a century. The rate for the whole state of North Carolina is not quite one-half what it was twenty-five years ago (67.4 in 1932—139.3 in 1914). That is a performance, an accomplishment that all people who work in public health, who work against tuberculosis, all who bend their efforts toward health education can be proud of.

There has been greater improvement still in respect to typhoid fever prevalence and nearly as much in respect to diphtheria. How are we going to respond to that? Are we going to find in it an excuse for being faint-hearted? Is it not rather a stimulus to greater endeavor? Is it not rather a stimulus to those who render the service and do the work to continue further, to those legislators who provide the laws and to those counsellors who furnish the funds? Should they not be urged to carry on rather than to quit in the face of this emergency? If we stop now we will not only have a break in the course of time, an interruption in the steady onward progress toward protection against these diseases, but we will slip back and pay the penalty of any interruption that we may indulge ourselves in.

EXPENSE OF HEALTH WORK LOW

We have heard public health work referred to as a luxury. I wonder if it is so. We have been told of the millions that were spent in this state and every other state for the care of those who are mentally sick. I have heard that of every dollar of tax funds spent in the State of North Carolina nearly five cents goes for curative care or custodial care of those who have developed mental diseases, some part of which might have been prevented. As against that there are seven-tenths of one cent spent for prevention and all the work done under the observation and direction of the State Health Department, which is not for the prevention of one disease but of all diseases, and not for the prevention of diseases only, but for the promotion of all physical and mental health and well-being that can be brought about. Prevention in the degree which we have costs seven-tenths of one cent as compared with five cents for the care of something that might have been prevented. We spend more than half of our total expenditures on roads, while, from the standpoint of the amount involved, health protection expenditures is one of the most trifling and unimportant items in the appropriations made by the legislature of the State of North Carolina. Large expenditures are made, as is always the case, for the much more expensive process of curing and caring for the sick while prevention has been neglected. It is prevention

that is economical. It is a method of cure that constitutes the luxury, and this is no time for the people of this state to indulge in luxuries. If they, as a consequence of warped ideas and carelessness, neglect the support of the institution of prevention, they will pay, and instead of paying at the rate of seven-tenths of one cent they will pay at the rate of dimes and dollars and hundreds and thousands of dollars.

Illness must be paid for. That is inevitable. Before the legislature of this state, the city councils, or any other appropriating body, the only question for debate is how they will pay and what they will pay. Will they pay for prevention in mills or will they pay for developed illness in dollars and in tens and hundreds of dollars?

HEALTH WORK IS GREAT ECONOMY

We are in the midst of an actuality. In the language of Grover Cleveland, we are confronted by a condition, not a theory; the depression which has hurt our pride, which has made some so humble and others so hopeless, has created a necessity for clear thinking. During the period which immediately preceded it we could proceed with recklessness and do foolish things. It seems that now has come the day of reckoning. There was nothing to ripen our judgment, nothing to train us in clear thinking. Now, we are in the midst of a situation where the obligation is to think straight, to burn out the dross and leave the gold, to discard the superfluous and wasteful and hold to the needful, to discard the expensive and hold on to that which is economical.

If there is anyone that needs courage to fight and confidence in his work during the present economic depression, it is the health officer. With the need for public health services becoming greater each month, and the demand for lower taxes becoming more general and determined each day, most health officers are confronted with a most discouraging outlook.

While everyone will readily admit that health is the most valuable possession of individuals as well as communities, there are still many people that are skeptical of the claim that public health within certain limitations is purchasable. Communities, like many individuals, are still inclined to place more confidence in fate than in recognized scientific health measures. On account of the great need for economy, taxpayers and their representatives are willing to gamble on a community's health in order to reduce expenditures. Knowing little about the many essential and effective health activities of a modern health department, many people are apt to believe that at least some of these activities are so-called frills which can be eliminated without endangering the health of anyone.

The budgets of police and fire departments are reduced, if any, with fear and trembling, because the big taxpayers don't want their fire and burglary insurance rates increased and the small taxpayers are more afraid of fire and robbers in their homes than they are of disease and death.

In addition to the ignorance and indifference of the general public in public health matters, the health officer also has to contend with a certain amount of opposition, from which most other city departments are free. Some health officers not only receive very little support from many of their medical friends but are actually being opposed by some of them who are sincere in their belief that the work of the health department may be materially curtailed without jeopardizing the health and lives of the people. Having the opposition of many and the support of only a few does not end a health officer's worries. His real troubles begin when, on account of reduced budget, he is compelled to reduce or abolish some of the health services. If he decides that certain services and certain employees can be spared with the least harm to the community, he is apt to be accused of unfair and inefficient action by the same individuals and organizations that demanded a drastic budget reduction.

The health officer of today is "on the spot." If he opposes the curtailment of vital health services, he is accused of being unsympathetic with the hard-pressed taxpayer, and if certain health services suffer due to a forced reduction in his budget he will be accused of making the saving in the wrong place. Regardless of the consequences to himself, every courageous and conscientious health officer must continue to fight for those whose health and lives are at least partly dependent on the efficient, unselfish and fearless administration of the health department.

We stand with our hands out asking for support by public funds for the continuation of a cause which has made good as no other cause has in all human history. Never since the world began has there ever been rendered an accounting of stewardship like that which health people are able to render. We don't feel as yet the consequences of the economic crisis, but if it continues to grow there will come a time when the consequences will not only be registered in the bodies, the minds and the spirit of the people, but they will be so plainly registered that there can be no mistake about them and the result will finally blossom out as disease, disease which might have been prevented and which, had it been prevented, would have saved money. Disease which could have but has not been prevented will be expensive.

The burdens of taxes, burdens of want and woe, of deprivation and sorrow, burdens of developed disease that might have been prevented, will be the penalty we will inevitably pay if we permit an efficient public health machine to be wrecked. Lower taxes can never justify higher morbidity and mortality rates and every health worker must be guided by that principle.

DISCUSSION

DR. C. W. ARMSTRONG (Salisbury): Mr. President, Ladies and Gentlemen: I have been coming to these meetings for nigh onto twenty years and I have heard Dr. Carlton present papers at a number of these meet-

ings. As usual he has given us something that is very much worthwhile. He has given us something that we can take home to our people, something that we can use as an argument for increasing public health service.

I think that possibly all of us were to a certain extent familiar with the facts which Dr. Carlton brought out, but few of us are able to amass those facts and put them into language so convincing as Dr. Carlton has.

Let me say, Dr. Carlton, your paper has been helpful and I feel that every man and woman here interested in public health work in North Carolina will be benefited by having heard your paper.

I can't add anything to what you have said, Dr. Carlton, except that I think possibly I know a little bit more about hard times in public health work, personally, than you do.

There were two points you brought out which I think should be stressed. The first is the fact that the present trend or the trend up to the present moment in public health matters in the state is not an accurate picture of what we may expect in the future.

A health officer who goes before an appropriating body or before any gathering in his community and says to the people that a certain epidemic has taken place and he would like for them to do certain things in order to prevent a second epidemic, is not worth much to his community. The thing that a man is paid for is to be able to point out to the people whom he serves potential dangers and to say to those people, "These methods are necessary in order to avoid those dangers."

I think that that point should be stressed a great deal in our home communities where we are working because a great many of the members of the body politic are disposed to take facts as they exist now and make use of those facts against appropriations for public health work. They say to us, "Conditions have been good, in spite of the fact that you have had your budgets decreased, in spite of the fact that you have had your forces crippled, as you say." But the fact you have brought out, that these conditions are not going to continue to exist, to my mind, is a very important thing.

The second thing I want to stress is the fact that the cost of public health work in North Carolina as compared with other governmental functions has been ridiculously low. The President in his address pointed out to you the immense cost of the roads and school systems in North Carolina, of which possibly all of us are proud, but there is a reaction beginning to set in throughout North Carolina now as far as roads and schools are concerned. Some people say, "Well, we laughed at Virginia, but now Virginia is laughing at us, because they paid as they went."

As I say, there is a reaction setting in against roads and schools on that account because they say if we had not been quite so progressive, if we had been willing to go a little bit slower, we wouldn't have gotten into debt so far and we wouldn't be having the hard times we are experiencing now.

Whether those things are true or not it is not my purpose to discuss, but I do believe that there is a very minimum amount of criticism of public health work in North Carolina on account of what it has cost, and I say without fear of contradiction that no department of the government of North Carolina—and I don't mean to disparage at all any of the service that any of those departments have rendered—has rendered as much service at so little cost as the public health department of this state, and I think that fact should be driven home to our appropriating bodies.

I can't offer any suggestions, except this: a number of you probably are baseball fans and you know that every spring there is a crop of "holdouts" for more salary. Babe Ruth is a classic example. There is an annual ballyhoo between Babe Ruth and Colonel Ruppert about Babe Ruth's salary, and I think any of us would be glad to take the difference between the salary that Babe Ruth asks for and what he actually gets. But that takes place every spring.

Not long ago someone asked "Nick" Altrock, the famous humorist with the Washington team, if he was a "holdout" this year and Nick promptly said, "Hell, no! I'm trying to hold on." (Laughter)

This is the thing I think that we must try to do, hold on, in the hope that conditions are going to get better and that we are going to be able to render the same type of service we have rendered in the past. And, Dr. Carlton, your paper has certainly enabled us to use some argument in a way to hold on. (Applause)

PRESIDENT SISK: Is there any further discussion of Dr. Carlton's paper? If not, the next paper, "Contact Study and Home Care of Open Tuberculosis," will be presented by Dr. W. F. Thornton, of Sanatorium.

SOME PRACTICAL ADVANTAGES OF TUBERCULIN AND ITS STATUS IN TUBERCULOSIS WORK

By W. F. THORNTON, M.D., Sanatorium, N. C.

The morbid condition of our present economic life has no doubt been cause for each of us to wonder how it will reflect upon the incidence and death-rate of the present-day trend of tuberculosis. That the widespread suffering and deprivation are conditions that contribute to an increase in this disease cannot be denied, and I feel that we must concede not discouragingly the probability of this unfavorable prospect. Just how soon and how much such undesired results can be determined, is more or less a matter of conjecture as yet. Many of the tuberculous infections of today will develop into disease ten to fifteen years hence, and it will be considerable time yet before we can measure any unfavorable trend accurately. We have reason to feel encouraged however in that the public is far better educated today with respect to this disease, and this should counteract much of the ill effects that will tend to come of the present economic crisis.

Out of past experience has evolved the belief that the greatest that can be accomplished in tuberculosis work is through a systematic study of contacts and control of known spreaders of disease. These two phases of work are so closely allied that we cannot logically pursue one without equal consideration of the other. And in this field of work, as in that of public health, we necessarily have to enlist the good will and interest of the thousands of practicing physicians. Tuberculosis field workers and those in public health have contact with only a small percentage of the innumerable cases that daily seek the services of these doctors, without whose support and co-operation the crusade against tuberculosis would be seriously handicapped.

Much has been accomplished in recent years that now facilitates a more methodical approach in the study of this disease, especially as regards childhood tuberculosis. In the forefront is tuberculin for skin testing, and in the field of childhood disease, the tuberculin test perhaps deserves greater prestige than does the Schick test in the pursuit of diphtheria study. Without tuberculin, the field workers would really accomplish less than one-fourth of the present results at much greater time and expense. It could well become an indispensable agent in the hands of every practicing physician who would take the means of acquainting himself with it. In the study of contacts and of children in large groups, the tuberculin test can cull out large numbers who would otherwise have to be given expensive time-consuming examinations.

Much has been said for and against the value of tuberculin testing, but the criticism we hear of it today is from those poorly informed regarding its use. There are few who yet believe that because a large proportion of adults have sustained a tuberculous infection, they will react to the test, thereby making it useless. Likewise, the field worker often has reported to him that the test may aggravate a disease that already happens to be present. These poorly founded ideas are of minor significance and need be given little or no concern with those interested in the proper usage of tuberculin.

It should be realized that tuberculin can be used in almost any dilution, ranging up to 1:1,000,000, or even greater. A dilution of 1:1,000, however, takes precedence over any other in routine work, because it is too weak to aggravate any disease already present, yet it is strong enough to cause reaction in those sufficiently infected to warrant examination. In routine work, 1/10 of one cc. of the dilution is injected between the skin layers and an interval of 48 to 72 hours is given for the maximum reaction to appear. Intensity of the reaction will vary according to the extent of infection as a rule. A prolonged intimate contact results in heavy infection that is usually followed by the more intense reactions. The practicing physicians and health departments who wish to keep tuberculin for use will find the 1:1000 dilution preferable for routine testing of children and nearly all adult cases.

Although the Von Pirquet is hardly as sensitive as where given intradermally, it has many advantages in convenience that perhaps make it more satisfactory for the average doctor to use. Health departments and those desiring to skin test large groups of children, will probably find the Manton test preferable to the Von Pirquet, because it can be given more rapidly and a properly measured dose can be injected exactly as necessary. Tuberculin can be obtained from the State Sanatorium, and it should be kept sterile in the ice chest, and not retained for use longer than three to four weeks. It may occasionally happen that the private physician without tuberculin when needed to skin test could arrange for this at the health department.

The value of tuberculin is supreme when used to rule out tuberculosis, whereas, its value to confirm diagnosis is very limited. The physician would find it a quick inexpensive method for ruling on tuberculosis in many routine cases of questionable pulmonary disease. There has not been sufficient skin testing of adults in North Carolina for an accurate estimate of the percentage of reactors, but we could safely assume that it would be somewhat less than 50%. On the basis of this and the skin test, the physician could easily rule out tuberculosis in approximately one half of all cases coming to him with pulmonary symptoms. The test is simple and inexpensive and can be given with such facility and ease that it could be used routinely to dispense with other more expensive and time-consuming measures.

In the field of childhood tuberculosis, it is an indispensable agent for culling out contact cases in whom examination and X-ray are warranted. Were it not for the tuberculin test, it would be necessary to X-ray all children before one could declare them free of serious infection, whereas, by first skin testing any group of children, the majority who will not react to the test can forthwith be eliminated from X-ray or other examination for tuberculosis. The test has been given during the past six years to 122,000 school children in North Carolina, 16%, or 19,500, who reacted, were examined and X-rayed. More than 103,000 who did not react were therefore free of infection, making examination unnecessary. The greatest usefulness, then, of tuberculin is not solely to find those infected, but to cull out that larger percentage of non-reactors who need no examination for tuberculosis.

It will be assumed that the doctor, after discovery of a new case of disease, will first choose to send the patient to a sanatorium, provided the case is a suitable one. Then in the set up of measures to prevent spread of the disease he will be particularly concerned with the younger members of the household because of their more intimate contact and the greater danger of infection to them. It often happens that many of them are already heavily infected and should be guarded against further infection to avoid overwhelming of their resistance. All members of the family, including any servants or outside contacts, should first be skin tested, and

the physician should feel quite free to make this request of them. Also he should feel entitled to a fee for his services in this connection. Having skin tested all contacts, the doctor will find that very likely all family members where the disease has been present for any period of time will give a positive reaction, but whether or not outsiders will react will depend of course upon the extent of contact they have had. All children under 16 to 18 years of age who react should be X-rayed. A careful history, physical examination, and temperature record may possibly make X-ray unnecessary for some adults, but this should be advised if there is any uncertainty at all, and especially if the additional expense of it is not prohibitive. In many counties public health is available to the needy cases, and both the welfare and public health departments will frequently find it necessary to co-operate with the private physician in the management of those unable to pay.

It is now becoming the better part of wisdom to depend less upon clinical and physical findings and more upon the X-ray diagnosis of early disease. The doctor who frequently dismisses cases without X-ray will soon discover, to his chagrin, that they have had X-ray diagnosis elsewhere, for these neglected cases do often fall into the hands of the more careful diagnostician who now gives to the X-ray its well-deserved measure of supremacy in early diagnosis. To wait until there are clinical and physical signs to depend upon for physical diagnosis, is to wait not only for the communicable stage, but most usually for a hopeless recovery. Absence of symptoms never means absence of early tuberculous disease. The reason that nearly half of all cases diagnosed have reached the far advanced stage is not solely the fault of the doctors, but principally because the victims wait for manifest symptoms to convince and convict them. Then, not only they themselves, but the neighborhood can make the diagnosis. If in our educational endeavor we could banish from the minds of the public that to wait for symptoms is oftentimes later to forsake all redeeming hope for recovery to a useful life, we shall have made a far-reaching advance in the fight against the disease.

DISCUSSION

PRESIDENT SISK: Dr. McCain, will you lead the discussion?

DR. P. P. McCAIN (Sanatorium): This subject of examination of contacts in tuberculosis is so important that the National Tuberculosis Association has this year adopted as its slogan, "Tuberculosis—From Whom Did He Get It? To Whom Has He Given It? Examine and Protect the Contacts."

In spite of the splendid reduction in the death rate there are still enormous numbers of people that are dying from this preventable and curable disease, and if we ever expect to reduce it to one of the minor causes of death it is necessary for us to find the cases while they are in the minimal stage and before they become contagious.

Heretofore we have been using the old method of taking the history, giving the physical examination, and examining the sputum. But the great majority of early stage cases of tuberculosis don't have any symptoms. They feel perfectly well. They look perfectly well. We don't realize to what extent that is true.

At the Sanatorium Clinic we have diagnosed thirty-nine doctors as having active tuberculosis, and of that number only twenty-three were in the minimal stage; forty-six per cent were in the moderately advanced stage, and thirty-one per cent in the far advanced stage.

So we can't depend upon symptoms to find tuberculosis before it is advanced enough to be incurable and before it is advanced enough not to be contagious.

Neither can we depend upon physical signs. And that is no reflection on the ability of doctors to recognize abnormal physical signs, when I say that.

Dr. Laurason Brown a couple of years ago read a paper in which he reported that nineteen hundred cases, consecutive cases, had been admitted to Saranac Lake from 1920 to 1927 and diagnosed as tuberculosis. Five hundred and three of that number didn't have any abnormal physical signs or didn't have sufficient physical signs for a diagnosis; so if experts like the Saranac Lake folks can't diagnose early tuberculosis on physical examination the rest of us shouldn't be expected to do it, either.

One of the great troubles, too, is that people don't go to doctors for examination and for study until they feel sick. If we are going to wait until people feel sick enough to come to a doctor we are not going to find tuberculosis early and we are not going to stop its spread.

We have to look for tuberculosis among those that are healthy, and the group that is most likely to have tuberculosis is that group who are living in contact with open cases.

So that if the rank and file of the medical profession will make a habit of studying every contact that they can, it won't be very long before tuberculosis can be brought under control.

The private physician hesitates, I know, to urge that patients be brought to him for examination, but when the private physician finds a case of tuberculosis, it is just as much his duty, his obligation, to insist that the other members of the family, including the servants, be studied, as it is for him to do what is necessary to protect the other members of the family when one member has typhoid fever or diphtheria.

The public health authorities can do a great deal towards making it easy for the private physician to insist that the apparently well members of the family come to him for study by urging the necessity of it. And there is no reason why the private physician shouldn't make a charge for this service, as Dr. Thornton said. He is certainly saving the head of that family many times more money by having his family come to him for a study, including a tuberculin test and the X-ray, than by allowing them to

drift along and develop far advanced tuberculosis and further infect the other members of the family, because it costs hundreds and sometimes even thousands of dollars to treat the advanced cases of tuberculosis in his family.

It should be a disgrace for whole families to die out with tuberculosis and we are all familiar with such families as that. There is no excuse for it.

When we find a case of tuberculosis, we should want to protect the others. We should teach the individual the importance of taking all precautionary measures, and emphasize the importance of studying all the contacts, including the tuberculin test, and on all the positive reactors, having a careful history taken, a careful physical examination, X-raying all the children, and, if, the family is able to, X-raying all the adults who react to the test also. If that is not possible you certainly ought to X-ray all those who have any suspicious physical signs or suspicious symptoms and all those who give a strongly positive tuberculin test.

X-rays are expensive but they are not anything like as expensive as financing the care of advanced tuberculosis, and one reason why they are so expensive now is because so relatively few are taken. If all those who need X-ray pictures and are able to pay for them should have them, then the roentgenologists could charge a fraction of what they are now charging, and at the end of a year have a very much better income than they have now. (Applause)

PRESIDENT SISK: Is there any further discussion of Dr. Thornton's paper?

DR. Z. P. MITCHELL (Weldon): Mr. President, I live in one of the eastern counties where I have been Health Officer now for eight years. We have a large negro population, and I am seeing more tuberculosis this year than ever before.

By the way, I happen to be one of those health officers who can't keep so busy with public health work that he isn't altogether too often called in to practice curative medicine.

As I say, I am seeing more tuberculosis among the negroes in Halifax County than I have ever seen before, and I have no means of reaching these contacts with conditions as they now exist. The way tuberculosis is reported at present, I do not get a record of these reports. They go directly from the physician, where the physician makes them (and, mind you, they are poorly made) directly to Dr. McCain's office, and I do not have any record of them except as I find them when I go here and yonder.

I should like for that to be changed. Perhaps some of the health officers get that information, but I do not. Instead of it being reported as all other reportable diseases are, directly to the health officer and then transmitted by him to headquarters, this is done directly to Dr. McCain's office and the health officer in the county, who is interested in protecting the health of the people and keeping down disease, has no record of those cases that are reported.

I want to know who is a contact, where tuberculosis is occurring, and under what conditions.

That ought to be changed so that the health officers will get this first-hand information, and then if we are privileged to have one of these clinics put on by the Extension Department of the North Carolina Tuberculosis Sanatorium, under Dr. McCain, we could send our nurses to these homes, from these records that we have, and get these contacts out, instead of having any and everybody flocking into these clinics who just have a lot of morbid curiosity.

PRESIDENT SISK: Is there any further discussion?

DR. J. A. MORRIS (Oxford): Mr. President, I should like to ask if it would not be possible for the health officer to make the intradermal test for tuberculosis and get the reactors, and since the examination by the stethoscope is somewhat discounted as a relative certainty, why not skip over that and have all the strong reactors at least X-rayed and the county pay for those, and get the Sanatorium to read those X-ray pictures?

If that were possible, I would be very glad to undertake it in our county. But I do confess that it is only the advanced cases of tuberculosis that I can diagnose, and sometimes I might even miss those.

PRESIDENT SISK: Is there any further discussion?

DR. R. S. McGEACHY (Greenville): I am from an Eastern county where tuberculosis among the colored people is getting to be a problem, and a big problem. We are getting it in negroes under fifteen, and in negroes from fifteen to twenty and twenty-five years of age. They are just dying off from it. We had ten more deaths from tuberculosis in our county last year than we had cases of typhoid fever.

I can carry you to places right now within six or eight miles of the county seat where tuberculosis exists—I can carry you to one house where there is a person in bed with tuberculosis, a house of three rooms, with ten people sleeping in the house. In that house of three rooms there is a girl eighteen years old dying of tuberculosis.

I don't know what to do with it.

There is something else I don't know what to do with. I don't know how to stimulate any interest in tuberculosis. If you get it in your cow you can get your people interested in that, but I doubt if I can get any interest in it when it occurs in human beings. We just can't do it. I don't know why it is, but it is tragic.

We tested in our county—Dr. Parrott knows this—some years ago every cow there was in the county, cow and calf, and we found four in the entire county that were infected. Immediately after that we tested about twenty-five hundred children and found that one out of four was infected.

Still it made no impression at all on the citizens of that county.

I will admit that I don't know what to do but it is getting to be, amongst the colored people, a very serious problem. At the rate it is going, I don't know what it is going to do in my county because, as I say, there are three or four homes that I know of right now where people are sleeping, ten in three rooms.

A man was in my office three days ago with tuberculosis. I asked him how many were sleeping in the house that he slept in. He said six. I asked, "How many rooms are there in the house?"

"Two," he said.

I asked, "How many sleep in the bed with you?"

"Two," was the reply.

There are two people sleeping in that bed with him, and he is an advanced case of tuberculosis.

Now, what can we do about it? We can't get any appropriation. We can't get them to the Sanatorium. We have no place to send them, and I wish this thing could be brought to the citizens of the county so that we could have something done. But how to stimulate any interest in the subject is more than I can tell. I sometimes feel like I am absolutely off in that. I believe you can stimulate interest in anything else more than you can in that and in my opinion it is one of the most dangerous things facing the citizenship of this state today. I am confident it is in my neighborhood. Just how to handle it, I will admit, I don't know, but as I say it is getting to be a problem. You can get people vaccinated for typhoid fever, you can get them vaccinated for diphtheria and all those things, but you just can't get them to take any interest in tuberculosis. At least, I can't.

DR. E. R. HARDING (Lumberton): I would just like to ask Dr. Thornton if he can give us any information as to the comparative number of colored children they found infected in the X-ray examination and the number of white. In other words, how many colored were there as compared to the whites that showed infection after positive tuberculin tests and X-ray diagnosis?

PRESIDENT SISK: Dr. McCain!

DR. P. P. McCAIN (Sanatorium): May I make a statement about the reporting of tuberculosis?

We have taken that matter up with the State Health Department and they are co-operating with us to the fullest extent, and I hope that bill will go through this year requiring reporting directly to either the local health officer or to the state health officer. If they are sent to the state health officer, they will be sent back to the county health officers.

Is it entirely satisfactory with the Sanatorium authorities for the doctors in any county to report their cases of tuberculosis directly to the County Health Officer and for him to forward the reports once each

month to the Sanatorium. In a few of the counties the matter is now handled in this way.

I should like to ask Dr. Hamilton just what the status of that bill is at present.

I would like also to say that we are now sending the reports to Dr. Hamilton at the end of each two weeks, and Dr. Hamilton is sending them out to the county health officers. We think that the county health officers should by all means have these reports, have them as soon as possible, and that they should follow them up. They should also be willing to give the tuberculin test for any doctor in the county who wants his patients tested. But I think unless the doctor requests it, the health officer should see the doctor and ask him if he doesn't want to do it, and if the doctor will not do it himself, why, I think that then the health officer's function is to do it—and I hope that procedure will be followed.

The Extension Department of the Sanatorium and the State Tuberculosis Association together will furnish free of charge tuberculin either in the little individual Von Pirquet tubes or we will furnish the intracutaneous, one to one thousand, dilution to any of the health officers in the state. And as Dr. Thornton mentioned we would like for you not to keep that tuberculin too long. We will give you a fresh supply if you will write for it and ask to have it sent to you. That is all you need to do to get all the tuberculin that you need.

In regard to the percentages, we found surprisingly small difference in the number of colored children and in the number of white children that showed positive tuberculin reactions. In round numbers, it was fifteen per cent in the whites and eighteen-plus, nearly nineteen per cent, in the colored. But, of the positive reactors, pretty nearly twice as many colored children showed demonstrable disease as the white children.

We think that is because they are usually thrown into very much closer contact, being huddled up together, and because they don't have anything like the same hygienic surroundings as the white people do.

PRESIDENT SISK: Is there any further discussion? If not, Dr. Thornton, will you conclude?

DR. THORNTON: Dr. Mitchell raised the question a while ago regarding the advisability of making reports of tuberculosis to the health departments. He may be aware of the fact that only recently there was some question regarding the introduction of a bill in the Legislature to make it mandatory for the doctors who discover new cases of tuberculosis to report them to the health department of the county instead of the State Sanatorium. I think, however, that has been dropped for the time being, and for the same reason it was not passed in the Legislature. But the Sanatorium will be glad to furnish this on request of any Health Officer.

Dr. Morris suggested that since the physical signs on examination are so illusive, why not simply omit that and make an X-ray picture of all

cases that react to the tuberculin test, particularly those that have the more vigorous reaction?

That would probably eliminate a good deal of time of course but there are some advantages in making physical examination of the patient aside from finding tuberculosis. A great many of these cases that you examine have some defect that might never be picked up were it not for the examination that is given at the time we make the examination of the lungs.

For instance, a child out in the rural sections that has not the advantages of a health department, and doesn't go to the physician, may have a heart lesion, he may have bad tonsils, or some other serious defect that needs to be looked after. So there is quite an advantage in making the physical examination, even though you know that you may easily overlook an early tuberculosis lesion in the routine examination.

The question was asked just now regarding a comparison of the positive cases among the colored and white children on X-ray. I am not certain regarding the figures on that. Dr. McCain can tell us about that. He probably has that information on the tip of his tongue. But I know that the positive cases found on the X-ray are much higher among the colored children than among the white children. That is true also with regard to the tuberculin skin test among the children.

Dr. McCain, I am sure, will be glad to answer your question if you want to know that, Doctor. (Applause)

PRESIDENT SISK: It has been stated—Dr. Parrott can attest to the fact—that all the cows in Lenoir County have been tested for tuberculosis. I should like to ask Dr. Parrott if all the dogs in Lenoir County have been tested for tuberculosis. (Laughter)

Ladies and gentlemen, that ends the program for this morning. If there is no further discussion, we will adjourn until two-thirty this afternoon.

. . . The meeting thereupon adjourned at twelve-thirty o'clock . . .

MONDAY AFTERNOON SESSION

APRIL 17, 1933

The meeting convened at 2:30 P. M., Dr. C. N. Sisk, President of the Association, presiding.

PRESIDENT SISK: The first paper on the afternoon program is "Maternal Mortality in North Carolina, Preliminary Report," by Dr. J. H. Hamilton.

MATERNAL MORTALITY IN NORTH CAROLINA

PRELIMINARY REPORT

By DR. JOHN H. HAMILTON AND DR. D. F. MILAM

A condition which kills more than six hundred citizens of North Carolina each year is important. This importance is accentuated if the citizens are in those age groups for which the State has completed its investment for their education and training. The major portion of this group are just entering upon a life of usefulness and productivity. Further emphasis is added by the fact that these individuals are killed in the act of creating new life—the most valuable service which can be rendered to the state. This, briefly and inadequately, is a statement of the maternal mortality problem in North Carolina.

In an effort to determine the cause, and with a hope that some useful suggestions may be justified, we are attempting a statistical study of this condition. It is planned for this study to cover a five-year period. The present report is intended only as a merely superficial preliminary survey.

Maternal mortality rates for North Carolina are more than twice as high as those for communities where rates are considered good. Our rates of approximately 8.5 per 1,000 live births are 30% greater than those for the United States Registration Area, which are approximately 6.5, as compared with the rate of 5.6 for Canada, 4.2 for England, 3.0 for Sweden, and 2.5 for Denmark.

MATERNAL MORTALITY IN EIGHT STATES AND IN NEW YORK CITY

	1923	1924	1925	1926	1927	1928	1929	1930
Arizona	5.1	5.0	4.5	7.0	5.8	4.8	4.6	4.7
California	6.7	5.9	6.0	5.5	5.8	5.6	5.2	5.3
Nebraska	5.8	6.3	5.7	6.6	5.9	6.0	5.4	5.3
New York (excl. of N.Y.C.)..	6.3	6.0	6.1	6.1	6.3	6.4	5.5	5.6
Ohio	7.1	6.3	6.6	6.8	6.2	6.2	6.6	5.5
Pennsylvania	6.3	6.1	6.2	6.1	6.1	5.8	5.8	5.6
Tennessee	8.1	7.5	7.8	6.8	6.8	8.2	8.1	7.9
Virginia	7.3	6.4	6.9	8.0	6.3	7.5	6.5	6.6
New York City	4.8	5.2	5.4	4.7	5.4	5.3	5.1	5.4

The fact that our rates are better than those of some States or countries gives us little cause for gratification.

Considerable confusion exists for definitions of the term "maternal mortality." Some rates are computed on the basis of deaths from maternal causes per 100,000 population. The errors of this method are readily apparent. Rates per 100,000 women of child-bearing age would improve the accuracy of computations on a population basis. A still more accurate idea may be obtained by computing maternal deaths per 1,000 live births. Unfortunately, this method does not take into account stillbirths, miscarriages or abortions. This omission is partly negated by not making corrections for twins or other multiple pregnancies.

In the continuation of this study, it is planned to tabulate and analyze all of the information contained on the death certificates of women who die of conditions related to maternity, and to integrate the information contained on birth certificates which match these death certificates.

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

Office of Special Agent,
Raleigh, North Carolina.

Dear Doctor:

We have a death certificate signed by you for..... who died....., 193....., of a cause related to pregnancy. Since we are attempting to make a study of maternal mortality in North Carolina, we will appreciate your giving us certain additional information which is not now available to us.

We hope that you will send the needed information promptly in the enclosed official envelope, for which no postage is required.

Thanking you in advance, I am,

Yours truly,

JOHN H. HAMILTON, M. D.,
Special Agent.

1. Was patient referred to you by a physician or a midwife?.....
Name..... Address.....
2. Trouble with previous pregnancies?.....
3. Previous abortions.....
4. At what period during pregnancy was patient seen by you?.....
Was patient ill at that time?..... For how long?.....
5. Maximum blood pressure..... Date.....
6. Was patient known to have syphilis?.....
7. Albumin in the urine..... Date.....
8. Placenta praevia?..... Premature separation of placenta.....
9. Excessive bleeding during labor?.....
10. Post-partum hemorrhage?..... Approx. amount of blood lost.....
11. Retained placenta?..... Method of removal?.....
12. Were forceps used?..... High, middle, low?.....
What was the indication for forceps?.....
13. What other obstetrical or surgical operation was performed?.....
What were the indications?.....
14. Number of vaginal examinations made?.....
15. How long before delivery were membranes ruptured?.....
Natural, artificial.....
16. Manual or instrumental dilatation cervix..... Artificial.....
Method.....
17. Duration of labor (in hours).....
18. Was temperature above 100° during labor?.....
Was the post-partum temperature above 100°?.....
19. What perineal repairs were made?.....

20. When did acute symptoms develop?.....
21. What care, or lack of care, contributed to patient's death?.....
22. What precautions, in your opinion, would have saved patient's life?.....
23. Was the patient delivered before death?..... Date.....
a. Name..... Physician or midwife.
b. Address.....
24. Was child born alive or stillborn?.....
25. Was a birth certificate filed?.....
a. Date filed.....
b. With whom filed—Name.....
Address.....
26. Was pregnancy twin, triplet, or other?.....
27. What was the period of uterogestation at time of delivery?.....
28. Was patient married?.....
29. What was husband's occupation?.....
30. What was patient's occupation?.....
31. Number of children..... (a) Born alive and living.....
(b) Born alive but now dead..... (c) Stillborn.....

In an effort to evaluate the effect of care or lack of care, an inquiry form has been designed, with the aid of obstetricians and statisticians. The complete data, when properly assembled and analyzed, should throw considerable light upon the problem, and will perhaps indicate some definite methods of attack. However, we need not wait to commence or continue our attack on the two most important causes of maternal mortality—puerperal septicemia and puerperal toxemias.

Puerperal sepsis has, since the days of Oliver Wendell Holmes, been recognized as closely associated with inferior care during the puerperium. Although it is now recognized that a considerable number of cases of puerperal sepsis have an endogenous source of infection, we could make a remarkable reduction in the incidence of this disease if we could eliminate the exogenous source of infection. To do this, we must have improved obstetrical practice. The British report lays considerable emphasis on the importance of vitamins A and D in the prevention of this condition. Improved technique and an increase in our knowledge of nutrition will do much to reduce puerperal septicemia.

In order to decrease the annual toll of life incident to the toxemias of pregnancy, more attention must be given to early diagnosis of impending toxemias and more adequate treatment must be given. Blood pressures exceeding 140 systolic and 90 diastolic should be regarded as abnormal, regardless of the age of the patient and whether or not there are other signs of toxemia present. For such patients, immediate hospitalization, or its equivalent, is recommended by the British Commission.

The need for a better understanding of our maternal mortality problem is apparent. Much assistance is needed. Fortunately, every person who is interested in public health protection can help. One tangible method is to promote the collection of accurate information. Complete reporting of birth and death certificates is essential. The securing of supplementary information can be encouraged. The dissemination of facts concerning proper maternity care is most valuable. Something can be done in North Carolina to decrease the hazard which women must now undergo in order to bring new life into the world.

DISCUSSION

DR. I. M. PROCTOR: Mr. President and Members of the North Carolina Public Health Association: Dr. Hamilton has presented a most important subject and one that everyone should be interested in. Last fall I approached him on this matter and found that he was already working on it. We had one or two meetings with a large number of men in the state who are limiting their work to obstetrics and gynecology, and he proposed this questionnaire. We agreed it was a good thing to do, in order to get accurate information which we can use in educating ourselves and educating others, in an effort to reduce the all too high maternal and fetal mortality and morbidity in North Carolina.

Along this line, I believe that the statistics gathered by the State Board of Health are intended not only for the members of the Health Association but for the physicians in general throughout the state. If that is so, I do not believe that the physicians in the state are getting the benefit of that information that they ought to have. I believe this questionnaire will help.

First of all, I don't think that maternal deaths ought to be figured against live births. It seems to me that information is inaccurate, and that they should be figured against pregnancies; and in our state, since we are not reporting pregnancies until the fifth month, they certainly ought to be figured against pregnancies after that time or against all pregnancies that are reported. I believe that will be an improvement in the statistics and give us more accurate information.

The second thing in those statistics is: I think we ought to be more specific, and have a column or heading for other accidents of pregnancy and labor. To me it does not now give accurate information, and certainly such information must be accurate for us to get any good out of it.

Third, the term "puerperal," which I believe the Health Association and members of the Board of Health use to cover ante-partum, intra-partum and post-partum conditions, I think should only cover the post-partum conditions. The average practicing physician understands "puerperal" to mean a thing that happens after delivery. And if he gets these statistics, using the term "puerperal," he does not take into consideration

that they apply to ante-partum and intra-partum conditions, as well as post-partum conditions.

These are three suggestions that occur to me that would give the practicing physician more information, if the statistics were changed in those ways.

If they take into consideration all of the deaths from cancer of the cervix in North Carolina, as indirectly due to pregnancy or child-bearing—and certainly there is a direct relation there—then we have approximately a thousand women in this State losing their lives every year as a result of pregnancy and child-bearing, and losing their lives at a time when they are most important to their families and to their communities. Certainly this is enough to cause us to use every effort, and gather all the information possible, to reduce this undue and disgracefully high mortality.

I would not, for a moment, seem to protect anyone, myself or anyone else, in this high maternal mortality, because I think it is far beyond what it ought to be. But it seems to me there are two explanations which North Carolina should take into consideration, not in a protective way, for this high mortality, when we figure our maternal mortality against other states and against other countries. The first is the large negro population which, as the essayist has brought out, shows twice the mortality that the white population does, and that comes necessarily from poor obstetrics and poor and inadequate care. The second is that we have more frequent eclampsia and more malignant eclampsia in North Carolina than in many of the northern states, and other countries. I have studied eclampsia in a number of places, but no place have I seen it so frequently and so severe as in the State of North Carolina. Stragenoff in Russia has a mortality rate on eclampsia of one per cent, or 1.2%. No one in America, with all of the best care, can get anything like that rate. It is ten times as high as that, usually, under the best circumstances. I have talked with men who have visited his clinic and they, too, do not believe that the type of eclampsia in Russia is nearly so severe as in this state. But certainly, eclampsia or toxemia of late pregnancy is a thing we can work upon to reduce maternal mortality. That, as statistics show, gives us at least a third and, in my opinion, more than a third, of the maternal mortality, and it has been proven beyond a shadow of doubt that patients who receive adequate prenatal attention do not have eclampsia, and by that means we can almost eliminate eclampsia. In the past ten years, it has been our rule that a patient when presenting eclamptic symptoms or signs is put to bed on absolute rest, and milk diet, and thorough intestinal elimination, and if the symptoms and signs do not subside and the blood pressure reduce, that the pregnancy is terminated at once, and there is no exception to the rule. I believe that is the proper rule for all physicians to adopt. It may be radical, but I believe it is right. Following that rule, I

have had one patient in ten years to develop eclampsia, who was under my prenatal care. And I think that was due to extreme exposure.

As to sepsis, the next highest, I do not know the remedy for the condition but I believe the universal adoption of rectal examination in the place of vaginal examination will certainly eliminate a number of cases. Surely the adoption of rectal examination in the place of vaginal, unless the patient is prepared surgically before any vaginal examination is made, is best. That surgical preparation means the same as we use in the operating room—shaving and scrubbing.

As to midwives, I do not come in contact with them very much. I had one patient here a few weeks ago, sent in to me on Sunday morning, that had been in the care of a midwife for twenty-four hours. I understood the patient could not get a physician because they did not have funds. But the patient had a transverse presentation of the baby, right arm and shoulder presentation, right arm prolapsed, and the patient in extreme shock. The physician, as soon as he saw her, brought her in the ambulance. I made a preliminary examination and found a laceration of the anterior vaginal vault. I did not investigate that because I thought the patient should be delivered immediately, if we had any chance of saving her. I did a podalic version and extraction and delivered the patient; then investigated the laceration and found that the uterus had been completely torn loose from the bladder. It was half separated from the vagina, and the placenta was lying in the abdominal cavity. I did an immediate abdominal section, removed the uterus, transfused the patient, and she showed some improvement the second day. But unfortunately she had developed peritonitis and died on the fifth day. Had the patient been seen earlier by a physician, I think that is one case that could have been saved. The fact that she lived five days showed us that she had enough resistance, had she not suffered a general peritonitis beforehand.

I am very much interested in this work Dr. Hamilton is doing and I think he is to be congratulated upon it. I think we should give him all the support possible, and that every physician in the state should do likewise. (Applause)

PRESIDENT SISK: Is there any further discussion of Dr. Hamilton's paper? If not, the next paper on the program is "Sanitary Procedure in the Community Health Program and Its Relationship to the Suppression of Disease"—Dr. J. H. EPPERSON, of Durham.

SANITARY PROCEDURE IN THE COMMUNITY HEALTH PROGRAM AND ITS RELATIONSHIP TO THE SUPPRESSION OF DISEASE

By DR. J. H. EPPERSON
Superintendent of Health, Durham, N. C.

In formulating a community health program it is incumbent upon those of us who are responsible for the preservation and protection of the

public health to weigh in the balance all of the things which have health significance and then prorate the funds available in such a manner that the best interests of the community shall be served in the suppression of disease.

I am mindful of the fact that in many communities the people of these areas have not been sufficiently aroused and that their knowledge of the transmission of disease is so meager that they are unwilling to expend only a small pittance for public health. This condition may or may not be due to the Health Officer. My own experience has lead me to believe that one of the chief functions of the Health Officer is to educate his public in matters of health and by all possible legitimate means, sell the matter of health protection to the people to the end that they will not only be willing to be taxed for efficient health service but will actually join hands with him in demanding adequate appropriation for the maintenance of a well-rounded program.

In large communities and in the small too for that matter it is unreasonable to assume that an undermanned health organization can take official notice of all conditions which have health significance. In this connection, however, I am lead to say, from several years of experience in administrative health service, that gross neglect of that phase of health service which has to do with sanitary procedure will put a health department on the rocks quicker than the neglect of other parts of his established program which probably have more significance and which mean more from the standpoint of lessened morbidity and mortality. The will of the public cannot be ignored in such matters and if the Health Officer is alert to the situation he will undoubtedly rearrange his budget from time to time to keep in step with those of his citizens who have developed a health consciousness and who are watching his movements at least out of the corner of one eye.

It occurs to me in dealing with a subject of the character which I have undertaken that it would not be amiss even for those of us who may think we are all wise in every phase of health service to stop a moment and consider what some may call the commonplace things of public health. But are they? Let's be fair about the matter and weigh the evidence submitted in the light of present-day knowledge relative to the transmission of disease and then attempt to arrive at a verdict which is fair and just.

The methods and modes of living today are so complex that we are forced to consider the various and sundry ways in which diseases are transmitted and then in the light of scientific knowledge endeavor to design workable procedure which will as far as possible prevent the spread of infection. We provide dental service for our school children which is highly desirable and then in certain instances find some of these same children infected with "trench mouth" and other mouth and throat infections which more than likely have been transmitted one to the other by antiquated drinking fountains or sloppy methods practiced in school

lunch rooms. These same children who have been materially improved physically by the school dental service may in certain instances have access to public food handling establishments and with their clean, shiny teeth be permitted to drink after the tubercular, the syphilitic and the carrier of other virulent infections. These same kiddies each evening of the summer months hustle off to the community swimming pool and there in their childish glee imbibe freely of the grossly polluted water contained therein. And then shortly thereafter the doctor is called to puncture an ear or treat an infected eye or what not, all as a result of the community's failure to maintain the character of the water in a state of purity which will insure freedom from infection.

If we are positive that certain diseases are frequently transmitted from one person to another by common drinking receptacles and eating utensils then why do we hesitate to enact ordinances which will require the elimination of such practices in all public places. Many communities in this state have legislation of this character and there is no doubt in my mind whatsoever that many an innocent person has been spared a serious infection as a result of such legislation. Of course, it goes without saying that the Health Officer who has the gall to set up barriers against disease spread which involves the expenditure of money is going to be berated in no uncertain manner by certain individuals. But is not this the price we are supposed to pay in part at least for the positions we hold?

In presenting this subject, I do not presume to say that we as health workers should over-emphasize sanitation to the detriment of other phases of our respective programs, but I do say that we should not shirk any responsibility in the matter. Milk sanitation, privy inspection and maintenance, swimming pool sanitation, protection of public and private water supplies, inspection of food handling establishments, septic tank installations, housing and many other matters of such character have very definite health significance, and should if possible be taken into consideration in formulating the community health program. Not only do these matters have positive health significance, they likewise tend to promote and encourage other health measures. The housewife who appreciates cleanliness in home and cleanliness in the food handling establishment she patronizes will most likely be the housewife who will consult the family physician about the physical welfare of her family before illness actually occurs. She will also be actively interested in her parent-teacher association and will lend encouragement to holding pre-school clinics and other community health activities that others too may enjoy the comforts and blessings of good health.

I feel that at this point some concrete evidence should be offered to show the effect of sanitary measures in the preservation and the protection of the public health. I will take my own county for example because I am or should be reasonably well acquainted with the happenings a good many years ago and the conditions which prevail at present as a result of

definite sanitary procedure. During the calendar year of 1918 a total of 216 cases of typhoid fever was reported in the county. The population at that time was in round numbers 50,000 persons. It is therefore seen that the rate per hundred thousand persons would be 432. Twelve years later this same area shows a rate of 7 plus cases per hundred thousand of population. In the year 1918 only 40% of the homes of the city had a sanitary method of excreta disposal. Open privies were in abundance and many wells and springs existed which were grossly polluted. These conditions have been practically eliminated with the result that filth diseases have all but disappeared. During this same period of time a corresponding decline has been noted in the infant death rate and the fact cannot be discounted that sanitary procedure along with clinic service and educational conference service on the part of the district nurses has had much to do in preventing the slaughter of the innocent. In this connection I must necessarily allow for the part that immunization has played in lowered incidence, but I do wish to remind my hearers that in areas of the county where typhoid and other filth diseases were most prevalent that the immunization rate was the lowest. Lowest because of the lack of intelligence on the part of the people in these areas to appreciate the protection afforded. Therefore, if filth diseases were to be eliminated it became necessary to enforce sanitary measures which would protect them against themselves. This was done and the disease vanished.

I should like in the course of this discussion to give you a few observations on swimming pool sanitation because after considerable study of the matter I am of the definite opinion that the health hazard of the average pool if not properly supervised is great enough to attract the attention of the Health Officer. In the first place the clean well-designed pool affords a type of exercise and recreation which is calculated to promote health of the young and old and should be encouraged. In the second place the carelessly supervised pool affords an excellent means of transmitting disease from one person to another. For a number of years I have made it a policy to confer with eye, ear, nose and throat specialists, relative to the number of ear infections treated during the swimming season. From the information at hand it would be comparatively easy to plot a curve which would show a marked rise during the months of June, July and August among persons who frequent pools at this period of the year. The peak of this curve will become lower in proportion to the effort toward rigid supervision of the sanitary character of the pool water.

Swimming pool construction and the routine of supervision which will insure a safe water for swimming recreation is at present reasonably well established. Engineering advice is available from many sources together with the procedure necessary in operating efficiently, recirculating equipment for control of this type of pool. Likewise I have found it entirely practicable to control the sanitary character of pool water where an adequate clean supply is available for refilling at periodic intervals and

where the operator is taught the proper reagents to use and the method of application between fillings.

After considerable experience with the subject of swimming pool sanitation I am of the definite opinion that this type of recreation is highly beneficial and should be encouraged but I am equally as positive that pools should be supervised by properly trained personnel and that the character of the water should frequently be checked through the laboratory. There is an abundance of evidence at hand which will prove conclusively that the small fill and draw pool can be operated in a sanitary manner where intelligent supervision is exercised in the cleaning, refilling and the water sterilization routine.

I now venture to mention a condition which in a great many communities still escapes the all-watchful eye of the Health Officer. Most of you I presume have had experience with the single service container for dispensing soft drinks and ice cream by operators of fountain service. Of course, it goes without saying that you have frequently gone behind the scenes and observed the methods practiced in washing dishes and other utensils used in serving the public in cafes and hotels. If we believe that infection is transmitted from one person to another by indirect as well as direct contact, it almost goes without saying that an obligation rests upon the Health Officer to devise ways and means that will insure that this condition shall not prevail in his public eating and drinking places. I well know the opposition you face in accomplishing this task. The single service container for soda fountain use is constantly under fire from two angles. First, the cost of the service over and above the cost of glassware. Second, it is charged by some that discrimination is practiced by allowing cafes and hotels to use glasses, spoons, forks and cups in repeated service and that they likewise should be granted the privilege of so doing. I am forced to say in all fairness to the public dispenser of food and drink that each should be treated alike if each group can and will provide adequate and efficient means for accomplishing the task. My observation has been, however, that the average soda fountain is not as effectively designed for the proper washing and scalding of glassware as the cafe or hotel kitchen may be. Hand washing of eating and drinking utensils can be done in a sanitary manner if the right type of equipment is available and the personnel in charge has the will to do it. But it so frequently happens that careless methods are practiced and that the utensil in question receives at best a casual rinsing before going to the next customer. I offer this as a problem for your consideration without arguing the question. I am very frank to state, however, that it seemingly has much health significance and should be dealt with fairly and honestly in the interest of persons who frequent such places and the operator of the establishment as well.

The problem of housing is one which has attracted the attention of sanitarians for a long period of time. In many of our larger cities it is

one of the major problems of the Health Department and is dealt with as such. There are cities in our own state which would do well as soon as conditions permit, to think of this subject and begin to lay plans which will make for better and more healthy tenement areas. We have gone quite a ways in the elimination of the open privy and the protection of private water supplies, but not many of us have actually gone into the homes of the poorer classes and attempted to solve their problems of housing. In many instances we find overcrowding in evidence. The sick and the seemingly well sleep in close contact because of this over-crowding. Facilities for bathing are entirely lacking. Buildings are poorly designed in many instances with little thought being given by the landlord to the health and comfort of the occupants at the time of the erection of the house. Some of these problems can be solved by the Health Officer if he wills to do it. It is comparatively an easy matter for sanitary inspectors to confer frequently with the building inspectors of the larger cities and go over with him the plans for tenement buildings with respect to light, ventilation, location of toilet rooms, adequate plumbing appliances for all tenants, screening and other matters which have sanitary significance. And then too if visiting nurses will keep constantly in mind that living conditions have a definite place in her health education program, she can in many instances assist in rearranging the home, even if it be ever so modest, so as to encourage a more sane and healthy existence for the inmates thereof.

I feel that before closing this paper that just a word or two should be said concerning school sanitation. It has not been so many years ago when the one and two teacher school in many of the counties of the state were poor examples for the rest of the community to pattern after in matters of sanitation. The open privy, the unprotected water supply, the inadequate janitor service and many other conditions prevailed without being molested by any one. We have gone a long way in these matters and our country schools in most instances measure up equally well with ones in urban communities. There are a few conditions, however, yet remaining which I believe we could improve upon if we would. I have noted this one condition in many schools which I feel should be corrected and that is that drinking fountains are installed on the water lines feeding the toilet rooms and at recess and lunch periods when children are frequenting the fountains the water pressure is reduced to the point of where the flow is so low that no water is available. If the old style unprotected orifice is in evidence the flow is so weak that each child is forced to swallow a portion of the opening in order to get any water at all. This condition reinstates the common drinking cup and should be corrected.

In connection with the program of school sanitation it is imperative that toilet seats be frequently disinfected, that the floors of school rooms and halls be oiled to lay the dust and that lunch rooms be inspected at frequent intervals. And last but not least, the Health Officer should not

lose sight of the opportunity to sell sanitation to the school personnel to the end that many minor matters may be adjusted by reason of their interest.

In conclusion permit me again to emphasize the importance of the various phases of sanitary procedure in the health program. Even though the Health Officer may feel that his time is well taken with more important problems, he can ill afford not to take cognizance of the many conditions of a sanitary character which have a definite health significance and which attract attention to the health program in general by the thoughtful and appreciative citizen.

DR. L. L. WILLIAMS: Mr. Chairman, Ladies and Gentlemen: I certainly do not think he has over-stressed the importance of sanitation in a public health program.

If I remember correctly, about two years ago before this body I said something in reference to sanitation in the public health program, and its importance. I felt health officers were more or less careless and negligent in regard to sanitation in a public health program.

I had something very vividly called to my attention last summer, in reference to the sanitation of swimming pools. I pass it on for what it might be worth. This was a swimming pool in a Y. M. C. A. where the water is chlorinated, and it is apparently what you would class as an A-1 swimming pool. During the summer months, or late in the summer, we had an epidemic of sinus, nose and throat infections. We got busy to try to locate the source of this epidemic, and where it was coming from. The first thing we went to was the swimming pool in the Y. M. C. A. The Y. M. C. A. happened to be running on a very slim budget. They had to pay the city for all the water they used, and we found on checking that they had been very negligent in changing the water. From observation and laboratory test of the water, we found that this was the source of our epidemic. We got busy, got the Y. M. C. A. officials interested, afraid we were going to close the swimming pool. It was cleaned out thoroughly, the water kept fresh and changed, and checked as to the chlorination, and our epidemic of this infection of nose and throat areas cleared up immediately.

I think we should be more diligent in keeping a watchful eye on just such conditions.

I feel that one of the most important phases of the work in a Health Department is the sanitation in our schools. It is hard at times to get the co-operation of our teachers, but in selling this to the Parent-Teachers' Association, and getting the women interested in the sanitary conditions of the school, they immediately are going to get the teachers concerned, and whatever needs to be done they will have done. And when you have convinced your women of the school, and the parents, of the necessity and prime importance of sanitation in the school, you have gone a long way in selling your entire public health program to that particular com-

munity. They will be a great assistance to you, and will enable you to get the necessary budget required to carry on a well-rounded program. (Applause)

DR. A. C. BULLA (Raleigh): This paper is applicable to all health offices. It has been pointed out very forcibly, I think, that most of our advances have been made by demonstrations. I think our first demonstration that I recall right now was about 1665. It was made in London when someone was asked to locate a hospital. He hung raw pieces of meat about in different sections of London, to see which would spoil first. And the one that spoiled last, that stayed fresh the longest, was selected as the most suitable place to locate a hospital. It was a very practical plan, I presume, in that day and time.

Coming on down the list, we remember that Pasteur, in every step that he undertook, had to give tests and public demonstrations, to make the public believe that he was teaching them practical, sensible things in that day.

Gorgas, about 1898, had to demonstrate that yellow fever was carried by a mosquito. And so on, down to the present time. We are demonstrating daily that many diseases are transmitted by the common drinking glass in our fountains today, and yet, it creates no concern whatsoever. The public is not concerned about that. They are not interested in that. But we are demonstrating these things daily. And we are not making the impression that should be made.

PRESIDENT SISK: Is there further discussion?

DR. C. W. ARMSTRONG (Salisbury): This Association is honored today by the presence of the President-elect of the State Medical Society. It is the first time that I recall when a State President of the Medical Society has sat in all day long at our meeting. I suggest that the Chair recognize Dr. Manning and extend him the privilege of the floor.

PRESIDENT SISK: It is a pleasure to have you with us, Dr. Manning, and it is with pleasure that we extend you the privilege of the floor.

DR. MANNING: No, thank you.

MR. WARREN H. BOOKER (Raleigh): Mr. President, I was very much interested in Dr. Epperson's paper. Unfortunately I did not have an opportunity to read it before he gave it a few minutes ago. I think, however, that Dr. Epperson is to be criticized a little bit for an undue sense of modesty. He came along to this matter of school sanitation and mentioned that last, and he didn't tell what I think is the real milk in the coconut, about that subject of school sanitation in Durham County.

Some months ago we were very much interested in studying the matter of school sanitation in North Carolina, as compared with school sanitation in the country at large. Some of our studies were with reference to water supplies in our public schools. We found that roughly one-third of our schools in North Carolina do not have any water supply at all. That is to say, children get their water from a nearby family, or a filling

station, and I am sorry to say in some cases from side ditches and open streams. Approximately a third have no water supplies. Another third have fair to good water supplies (or slightly less than a third), while slightly more than a third have bad or questionable water supplies.

With reference to the school sewerage, we find that the sanitary conditions there are even worse, if possible. About one-fourth of our schools were found to have no sewerage at all. Approximately another fourth have fair to good sewerage, and slightly over half have bad or questionable sewerage.

So much for the picture in North Carolina. We felt that that was bad and we were anxious to compare it with other sections of the country. So we took the registration areas as a whole, in an effort to find out any possible relation between the sanitary conditions in North Carolina and our death rate, as compared with that of the registration area. We find this: During pre-school ages, that is up to five years, 4.5% of our North Carolina cases of typhoid occur resulting in death. In the United States, however, 5.4% occur in pre-school ages.

Now then, during the school ages, in North Carolina we have 36.7% of our deaths occurring from typhoid, but only about 33.9% in the registration area.

Finally, in post-school ages, in North Carolina we have 58%, roughly, of our deaths from typhoid occurring, but in the registration area slightly over 60%. In other words, folks, it is safer in North Carolina to be at home before school or after school, and it is more dangerous to be in school in North Carolina than it is elsewhere.

That seemed very significant in view of what we already knew in regard to school sanitation. That being the case, we cast about for some demonstration, as Dr. Bulla was mentioning, to give us a clue in regard to what this was all about. We took up Durham County because we knew that there, a little over five years ago, they had inaugurated, through Dr. Epperson's efforts, a program of school sanitation. We studied five years prior to the adoption of this program of school sanitation in his county, and five years subsequent, with these results:

The number of deaths from typhoid, in pre-school ages, before they sanitized, was one, and since they sanitized, it was two. That is not significant, but here is the significant thing: During school ages, before sanitation, they had twelve deaths in Durham County, and since sanitation they have had no deaths in the school ages. During post-school ages, in Durham County, they had thirteen deaths from typhoid fever during the five years prior to school sanitation, and only nine since then.

In view of those statistics, gentlemen, I think that Dr. Epperson has given us a demonstration such as Dr. Bulla was talking about, which is second to none. He has demonstrated over there that school sanitation—and I don't mean that immunization and other means have not contributed

their part—has figured tremendously in reducing the death rate over there, where they have an enormous medical center. (Applause)

PRESIDENT SISK: Is there further discussion? The next paper on the program is "Tularemia in North Carolina," by Dr. D. F. Milam, Epidemiologist, State Board of Health, Raleigh.

TULAREMIA IN NORTH CAROLINA—1928-1933

By D. F. MILAM, M.D.

Epidemiologist, North Carolina State Board of Health

Tularemia as a human disease made its first appearance in medical literature in 1914 in Cincinnati. It was an American disease worked out by Americans, and it was at first thought to be limited entirely to a few sections of the United States. In the twenty years since that first case was diagnosed, human cases have been reported in more than forty American states and from many nations in Europe and Asia. We can now consider it a world-wide disease. The medical literature on tularemia is getting to be voluminous, too voluminous to read casually. After going over this literature recently it seemed worthwhile to assemble data on the cases occurring in North Carolina and to compare the findings in this state with the general knowledge of the subject. In particular, it was worth attempting to find out how extensive the disease was and in what parts of the state it was occurring; also what animals were the source of the disease, if other animals than the rabbit were also responsible; and what was the usual method of transmitting infection from animal to man.

Consulting the records it was found that there were twenty-one reported cases, including two deaths. By checking back on laboratory records and attempting to follow up every possible case we have increased the number of reported cases at this writing to forty-five. We have no reason to believe that this is all the tularemia that has occurred in North Carolina, but it is a sufficiently large number of cases to indicate the trend of the disease here. It is evident at the outset, from the small number of cases reported, that tularemia is not an outstanding public health problem. It is, however, a disease of particular interest to certain groups in the state, particularly hunters, butchers, and others coming in contact with rabbit carcasses.

The forty-five North Carolina cases included in this analysis have all been reported since the year 1928, in which year it was made a compulsory reportable disease. There are three known cases which were infected in 1928, six cases in 1929, ten cases in 1930, seven cases in 1931, eighteen cases in 1932, and in 1933 one case to date. It is quite probable that the increase in the recent years is due entirely to a more general appreciation of the existence of this disease rather than to an actual increase in its incidence.

The month of occurrence of the majority of tularemia cases in North Carolina is interesting and important in that it coincides exactly with the hunting season for rabbits. There are, however, scattered cases throughout the year, showing that the hunting season is not universally observed. The months of maximum occurrence are November to February. In these months thirty-four of our forty-five cases occurred: in November ten cases, in December twelve cases, in January nine, in February three. In other months nine cases are on record, two cases in months not stated. These nine cases out of the hunting season occur in every other month of the year except April, one or two cases in each month. So much for the *season of occurrence*.

As to *occupation*, the distribution of the thirty-eight patients for whom we have collected records is as follows: farmers eleven, housewives nine, children two; and one each: traveling salesman, veterinarian, woodyard operator, and railroad flagman; and twelve cases with occupation not stated. Quite evidently the two most dangerous occupations in regard to tularemia are farmer and housewife, this of course being related to their more frequent contact with rabbit carcasses. It might be inferred that farmers are more frequently engaged in rabbit hunting than are men in other occupations; however, the salesman, flagman, and wood dealer show that other callings also have their contingent amongst the hunters. It is to be noted that "hunter" was in no instance given as the occupation.

Color: As to color of the forty-five known cases of tularemia, thirty-five were white, six black, four not stated. This ratio of white and black is, roughly, the same as that of the two races in the population of the state.

Sex: Males accounted for twenty-seven cases, females fourteen, not stated four. It is worth noting that there were one-half as many women as men amongst the patients, though hunting rabbits is not a sport women ordinarily engage in. This again points to the great danger to housewives coming in contact with rabbit carcasses by preparing them for cooking.

Age: Regarding age, tularemia can evidently occur at any age. No one of the cases occurred in a child under five years of age, but one or more cases occurred in each of the five-year age groups between five and sixty-five years. There were eleven cases, or one-quarter of the total, in the age group 45-54 and ten cases in the group 35-44. That is to say, approximately one-half of the cases occurred between the ages 35-55. It seems to be quite evident that age has no relation to susceptibility to tularemia infection, the only point being opportunity for exposure. Such opportunity is naturally concentrated in the adult or near adult population.

Distribution in the State. The forty-five North Carolina cases of tularemia are distributed in nineteen counties, one case also being assigned to South Carolina and one unknown. Six cases were infected in Anson county, five in Stanly, and four each in Durham, Guilford, and Cabarrus; two cases each in Chatham, Granville, Caswell, Nash, Union, Wake; and

one each in Alamance, Beaufort, Columbus, Forsyth, Lee, Mecklenburg, Pender and Randolph.

It would be manifestly unfair to assume that these are all the counties in which cases occur or that the danger of infection is in proportion to the number of reported cases from the several counties. Too many other factors are involved, including failure to report, to warrant any such conclusions. It is interesting that no cases have been reported west of Charlotte and Winston-Salem and only three east of Raleigh. I don't know why our reported tularemia should appear to be concentrated in the Piedmont section. The disease in rabbits is known to occur in epidemics and the geographical location of these epidemics varies just as occurs in human epidemics of other diseases. It is probably fair to assume that the danger of meeting an infected rabbit is pretty well equalized throughout the state over a long period of years.

Animal Source. The literature on tularemia has recorded cases arising from contact with a great many different animals. Those listed up to the present include the rabbit, rat, mouse, squirrel, woodchuck, muskrat, coyote, cat, dog, sheep, cattle, horse, deer, and several birds, including quail and pheasant. In the absence of direct proof as to animal source, the probable source of infection has been queried in each of our North Carolina cases. The rabbit is far and away the most usual source and was given as the probable source in thirty-three of the forty-five cases. One case each was attributed to the following animals: squirrel, cat, opossum, dog, skunk, hog. In six cases the source is unknown. These cases, for animals other than the rabbit, are of course not definitely proven, but presumptive evidence is that these sources were responsible. So far as I know, cases have not previously been attributed to the opossum, skunk, or hog. These animals, however, are a part of the great group of possible or probable sources of this infection and it would not be surprising if they were the actual source in these cases. Since no other probable source was available in each case, they are tentatively accepted as the source of the cases attributed to them. Parenthetical reference is made to another North Carolina case of tularemia reported by Dr. Lucius G. Gage of Charlotte. This patient in 1921 cleaned several quail and injured a finger with a broken wing bone. She also manipulated some rabbits at the same time. Clinical tularemia developed and was subsequently confirmed by the agglutination test five months later.*

The *method of transmission* of infection from animal to man in every case in our series save one was by direct contact with suspected animal source. In the thirty-three rabbit cases, it was by contact with the rabbit carcass. The squirrel clawed a man in the thumb; the cat scratched a child on the back of the hand; from the opossum no known injury was received but an ulcer developed on the hand after dressing the animal; the skunk bit a man on the finger when he tried to catch it; the hog

*Reported in the A. M. A., April 25, 1925, 84, p. 1245.

case occurred in a veterinarian who made a post-mortem on a hog supposed to have died of cholera. The dog case occurred in a man who picked ticks off the dog and knew of no other source of contact. Parenthetically, it can be stated that forty such dog tick cases are on record and that this tick is a good vector of the disease. Cases are also on record from the bite of the wood tick.

The *method of transmission* of tularemia from rabbits to man has usually been through the skin by handling carcasses. Recently a small group of cases was reported in a South Carolina family where a sluggish rabbit was knocked down with a stone, hastily cooked and eaten. Practically the whole family was infected and no ulcers or glandular enlargements were observed. The epidemic was proven to be tularemia and every evidence pointed to infection through the intestines from the insufficiently cooked rabbit. In this South Carolina epidemic there were several deaths, showing the severe type of this infection. Two of our North Carolina cases quite probably received their infection in the same manner, that is, through the intestines from insufficiently cooked rabbit. The two patients, a white man and a black man, went on a hunting and drinking spree, killed a rabbit, and the negro dressed it. It was hastily cooked and eaten. Within twenty-four hours both were acutely ill and were hospitalized. Tularemia was suspected from the history. The blood of each was tested for tularemia and was found positive in titer 1:640 in the case of the white man but negative in the case of the negro. The negro died on the ninth day of illness and the white man on the thirteenth day of illness. Neither showed any ulcers or glandular enlargements, but an autopsy on the white man showed enlarged mediastinal glands and there was some lung involvement. These cases will undoubtedly be reported in detail by the doctors at Duke Hospital. It seems quite probable that both are cases of tularemia from ingestion of insufficiently cooked rabbit and that the negro died before positive agglutination could be obtained. The negative agglutination test on the negro does not exclude tularemia, since this test is frequently not positive until the third week of illness.

The method of acquiring the animals suspected of causing the infection is of interest. For animals other than the rabbit this has already been mentioned. Of the suspected rabbits, twenty-five were shot by the patient or someone in his family. The question as to whether the animals were sluggish when killed is an important one. It is a universal recommendation to hunters that they forego shooting a rabbit that does not actively run away, since a sluggish rabbit is possibly suffering from tularemia. In the twenty-five instances cited here, in only one case did the hunter notice that the rabbit was sluggish and in another instance reported that it was an unusually thin rabbit. In nine instances it was stated that the rabbit was active and in fourteen cases that the patient hadn't noticed anything one way or the other. Only one of the suspected rabbits was bought at a butcher shop. In another instance the source was unknown. Other than

being shot or bought at the butcher's, one rabbit was caught by a cat, one was caught by a dog, two were caught in traps, one killed with a stone, one caught in its bed, and one caught in a hollow tree. But only the rabbit caught by the cat and the one caught in its bed were noticed to be sluggish. The others were active or no attention was paid to this point. These points serve to illustrate the point that it is unsafe to conclude that only sluggish rabbits are dangerous as a source of tularemia.

Portal of Entry. Of the thirty-eight patients for whom records are complete, thirty-four dressed the animal themselves, four did not. In the thirty-four cases the portal of entry was evidently through the skin, the infection coming from the raw flesh or blood of the animal. Of the other four cases, one from macerated dog tick is similarly explained. The skunk bite, the squirrel claw, and cat scratch are not so easy to explain.

Of the type of wounds preceding the ulcer, nine were penetrating, seven were abrasions, three were knife cuts, one was from clawing and one unknown. In seven cases there was no known injury at the time of dressing the animal. In ten other cases there was no known injury made at the time the animal was dressed, but a previous injury or sore open at the time the animal was dressed was the probable portal of entry. These preceding injuries are listed as follows: one hangnail, one pimple on the face which was squeezed with the soiled hand, one crack on the knuckles, one injury from a handsaw, one knife puncture, one old ulcer, two briar scratches, two abrasions. In only one case were any precautions taken following injury and this was application of iodine to a knife cut.

The site of injury, identical in every case with the site of the subsequent ulcer, were as follows: on fingers ten, thumb ten, hand twelve, face one, not stated five.

Regarding the question of thorough cooking, the answer was "No" in two cases, being the two above described as probably dying from ingestion of insufficiently cooked rabbit. The hunter who noticed the skinny rabbit rejected it for food, but acquired an ulcer from skinning it.

Symptoms. The classical symptoms of tularemia as listed by Francis are: (1) history of having dressed a wild rabbit or being bitten by an insect vector; (2) a primary papule on the skin followed by a persistent ulcer or a primary conjunctivitis; (3) persistent glandular enlargement in the region of the primary lesion; (4) a fever of two or three weeks' duration. These four symptoms, supported by a positive agglutination test, are diagnostic of tularemia. In our series there is *history of contact* with the animal source in every case. As to ulcer, it was present in thirty-three cases, not stated in three, and absent in two. These last two again were the above-mentioned cases which were probably ingestion tularemia. The site of these ulcers was in every case the same as the site of the original skin injury. In five cases there were multiple ulcers, these being on the hands and forearms in two cases; on the hands, feet and face in one case; on several fingers of both hands in one case; and on the

knuckles and palm in one case. Our series of cases does not include a tularemic conjunctivitis.

Regarding regional *glandular enlargement*, it was present in every case except two. In one of these the doctor could not remember, when questioned four years after the death of his patient. The other case was that of the negro dying from probable ingestion tularemia. The other ingestion case showed mediastinal glands at autopsy. Otherwise, glandular enlargement was as follows: axillary and epitrochlear fifteen cases, axillary alone sixteen cases, epitrochlear alone two cases, cervical one case (case with infected pimple on face), axillary and cervical one case. Our information is not very complete regarding the point as to whether or not these glands suppurred, the question being confused with that regarding discharge from the ulcer. In several cases, however, it was stated that the glands were fluctuant and were incised with resultant discharge.

The height and duration of *fever* in our group of cases is as follows: highest fever under 100 degrees two cases, 101 degrees one case, 102 degrees four cases, 103 degrees nine cases, 104 degrees eleven cases, 105 degrees four cases, 106 degrees two cases, unknown four cases, not stated one case. Of the five cases dying, one had maximum temperatures of 104 degrees; two had 105 degrees; one had 106 degrees; and in one death the maximum temperature was not stated. The *duration of fever* was stated to have been as follows: under one week three cases, one week three cases, two weeks two cases, three weeks five cases, four weeks six cases, five weeks two cases, six weeks four cases, two months two cases, three months one case, four months two cases, five months one case, to death (under two weeks) three cases, not stated four cases. Or, summarized, nineteen or one-half of the thirty cases had fever lasting one month or shorter, twelve had fever lasting five weeks to five months.

An interesting point is the *interval* between exposure to infection and the onset of symptoms. In four cases this interval was one day, two of these patients being the ingestion cases, both dying within two weeks. The interval was two days in one case, three days in three cases, five days in one case, six days in three cases, seven days in three cases, eight days in two cases, eleven days in two cases, twelve days in two cases, fourteen days in one case, and three weeks in two cases; unknown or not stated fourteen cases. The shorter interval would apparently point to severity of infection or size of dosage. Two of the four cases developing within one day died. The interval was six days for another death and in two deaths the interval could not be stated.

Regarding the five cases *dying*, three were colored and two were white; three were male and two female. The interval between onset and death was, for the five cases, as follows: nine days, thirteen days, thirty-four days, four to five weeks, unknown. The deaths occurred one each in the years 1928, 1929, 1930, two in 1932.

Diagnosis. The diagnosis of tularemia is made clinically on the tetrad of history and symptoms listed above. This clinical diagnosis should be confirmed by the agglutination test. The agglutination test is usually not sufficiently positive to be diagnostic until the third week of illness. Of the thirty-eight cases whose record we have obtained, twenty-seven gave positive agglutination test. Of these twenty-one were positive in dilutions ranging from 1:80 to 1:1280. There was one case with agglutination positive in dilution 1:20. The time in illness when all blood specimens were taken for examination has not been obtained. This would be an important point in interpreting the negative reactions of which we have a large list. In five other cases the agglutination test was positive but records showing the titer are not available. In five cases the test was not made, three of these being deaths. In four other cases information regarding agglutination test was not obtained. In two cases, reported as tularemia, the agglutination test was negative, one of these being the above-mentioned case of ingestion tularemia with early death, and the other having the history and symptoms of tularemia but with repeated negative blood tests, and probably not tularemia.

In the twenty-one positive agglutinations of known titer, six were positive in dilutions 1:640 and six in dilutions 1:1280. This indicates the very high degree of positive results obtained in this disease. The positive agglutination test after an attack of tularemia has been found to be positive for as long as twenty-five years after the attack. This would naturally raise the question as to whether another illness suspected of being tularemia might not be misdiagnosed when a positive agglutination for tularemia dating from the old attack should be found. A disease clinically diagnosed as tularemia, supported by the positive agglutination test, should, however, be unhesitatingly diagnosed as tularemia. It is interesting to note that at least one case of a second attack of the disease is on record. The immunity, therefore, to this disease, as in most others, is relative and not absolute.

In conclusion, it is repeated that tularemia is not an outstanding public health problem and that there is no reason why hunting rabbits should be abolished or the use of rabbit meat for food questioned. There are other common sources of animal food potentially much more dangerous than the rabbit. What is important is that the danger of contracting tularemia, small as it is, should be borne in mind by those most exposed to it, namely those handling rabbit carcasses. Such precautionary measures as are possible should be taken and these include avoiding shooting or any contact with rabbits that are sluggish in running away from the hunter. When the dressed rabbit shows a white speckled liver, it should be rejected for food and burned and the hands thoroughly disinfected. It would be very helpful if the custom for housewives to wear coarse rubber gloves when dressing rabbits should come into use. Any type of meat used for human food is safest if thoroughly cooked, and this certainly applies to

rabbit meat. And a rabbit caught by hand, knocked down with a stick or stone, or caught by a child, cat or dog, is in general not to be considered suitable for eating.

DISCUSSION

PRESIDENT SISK: Is there any discussion on the paper of Dr. Milam?
 DR. JOHN SYMINGTON (Carthage): I would like to ask Dr. Milam a question. He talked about the duration of the fever. I would like to ask how long, as a rule, the ulceration and swelling of the glands lasts, in the majority of the cases, and also a little about the treatment.

DR. C. C. HUDSON (Greensboro): I would like to add some little information which Dr. Milam may not have had in regard to the origin of infection of these cases. I noticed he did not state just where the infection came from. He gave the locality, but that does not always give you the places where they were infected. For instance, in Greensboro, the skunk case came from the eastern part of the state. They were traveling along, east of little Washington, going along a path, and they thought they saw a pretty kitten. A man started to catch it and he was bitten—and other things, and tularemia resulted. So that case was definitely contracted in the eastern part of the state. The other case we had in Greensboro came from South Carolina. This lady was nursing her daughter down in South Carolina and contracted the disease down there. She came home and developed it a day or two after coming to Greensboro. So in those two cases, the origin was definitely elsewhere than in the Piedmont section.

DR. MILAM: Answering Dr. Symington's question, unfortunately the treatment for tularemia, once developed, is largely symptomatic. Within the last year or two a group in Cincinnati have been studying it. They had a case—and by the way, it was the first case diagnosed around Cincinnati—of conjunctivitis of the eye, from running the hand to the eye while butchering. They have made a close study for tularemia since that date, and at present they are producing a curative serum. As far as I know its source is entirely in Cincinnati, and is used only locally. I don't know whether it is available for use in other areas or not. I understand it is being made useful. Otherwise, the treatment is largely symptomatic and can drag out a very long time.

Now, your question about ulceration I am sorry I did not understand.

DR. SYMINGTON: It was about the duration of the fever, and I wanted to know the duration of the ulceration and swelling of the glands.

DR. MILAM: The original ulcer frequently heals before the glands are noticed, so that if you had only what you can see you would not know there had ever been an ulcer on the finger or hand. Sometimes if you look you will see a little scar, and if you ask you can get the history of the ulcer there. The glands actually get as large as your fist and stay enlarged for some weeks. I can't say exactly how long. They supurate frequently, and vary in size, but it is weeks, certainly; and cases of tularemia lasting symptomatically over a year are reported.

PRESIDENT SISK: The next paper is "The Relationship of Oral Conditions to Systemic Conditions," Dr. Arthur Fleming of Louisburg. (Applause)

THE RELATIONSHIP OF ORAL CONDITIONS TO SYSTEMIC CONDITIONS

By DR. ARTHUR FLEMING

Mr. President and Gentlemen: I assure you that coming here from the dental profession, that section of the great profession of medicine, has been most interesting to me, because we deal in germs up to our elbows all day long.

This study of germs has been a very big question from time immemorial. We have heard the study that Dr. Milam has given it, and the study that other great scientists have given it.

You know, some years ago there was a meeting down at Morehead, and Dr. Edward C. Kirk, the Dean of my Alma Mater, came down to give a discussion on germ theories. It was about the time that Dr. Miller of Berlin had put out the first plausible dental caries theory. Dr. Miller, having been a student at the University of Pennsylvania, Dr. Kirk was invited down to read a paper. Well, the paper was over everybody's head. I was glad I was a student at the time and not supposed to know much. But it was a magnificent paper. In the course of his paper he took occasion to say that Dr. Miller had isolated a germ in Berlin which was so small that ten thousand could stand abreast on the point of a cambric needle without being in apposition. And of course it took many thousands of amplifications for this germ to be seen. When he had finished his paper they called on the others for discussions and nobody discussed, because nobody seemed to know. Well, up in the western part of the state we have a very celebrated character who farms, and carries his operative instruments around in his pocket, but he is shrewd. And they called on this gentleman to get up and discuss the paper. He got up and said, "Gentlemen, I have enjoyed hearing Mr. Kirk read his paper. It was mighty nice. But I don't know anything about them. I don't have none in my practice. I don't have nothing to do with anything that you have got to buy five hundred dollars' worth of glasses to find them. If he wants me to take any notice of them, they have to grow up to be some size."

Well, we have got germs, and if it were in order, I would like to make a motion that this wonderful paper that has just been read be referred as a tribute to the Chief of the Bureau of Animal Husbandry. I think it undoubtedly will show that we have the healthiest rabbits through Wake and Franklin counties, of any part of the state.

We have in dentistry almost all the germs to which the human system falls heir. It is deplorable that we do not have clinical and laboratory

facilities for ferreting out the cases that come to us, and that the physicians have.

In the short scope of man's life, there are just a few things, a few major things, that have entered into his life to make it either miserable or pleasurable. It matters not what the record of human systems may be or may have been. Our records are very meager of anything from the lost continent of Mulab to the newly discovered Manchukuo. But they all are inhabited by and populated with human beings, subject to different diseases. Now, the diseases have come about, not as a curse from some supreme being, because that could not be. And our blessings have not come about by any special gift from supernatural things. But we must all admit that when man reached that stage that he realized his inability to create himself, he worshipped something, and looked higher—to the stars, and the wind; and no man with a vestige of brains would dare say that he does not realize that there is something, call it cause and effect, or science and nature, or God, whatever you please, that is bigger than we are, that controls the destiny which controls us.

A few hundred thousand years ago, of which we have very little history except the history that is being dug from the earth today, when man first stood erect, he changed his entire being. His blood pressure was changed. Every vital organ in his body was changed; its position was changed, and its hang was changed. And that is the first great factor that has had to do with the health or the unhealthy conditions, probably, of the human race today and its predecessors.

The next principal factor that entered into life was probably the discovery of fire. And with the discovery of fire came, of course, cooked foods. Now there is no doubt that this world has been here for billions of years and man, through special selection, is only probably one of nature's wonderful germs that happened to stray out in a more selected field and, through his absolutely uncharitable attitude towards everything else around him, has gotten to be the germ predominant at present, as we are pleased to picture him.

But, gentlemen, we are not. It seems fallacious to think that man, whose mind probably has reached the culmination or the highest point of any animal, must admit that his body is still amenable to the most lowly germ.

Now, with the advent of fire, as I said, we began to cook foods, and the human system has not changed with its environment one-millionth time as rapidly as our foods have changed. Our foods are not suited to the human system today, and the cry today, the blazing cry, in almost every magazine for uncooked foods, is only a back-to-the-soil call, which man realizes he must hear, at least to a certain extent.

The ultra-violet ray, and the many other things that are entering into our daily life—that business men are missing—the nudist colony, the bathing suit without a back, and the evening dress which unfortunately

gets no ultra-violet ray, are all the answer and a logical answer to back-to-nature.

Now, when we come in contact with the virile germs, we are up against a problem. Through the thousands of years of, you might say, physical debauchery, the germs have maintained their racial status. They have maintained their social characteristics. And while the human frame has degenerated in certain particulars, it has become amenable to the action of the most virile germs. The work of the health officer and the work of the doctor are wonderful. We are studying and working out wonderful things that are benefiting the children and the adults every day. But there is hardly enough stress laid on the point that in order to have a healthy body you must build a body not to be able to take vaccines, necessarily, or to take medicines, necessarily, or to shy away from the old proverbial swimming pool; but rather, start out with building a structure strong enough to resist those things with which we come in contact. Life, as you know, is a continuous struggle of vitality against virules; and if the wee, little germ, through its racial stability has maintained more virulence than the human being can meet, he is going down. We must lay more stress on those things.

Now when this begins to happen, when a germ begins to affect a human system, it does not affect the strongest organ in that body. It affects the weakest organ, because the human being's strength is in an inverse relation to that of the germ. Now since, as I said, we are standing erect, we no longer need the appendix into which went the chaff of maybe three hundred and fifty thousand years ago, from roots and barks and such things. The appendix is disappearing. And we are having all sorts of trouble with appendices. Of course, if the race goes through maybe a half million years more, it is destined, unless we change our food, to not only be a race entirely destitute of appendices, but we will be a sucker race—very much like the horse-fish. Because nature is undoubtedly eliminating all unused organs, and teeth are one of the greatest unused organs today—next to the appendix. You can go back, in any of the older museums, and examine the oldest skulls, prehistoric skulls—for instance, in the Worcester Institute of Anatomy—and in looking at skulls from the old Egyptian civilization, especially in the mummies, you will find thirty-two well developed teeth. We do find there was a great deal of dentistry among those people, but it was for decorative purposes more than it was for the alleviation of pain. And now it is the rarest thing to find in anybody, even the best fed and best nourished people, thirty-two well-developed teeth. You will find in children that their teeth are developed in proportion to the brains of the mother and the brains of the grandmother. Because you will find in families that the same class of foods exist for several generations.

Back in Civil War days, or before the War, you would see the little slick fat niggers running around the house, with their little stomachs

stuck out as fat as could be, and the little white children looked emaciated. The little niggers were eating and drinking the pot liquor and dunking corn bread, and the little white children were having theirs dipped from a cauldron of four or five gallons. And all the lime and calcium and phosphorus, and anything else of value, that was in the turnip greens or the cabbage, was boiled out for the little nigger children, and the white children ate the alfalfa.

A very cultured woman asked Dr. Darby when was the time to begin to care for her children's teeth. He very wisely said, "Lady, with their great-grandmother."

Now to deal with teeth only for masticatory purposes and for decoration has been the idea of a great many dentists. I am proud to say, and I say it unhesitatingly, that the personnel of North Carolina dentists is much higher than almost any state in the union. We have a State Board that requires a man to know something and be something before he can expose himself to the great public of North Carolina to do a service. And yet, we have conditions that are confronting us today with older men in the profession, who have not kept abreast of tularemia and other diseases, who are doing things just as they were done twenty or twenty-five years ago. The discovery of the X-ray has done more to revolutionize the practice of dentistry than any other one factor, and it has shown us conclusively, those of us who are willing to admit our mistakes of twenty years ago, exactly what we were doing.

I want to cite one case for you, if I am not taking too much time. A good many years ago, a patient came to me who was a tobacco chewer. He had worn his teeth away down to the gums, upper and lower. Well, he was a little bit kin to me by marriage, and I didn't think if I did anything wrong he would tell it. And I thought if I did anything right he would be glad to tell it. So I did what I thought then, and what the profession thought in the light of the very best knowledge we had, was a wonderful piece of dentistry. Where the teeth were worn off to the gingiva, his teeth closed down to the gum line. I put porcelain crowns on all of the upper and lower anterior teeth, and then on the molars and bicuspids I elevated them perhaps an eighth of an inch with gold—what we call cast work. It was beautiful. If I do say it myself, it was skillfully done, and I was so proud of it that I brought him to Raleigh, to the State Dental Convention, and with a great deal of pride I opened his mouth and showed the works.

Well, the man went on. He was a farmer, and a man of wonderful vitality. But for that, he would have been dead long ago. He hunted and fished, and led an outdoor life. He lived—and I was proud of him. I was proud of his work and he was proud of me. But about ten years after that, I bought the first X-ray in North Carolina. And singularly enough, I have a diagram and absolute record of every filling and every operation that I have ever done since I have been practicing dentistry, since 1902.

When I got the X-ray, this fellow being kin to me I sent for him to come in, that I wanted to X-ray those crowns. He said, "No sir, they are all right. Nothing is the matter with them." And he would not let me do it. I told him what might happen, and that there were no men of repute now that would dare put a crown on a dead tooth, and that I was quite sure if he ever died that those darn teeth would kill him. But he would not let me take them out, and wouldn't let me examine them under the X-ray.

Well, I lost track of him. He moved away, to another far section of the county, almost bordering on Wake County, and he was taken sick, less than two years ago. He had rheumatism and had it bad. He was in bed for several months and then intermittently for a week or two at a time. Finally, a very conscientious country physician, after treating him for about eighteen months, suggested that he go to a dentist. The gentleman was brought to my office on a stretcher. He still maintained that there was nothing the matter with his teeth, that not a single one had ever been sore, and not a one had ever given him any trouble. Much over his protest, I X-rayed the teeth and found nineteen beautiful abscesses. I was afraid to eliminate so much infection at one time, and so only extracted about four or five of the worst ones first, and curetted the pockets. He came back in about a week and, with the aid of a man on each side, they were able to get him up the steps to my office. I took out several more. And after a period of about three weeks he came up the steps himself, and I extracted all of his teeth. Now he has been adentulous for six or seven months, possibly, and his rheumatism has entirely disappeared.

Gentlemen, that is only one of dozens and dozens of cases, that I might recite to you. And there are hundreds of other dentists who could recite them to you also, if they were honest enough to admit their mistakes. I have made them, but I am trying not to make any more quite as big as that.

I believe there are more infectious conditions that arise in the mouth, that affect the human system, than even the best of our pathologists imagine.

Doctors Rosenauer and Price have done magnificent research work along this line and have given us a wonderful field for thought. And while we don't have the laboratory facilities for examining all of these cases, still in just such cases as I recited, when you do something and have a definite result, you have every reason in the world to believe that you are along the right line.

I am glad that the physicians and the health workers in North Carolina are co-operating one hundred per cent with the dentists and other physicians, because without the proper co-operation of all, it is impossible for one to accomplish what they could together.

I have in mind a gentleman from the states who held a most responsible position in the Orient for fourteen or fifteen years, who developed

lumbago and neuritis to the extent that he had to resign his position with the Standard Oil Company in Teintsin. He went to Singapore and was examined. He went to London and was examined. Then he finally came back to the States and went to a very celebrated hospital in North Carolina, where he was examined. I am sorry to say that not a single one of these hospitals made anything more than a casual examination of that man's mouth. His work was beautiful. It was perfect from a mechanical viewpoint. But when he came into my office I suggested an X-ray, just after he had come from a two weeks' stay in a North Carolina hospital, in which time he told me they did everything, even to making a spinal puncture, and they found nothing that they could relieve. When I suggested an X-ray of his teeth he was astounded. But I found, under that beautiful work that had been made, (some in India, some in Berlin, and all over the world, including the Philippines, and mostly done by American dentists) and under those beautiful crowns and bridges, there were nine granulomas.

I have not finished with the patient, although I have extracted three or four, and done curettements. I don't know what the ultimate end will be, but he is improving.

I am glad we can work these cases out together, and it is a real pleasure to work in any town, as I do, with the physicians, who work with us. I am glad to bring you a message from the dental profession that we are with the health work and with the physicians in the state one hundred per cent, and we want you all to help us in our work. (Applause)

DISCUSSION

PRESIDENT SISK: Is there any discussion of Dr. Fleming's talk? Dr. Fleming, I want to express the appreciation of the Association for the excellent talk you have made. It is a very valuable subject for the physician, and particularly the health officer.

I see we have Mr. Riley with us. I remember well an excellent paper Mr. Riley gave us at Winston-Salem last year on the subject of syphilis. I would like to ask him if he has anything to add at this time. Mr. Riley.

MR. WILLIAM D. RILEY: Mr. President, Ladies and Gentlemen: Paraphrasing the language of the great Mark Antony, when he stood before the bier of his beloved Caesar, I came not here to talk. I am here today to listen and to learn. In that I have not been disappointed. You have not been disappointed, either, I am sure. But now your turn for disappointment, I am sure, has arrived, inasmuch as Dr. Sisk has injected me or catapulted me into this program.

Broadly speaking, the problem of syphilis comprises two well-defined aspects. One relates to the public health control of disease. The other embraces a multiplicity of economic conditions resulting from imperfect, improper or haphazard application of well-known and well-tried public health measures.

It is impossible to deal successfully with either phase of this problem if we entirely ignore the other. Pausing for a moment, to ponder upon the many ramifications of the syphilis problem, we are at once reminded that syphilis, more than any other disease which afflicts mankind, manifests itself in some disabling form long years after the public health aspect of the disease has been forgotten. It is obvious, therefore, that unless physicians and clinicians treating syphilis look into the future to visualize what might happen to a syphilitic patient, unless he is properly and adequately treated, we are not going to make a great deal of headway or progress in the control of this very important public health problem.

The minimum aim, in the public health control of syphilis, is to render the patient temporarily non-infectious. The maximum aim is to render the patient permanently non-infectious. Cure of the patient, however, is quite another story. While the public health worker is interested primarily in only those two phases of the problem, that is to say, the minimum aim and the maximum aim, he is not, however, in our opinion, doing his whole job if he loses sight of the fact that the economic phase of the problem is perhaps just as important as the immediate public health aspect.

Let us look at this phase of the problem from the standpoint of treatment. Too often, much too often, we find the treatment of syphilis confined to the use of only one drug. I was in a clinic in this state not very long ago, in which I was told that their schedule of treatment was about like this: Twenty doses of nearsphenamine. Then they pick up the treatment by the use of mercury. I would like to see the clinician or the physician who is able to control the average patient over twenty weeks of treatment. It is usually considered a pretty fair treatment over a period of fifty-two weeks.

Now, the old conception of radical cure of syphilis has been discarded in favor of a long-time treatment for syphilis, with a possibility of rendering that patient entirely free from the disease. This is not possible, however, if we confine the treatment only to the use of one drug. Now the value of the arsenicals, which have sprung into pretty popular use in the last few years, has not been thoroughly evaluated. The efficacy of the drug, I should say, has not been thoroughly evaluated. However, we do know that the function of that drug is primarily to remove surface lesions. In the use of that drug, however, we find that a great many of the organisms are not killed off and it is those remaining organisms that cause serious damage later on in life. It is possible to effect a satisfactory cure of syphilis only by the use of other anti-syphilitic drugs in connection with the arsenicals. I didn't expect to speak, however, on the subject of treatment.

Now, as concerns the public health aspect of syphilis, I would like to state that in full-time County Health Departments this problem should be integrated in the whole health program, rather than be dealt with

haphazardly, as it has been dealt with so frequently in the past. The average health officer is interested in syphilis, but he finds so many obstacles in his way that he confines the control of the disease simply to treatment.

The cure of an isolated case of syphilis is a medical problem of no special difficulty. Therefore, if every case of syphilis could be isolated until cured, syphilis would become a rare disease in a few years. It is accordingly obvious, then, that the social management of these diseases is relatively just as important and as far-reaching in the end as methods of medical attack. Accordingly, too, the nurse can be a vital factor in the County or City Health Department in the program of syphilis control.

Social management, however, of the disease, is one of the most difficult problems that confronts us in the control of syphilis. I know of no work that requires a higher order of diplomacy, judgment and discretion than does medical social service in connection with syphilis control. The nurse who understands the problem, its ramifications, who is intelligent enough to apply the measures at hand, and who can deal tactfully and successfully with the family, has an opportunity of rendering a very valuable contribution to the common good.

If there are any questions I shall be very glad to answer them. (Applause)

PRESIDENT SISK: Is there any discussion of Mr. Riley's remarks, or any questions?

Dr. Parrott, have you something to add?

DR. PARROTT: No, I have not.

PRESIDENT SISK: If there is nothing else, we will now call this meeting adjourned, until eight o'clock this evening. The meeting will held in this room.

. . . The meeting adjourned at 5:00 P. M. . . .

MONDAY EVENING SESSION

APRIL 17, 1933

The meeting convened at 8:15 P. M., Dr. C. N. Sisk, President of the Association, presiding.

PRESIDENT SISK: The first paper on our program this evening is "Diagnosis and Treatment of Fungus Infections in North Carolina," by Dr. D. T. Smith, of Duke University.

DIAGNOSIS AND TREATMENT OF FUNGUS INFECTIONS IN NORTH CAROLINA

By DR. D. T. SMITH, Duke Hospital, Durham, N. C.

INTRODUCTION

Fungus infections are relatively more common in North Carolina than in more northern states. After eliminating the fungi which remain localized

to the skin and hair, we find three groups which may produce severe and even fatal infections. (Table 1). With the exception of *Torula*, *Coccidioides immitis*, and *Mucor*, we have seen one or more examples of each of these thirteen types of fungus infection since the opening of the Duke Hospital in July 1930.

EXAMINATION OF MATERIAL FOR FUNGI

The yeast-like fungi and the mold-like fungi can be found in the secretions from the lesions by treating some of the material with 10% sodium hydroxide and examining it under the microscope with the condenser racked down as for the study of casts in the urine.

The higher bacterial forms may be found in the fresh material as "sulphur granules" or demonstrated in stained smears as branching gram positive forms which may be either acid-fast or non-acid fast.

CULTIVATION OF FUNGI

But the yeast-like and the mold-like fungi are easily cultivated on Sabouraud's media. The higher bacterial forms require a medium which contains blood or ascitic fluid. Many of these organisms are anaerobic so both aerobic and anaerobic cultures should be planted.

SACCHAROMYCETE

The Saccharomycetes have a "yeasty" odor and produce on Sabouraud's media a white glistening colony which resembles *staphylococcus albus*. These organisms reproduce by budding and by ascospores, but form no filamentous hypha. They are only rarely if ever pathogenic.

MONILIA

The Monilia have a "yeasty" odor and produce white colonies on Sabouraud's media which resemble *staphylococcus albus*. They reproduce by budding and by filamentous hypha, but not by ascospores. Some species are non-pathogenic while other species are moderately pathogenic.

TORULA

The Torula have a slight musty odor and produce white, ivory, or pink-colored colonies on Sabouraud's media. In size and consistency they resemble monilia, but they reproduce by budding alone, having neither ascospores nor hypha. Some species are non-pathogenic, some moderately pathogenic, and a few, e.g., *torula hystolytica*, highly pathogenic.

ENDOMYCETE

The Endomycetes have either no odor or slightly musty odor. They produce on Sabouraud's media a tough corrugated colony with hypha which extend down into the media. They may, or may not have aerial hypha. They reproduce by hypha and by spores, containing endospores, which form within the segments of the hypha. They are either non-pathogenic or only slightly pathogenic.

OIDIUM

The Oidia have little or no odor and produce a white corrugated colony on Sabouraud's media with hypha extending down into the media. The colony looks tough, but when touched with the bacteriological loop, it is found to be quite soft. They reproduce by hypha and by budding from the corners of the rectangular spores. Some strains are non-pathogenic; others moderately pathogenic.

BLASTOMYCETE

The Blastomycetes have little or no odor and produce on Sabouraud's media tough, corrugated colonies of white, yellow, red, gray, brown, or black color. They have hypha which project down into the media and may or may not have aerial hypha. They reproduce by budding and by hypha and show after four to six days incubation double contoured spores which differentiates them sharply from the five preceding types. The blastomycetes are either moderately or highly pathogenic.

COCCIDIOIDES IMMITUS

This highly dangerous fungus has no odor and produces on Sabouraud's media a white, filamentous fuzzy colony. It reproduces in human and animal tissues by budding and by endospore formation and on artificial media by hypha alone. This fungus has a double contoured spore which can be differentiated from that of the blastomycete by its larger size and by the presence of endospores. This is the most highly pathogenic of all the fungi and is reputed to kill 98% of its victims.

SPOROTHRIX

The Sporothrix have little or no odor and produce on Sabouraud's media a small tough corrugated colony of white or black color, depending upon the species. It reproduces both by hypha and by spore formation. The spores are small oval bodies which may arise singly or in pairs from the sides of the filaments or in clusters from their ends. These organisms are generally moderately pathogenic, but may be highly pathogenic at times.

MOLD LIKE FUNGI

The *Aspergillus*, *Penicillium*, and *Mucor* belong to the same family as the ordinary bread molds. All three may produce black, brown, red, yellow, or green-colored colonies on Sabouraud's media. Both filaments and spore formation are employed in the reproduction of all three species. The differentiation is made from a study of the fruit or spore heads. The fruit of the *Aspergillus* has a clear central body around which the small, round colored spores cluster resembling a sunflower. The spores of the *Penicillium* develop on a structure which suggests the hand of a skeleton with the chains of small spores representing the fingers. The *Mucor* has a large round head with the spores all enclosed inside a delicate membrane. Most

strains belonging to these three groups are non-pathogenic, but some strains under favorable conditions acquire a moderate degree of pathogenicity for man.

ACTINOMYCETE

The Actinomycetes produce sulphur granules when growing in man, but not on artificial media. When grown on blood agar under anaerobic or aerobic conditions, small, tough, corrugated colonies appear which on smear show numerous gram positive filamentous branching organisms. Some actinomycetes are non-pathogenic, some pathogenic for plants, some have a moderate and some a high degree of pathogenicity for man.

NOCARDIA OR STREPTOTHRIX

The Nocardia or Streptothrix organisms resemble in general the Actinomycete, but do not produce sulphur granules. They may be demonstrated in smears from the lesions as gram positive branching filamentous forms which may or may not be acid-fast. Most of them produce tough corrugated colonies on blood agar which resemble the Actinomycetes, but some the acid-fast forms have not yet been cultivated on artificial media. Most strains of Nocardia have little or no pathogenicity, but some have a moderate and some a high degree of pathogenicity for man.

TREATMENT

All types of fungus infection should be treated with large doses of potassium iodide. We begin with one drop three times a day of a saturated solution and increase the dose either one drop each day or three drops each day until the patient is receiving sixty drops three times a day. Sensitivity to iodides may be encountered at any level between five and one hundred and eighty drops per day.

Those patients which do not respond to potassium iodide treatment are given in addition ethyl iodide inhalations. We begin by having the patient breathe through a small Collins inhaler 1 cc. of ethyl iodide three times a day and gradually increase the dose by $\frac{1}{2}$ cc. each day until the patient is receiving 5 cc. three times a day. We have seen one case of actinomycosis, one of blastomycosis, and one of sporothricosis resistant to potassium iodide which made rapid improvement with ethyl iodide.

TABLE I
FUNGUS DISEASES OF THE LUNGS

- I. YEAST LIKE FUNGI
 - (1) Saccharomycete
 - (2) Monilia
 - (3) Torula
 - (4) Edomycete
 - (5) Oidium
 - (6) Blastomycete
 - (7) Coccidioides immitus
 - (8) Sporothrix

II. MOLD LIKE FUNGI

- (9) Aspergillus
- (10) Penicillium
- (11) Mucor

III. HIGHER BACTERIAL FORMS

- (12) Actinomycete
- (13) Nocardia (a) Acid-fast, (b) Non Acid-fast

PRESIDENT SISK: I am sure we have all enjoyed Dr. Smith's presentation of this important subject, and if there is any discussion we would like to hear it.

It seems to me, from some of the pictures he has shown, that possibly we have been treating cases for tuberculosis and chronic leg ulcers that probably would have been benefited by potassium iodide.

DISCUSSION

DR. P. P. McCAIN (Sanatorium): I am not capable of discussing this subject, but I do want to testify what a joy it is to those of us doing tuberculosis work, to have such a man as Dr. Smith right here in our state, to whom we can refer these doubtful cases. Every one of us doing chest work constantly sees cases that have a lot of pathology in the chest, but we cannot find tubercle bacilli in the sputum, and we immediately begin to doubt that it is tuberculosis when they have advanced disease but repeated examination of the sputum fails to find the bacilli. Dr. Smith is an outstanding authority in the United States on this subject and is not only willing but anxious to co-operate with the doctors of the state.

I want to express my appreciation of this paper and also of the fine work that Dr. Smith is doing in this state. (Applause)

PRESIDENT SISK: Ladies and Gentlemen, it gives me great pleasure at this time to present a native North Carolinian, one whom we all know and who needs no introduction to a North Carolina audience. This gentleman was educated at the University of North Carolina, progressed in the field of public health and at the present time he occupies the highest position available in his field. We are very glad to have with us Dr. John Ferrell, President of the American Public Health Association, who will speak to us on the subject, "Observations on Present Trends in Public Health." Dr. Ferrell—of New York City and Clinton, N. C. (Applause)

OBSERVATIONS ON PRESENT TRENDS IN PUBLIC HEALTH

By JOHN A. FERRELL, M.D., Dr. P. H., New York*

The factors in public health service which are of concern to the taxpayer are numerous, but only a few of the more important ones can be discussed in the few minutes at my disposal.

*President, American Public Health Association and Associate Director, International Health Division, Rockefeller Foundation.

The safeguarding of public health is essentially a responsibility of government. This principle is accepted even by the voluntary or unofficial health agencies, and it is, of course, recognized by all branches of government—federal, state, and local. That this is so is evidenced by laws which regulate the powers, duties, and expenditures of public health organizations.

The scope of the public health field has not yet been clearly defined. Such activities as are involved in safeguarding the public water supplies, disposing of sewage, rendering milk and other foods safe, combatting communicable diseases, and teaching the public methods of protection against disease; and the principles of promoting health and physical efficiency are now uniformly recognized as responsibilities of the health department. Questions arise when the health department offers services which the physician thinks he might furnish on a private basis. Immunization and/or curative measures are, in certain cases, essential for the protection of the community against disease, and in certain situations the safety of the community demands that they be uniformly and promptly carried out and not left to the uncertainty of the patient employing the physician.

Physicians in a private capacity are expected to practice medicine, both preventive and curative, to the fullest extent possible, as long as this procedure, or rather its failure, does not endanger the health of others in the community. The social welfare service is expected to furnish medical care of a therapeutic nature only for the indigent, that is for those who are unable privately to pay for medical care. In view of the present tax burdens, neither the health service nor the social welfare desires to make greater demands upon the public treasury than are necessary. Since these services have limited funds and personnel, the tendency would be for them to urge that every possibility for treatment and care on a private basis be fully exhausted before they take matters in hand. But it must be remembered that the family which secures its medical service privately is also the one which largely supplies the tax funds to pay for free medical services for the indigent. In time, such families may protest against this double assessment. In the field of public education the protest came years ago, with the result that all children of the community, regardless of economic status, are now admitted to the public schools.

Many sparsely settled communities have been unable to induce qualified physicians to settle in the neighborhood for the private practice of medicine. In such communities, separate health, medical, and welfare services are obviously impracticable. In the sparsely settled Canadian provinces of Saskatchewan and Alberta, a movement has gained headway by which the municipality—somewhat smaller in population and possibly in area also, than the average county in the United States—has employed a full-time physician to render all needed medical service, curative and preventive, on a salary paid with funds collected by a tax levy. In August,

1932, of the 301 rural municipalities in the province of Saskatchewan, 36 were served by full-time municipal physicians, and 27 other municipalities were served by part-time municipal physicians. Of the 589,273 rural inhabitants of the province, 127,469, or 21.6 per cent, were served either by full-time or part-time municipal physicians.†

This development is mentioned merely to emphasize the fact that social, political, and economic conditions are not uniform, and that, consequently, we need not expect the scope of public health service, or its organization or procedures, to be uniform in all communities.

No factors relating to public health service are of as great importance as the qualifications and the competency of the personnel. University training of personnel specifically for public health service began to make headway only during the past decade or two. Progress has been made over a longer period by health workers who, in the school of experience, have adapted and applied knowledge to the protection of health, by means of the trial and error method.

Now that a creditable body of knowledge has been assembled, organized, and classified, and has been given practical tests in order to afford guidance to health organizations and a scientific basis for sound courses in public health, the time seems to be ripe for gradually placing the health service definitely on a professional basis. The transition can not, of course, be sudden. In medicine and in law the change from the apprenticeship type of training to the ordered university course was gradual. Experience has already demonstrated that, of all the professions, medicine comes nearest to supplying the basic knowledge upon which efficient health service can be founded, but it has demonstrated also that medicine alone is insufficient. Knowledge in the fields of engineering, statistics, epidemiology; economics, and education, is also essential. Moreover, the knowledge, from whatever source derived, has to be adapted and applied to health conservation from the community standpoint. Failure on the part of executives or boards, and on the part of the public, to understand that public health is a technical service for which special training is necessary, has retarded progress and at times has led to inefficiency and waste. Fortunately there is a trend—steadily gaining headway—toward placing public health service and its personnel, composed of medical health officers, sanitary engineers, statisticians, epidemiologists, and public health nurses, etc., on a professional basis, free from the injurious influences of politics.

The carrying out of this principle raises questions, on the one hand, as to conditions regulating appointment, service, tenure, and compensation, which would tend to attract and to hold competent personnel, and on the other hand as to how the appointing authority can distinguish between the trained and the untrained, the qualified and the unqualified.

The criteria by which the appointing authority and the public can distinguish the qualified and trained health worker from the unqualified or

untrained worker have not been satisfactorily settled. Certificates or diplomas from recognized colleges, combined with successful experience, will to some extent meet the situation. However, since the health worker must have special training in public health, in addition to training in medicine, engineering, or nursing, steps are now being taken in a few places to set up definite qualification standards for each group or class of health workers. Safe, intelligent, and efficient service in the protection of the public health is the objective. The public and the taxpayers are entitled to protection against unqualified health workers. There is discussion in public health circles with regard to the establishment of a national qualifying agency similar in character to the National Board of Medical Examiners. Whether a national or state basis or both will be adopted in creating agencies to pass upon qualifications of health officers and other health workers, I hesitate to predict, but I feel sure that the growing interest in professional education will lead to some plan that will safeguard the public.

The program of the health department should be sound. It should be based upon a thorough survey of the health problems of the community to be served. Careful consideration should be given to the relative importance of these problems as well as to the steps which, in the light of available knowledge and funds, can be taken to solve each of them. All the activities to be undertaken should be listed and classified. In a local health department, for example, the duties of the health officer should be listed separately; likewise those of the nurse, the sanitary officer, and the office assistant. The work to be undertaken by each member of the staff each week, month, or year should be projected as far as practicable into the future so that the schedule will place emphasis on problems according to their importance and according to the season of the year when the work can be done most effectively. The trained health officer will find the task of laying out the program reasonably simple. He can prepare blanks on which to keep records of the work done by each member of the staff and show the collective results achieved.

Those of you who have visited health organizations which have not defined their problems, formulated their programs, and recorded their activities and results, know how poor an impression they create and how unfavorably they compare with an organization that is operating intelligently and in a systematic way. Evaluation of results renders record-keeping necessary. The records should be of such a character that they reveal results in terms of health and lowered death rates. Systems have been devised which translate dollars into activities, but a satisfactory method for translating activities into convincing evidence of better health and greater physical efficiency has not yet been perfected. Influence on the mortality statistics is the measure most often applied, but as a method this fails to reflect the value of the work in important respects and leaves much to be desired.

†Notes of Dr. John G. Fitzgerald.

The cost of health services varies widely. The amount necessary for the state or central government to set aside for health work will depend somewhat upon the extent of the health service provided by the local governments. In general, the central or state health services of progressive states spend yearly 20c to 80c per capita. Expenditures by local governments, city or county, range from about 20c to more than \$1.00 per capita; in a few exceptional situations, more is spent. Usually the state shares substantially in the cost of county health services. For a population of 20,000, an expenditure of 50c per capita under the prevailing salary scale will finance what is known as a four-piece unit, that is, a health officer, an office assistant, a nurse, and a sanitary officer. A unit of this type can accomplish a good deal, but the staff is too small to supply a service approaching adequacy. A per capita expenditure of \$1.00 will supply a very good service of a preventive character, which makes no attempt to supply bedside care. With this expenditure, there can be provided a health officer, a clerk, two sanitary officers—one for each ten thousand inhabitants—and four public health nurses, i.e. one for each five thousand inhabitants. Some authorities think a higher ratio of personnel to population is necessary.

The influence of the economic depression on health has not been apparent, if the mortality figures available for 1931 and 1932 reveal actual conditions. There have been no severe death-dealing epidemics, and it may be that the slump in standards of living is not being reflected immediately in the death rates. The death rates from heart disease, cancer, and suicides have definitely increased. Some of the health authorities who are watching trends state that recently the deaths of infants and deaths due to tuberculosis have shown an increase. They believe that even if prosperity should now return, the depression will have an adverse influence on health for some time to come and that there will be an increase in death rates. Surely this is no time for the average family to be called upon to meet the cost of medical care made necessary by sickness which an efficient health department might have prevented.

A committee which for five years has been studying the cost of medical care in the United States reports that for every dollar spent on medical and health service, only 3.3 cents goes for public health work, whereas 29.8 cents goes to physicians, 23.4 cents to hospitals, 18.2 cents for medicine, 12.2 cents to dentists, 5.5 cents to bedside nursing, and the remaining 7.6 cents for other miscellaneous items. No one reasonably aware of the possibilities of preventing much of the sickness necessitating these expenditures doubts the wisdom of enlarging the public health service, which operates entirely in the field of prevention. Compare the record of our 50,285 who were killed or who died of wounds in the World War, with 88,088 persons dying of tuberculosis in the United States in 1930, and the 135,845 infants under one year of age dying in this country in 1931. We know that a large percentage of the infant mortality and of the deaths from tuber-

culosis and from other diseases could have been prevented. Is it not strange that the taxpayer will submit to having only 1.4 per cent of what he expends for the prevention and care of illness applied to the *prevention* of illness, while according to the Committee on the Cost of Medical Care 78.5 per cent goes for the *care* of illness?

Defending the health budget should, theoretically, be easy. It is generally known that diseases such as typhoid, diphtheria, and smallpox can be held in check by preventive measures. Should they become epidemic, the present financial embarrassment of individuals and families would increase. Unless disease prevention is maintained as actively as is possible, the consequences will be disastrous, not only to families, but to the government, because the already enormous costs for the care of the tuberculous, of the insane, and of other unfortunates will continue to increase.

When retrenchment and reduction of appropriations are the order of the day, there is danger that the appropriating bodies will not make distinctions where they should be made. An indiscriminate cutting down of health appropriations may be likened to a nation entering into war before thought has been taken of the consequences in suffering, death, and cost in taxes for generations to come. Gains in the protection of the public health have come slowly. They may not disappear immediately, but like the influences of war, the consequences of indiscriminate curtailment in funds and service will arise in the form of chronic illness, increasing need for institutional care, and a rising death rate, which will continue for a long time to come. Since health service is impersonal in character and since the results to the average citizen are less apparent and less tangible than are services which are applied to him individually, like the treatment of a decayed tooth or the removal of diseased tonsils, he may not appreciate the protection he enjoys through the health service, and as a result he may not work for the retention of the health appropriations as he would if the services were more personal. The taxpayer, experiencing increased difficulty in paying the assessments made on him, is, of course, concerned with having his dollar applied where it will mean most for the welfare of himself and his family. While services other than health must be maintained, the consequences of even a temporary reduction in some of them, I believe, will be less injurious over a period of years than would be a cut in the health appropriations. Of course, it is taken for granted that the money going into health service is to be used for the maintenance of an efficient organization, a sound program, and competent personnel.

PRESIDENT SISK: I want to thank Dr. Ferrell on behalf of the Public Health Association for this excellent paper and assure him we are always glad to have him with us.

We have with us at this time an ex-President of the American Public Health Association and a former Secretary of the North Carolina State Board of Health. I want to ask Dr. Rankin to say a word.

DR. W. S. RANKIN (Charlotte): Mr. Chairman, I appreciate being recognized. I am very sorry that I could not get over earlier in the day to enjoy the discussions which I have been told by a number of my friends were very helpful. It is always a great pleasure to be here, and to be present when Dr. Ferrell returns to his native state. We all feel a great deal of pride in his position in the public health work of the United State, and I might say of the North American continent. I always do enjoy hearing Dr. Ferrell discuss public health and the broader aspects of public health. I am particularly gratified to hear him stress the importance of being careful about making retrenchments at this time, when retrenchments are the order of the day. He has been interested for a long time in advocating some standard qualifications for health officers. He has taken a leading rôle in that movement. I don't know how long it will be before it matures, but it is one of the essential things in the further development of the public health work in this country. (Applause)

PRESIDENT SISK: We will now have the reports of committees. The first is Report of the Committee on the President's Address.

. . . Dr. J. Roy Hege read the Report of the Committee on the President's Address, as follows:

COMMITTEE REPORT ON PRESIDENTIAL ADDRESS

We, the Committee on the President's Address, submit the following report:

Whereas, the President of our Association has most effectively called to our attention the fact that only a portion of the counties of our state are served by definite and adequate health services, and whereas, he further calls to our attention the small amount of public funds expended for health services as compared to the amount spent for roads, schools, and other governmental services. Whereas, we the members of the Public Health Association, fully agree with the principles outlined by our President in a readjustment of expenditures and policies relating to public health administration.

Now, therefore, be it resolved that this association go on record commending Dr. Sisk for his timely presentation of these problems. And be it resolved further, that the members of this association go on record publicly endorsing his policies, and that each of us lend our support and influence to the task of carrying out his suggestions. Be it further resolved, that this association endorse in principle the proposed policy outlined by Dr. Sisk in differentiating between the practice of medicine and the established public health program. We further urge that the State Board of Health take official notice of the situation existing in several counties relative to the enforced practice of medicine by the Health Officers, and

that the State Board of Health use all legitimate means of having this practice discontinued.

DR. J. H. EPPERSON,
DR. C. W. ARMSTRONG,
DR. J. ROY HEGE.

. . . Report was adopted . . .

PRESIDENT SISK: Report of the Committee on Resolutions.

. . . Dr. A. C. Bulla read the Report of the Committee on Resolutions . . .

REPORT OF COMMITTEE ON RESOLUTIONS

Raleigh, N. C., April 17, 1933.

Your Committee desires to make the following report:

In the death of Dr. Clarence A. Shore, February 10, 1933, the North Carolina Public Health Association lost one of its most valuable members. For twenty-five years he was connected with the State Board of Health and director of the State Laboratory of Hygiene. From a very small beginning, a few test tubes, Bunsen burner and a small appropriation, he saw the laboratory grow from year to year to become the very soul of the Public Health System in North Carolina, and which was the pride and glory of his most useful career.

What Dr. Shore has left behind him in our hearts and minds constitutes his real memorial, his honesty, his willingness to help, his reverence for truth—these are the attributes that are worthy of worship and for which he will be held in remembrance.

To know him was to value his friendship, to admire his character and best of all, to love him for those rare virtues that set him apart; his retiring disposition, his shrinking from public and private praise, his adherence to verity and his innate passion for the truth, the beautiful and the good.

The 1933 General Assembly has designated for all time that the institution, which he served so well and which represents his life's work, shall be called "The Clarence A. Shore State Laboratory of Hygiene."

We wish to thank the officials of the Hotel for the courtesies and privileges extended to the Association.

A. C. BULLA, *Chairman*,
R. S. MCGEACHY,
T. C. BRITT.

. . . The report was adopted . . .

PRESIDENT SISK: Next thing on the program will be the election of officers for the ensuing year. Do I hear a nomination for President?

DR. R. S. MCGEACHY: I want the privilege of placing in nomination my old friend and neighbor, and college mate, Frank M. Register.

... The nomination was seconded ...

PRESIDENT SISK: Are there further nominations?

... It was voted, upon motion made and duly seconded, that the nominations be closed ...

PRESIDENT SISK: I will ask the Secretary to cast the unanimous vote of this body for Dr. Register for President.

SECRETARY MITCHELL: Mr. President, I am very happy at this time to cast the vote of the North Carolina Public Health Association unanimously for the election of Dr. F. M. Register for President of this Association for the ensuing year.

PRESIDENT SISK: Nomination for Vice-President.

DR. BROADWAY: I rise to nominate Dr. Z. P. Mitchell for Vice-President.

... The nomination was seconded ...

PRESIDENT SISK: Are there further nominations?

... It was voted, upon motion made and duly seconded, that the nominations be closed ...

PRESIDENT SISK: I will ask the Secretary to cast the unanimous vote of this body for Dr. Mitchell for Vice-President.

I declare Dr. Mitchell elected. And now that we have elected Dr. Mitchell Vice-President, that vacates the office of Secretary. We will entertain a nomination for Secretary.

DR. MITCHELL: I will put in nomination the name of Dr. D. E. Ford for Secretary.

... The nomination was seconded ...

PRESIDENT SISK: Further nominations?

... It was voted, upon motion made and duly seconded, that the nominations be closed ...

PRESIDENT SISK: I will ask the Secretary to cast the unanimous vote of this body.

SECRETARY MITCHELL: Again I am very happy to cast the unanimous vote of this Association for Dr. D. E. Ford for Secretary, and I now declare him the Association's Secretary.

PRESIDENT SISK: I will ask Dr. Carlton and Dr. Hudson to escort the new President to the Chair.

... President-elect Register was escorted to the Chair ...
(Applause)

PRESIDENT REGISTER: Gentlemen, I certainly appreciate this honor very much and I hope that the organization will stand behind me. You have made me President, now help me out. I certainly appreciate this honor very much. (Applause)

Is there any other business to come before us tonight? If not, I will declare this meeting adjourned.

... The meeting adjourned sine die at 10:00 P. M. ...

ALPHABETICAL LIST OF FELLOWS FOR 1933 WITH POST OFFICE ADDRESSES

Name	Address	Name	Address
*Abel, J. F., (Hon.)	Waynesville	Aycock, F. M.	Princeton
Abernathy, H. N., (Hon.)	Charlotte	*Aydlett, H. T.	Greensboro
Abernathy, Miles B.	Reidsville	Aydlette, J. P. (Hon.)	Earl
*Abernethy, Claude O.	Raleigh	*Baker, Horace M.	Lumberton
*Abernethy, Wm. Borden	Chapel Hill	*Baker, J. M., (Hon.)	Tarboro
Achard, Lucien	Morganton	Baker, W. E.	Arden
Adams, C. A., (Hon.)	Durham	Bandy, W. G.	Lincolnton
Adams, Charles E., (Hon.)	Gastonia	Banner, A. C., OALR	Greensboro
Adams, Edw. E.	Murphy	Banner, Chas. W., OALR, (Hon.)	—
Adams, J. L.	Asheville		—Greensboro
*Adams, J. R.	Charlotte	*Barbee, G. S.	Zebulon
*Adams, M. R., (Hon.)	Statesville	Barnes, Dempsey	Asheboro
Adams, N. B.	Murphy	*Barnes, J. T.	Asheboro
Ader, O. L.	Walkertown	Barrett, H. P.	Charlotte
*Adkins, M. T.	Durham	*Barrett, J. M.	Greenville
Alexander, James M.	Statesville	*Barron, A. A.	Charlotte
Alexander, Jas. R., (Hon.)	Charlotte	*Basnight, Thos. G.	Stokes
Alexander, M. Janet	Montgomery India (Mecklenburg Co.)	Bass, H. H., (Hon.)	Henderson
*Allan, William	Charlotte	*Bass, H. H., Jr.	Henderson
*Allen, Chas. I.	Wadesboro	*Bass, Spencer P.	Tarboro
*Allen, Jos. A.	New London	Battle, Geo. C.	Asheville
Allen, Sylvia	Charlotte	*Battle, John T. J., (Hon.)	Greensboro
Allen, W. O.	Hendersonville	Battle, N. P.	Rocky Mount
*Allgood, R. A.	Fayetteville	*Beall, L. G.	Black Mountain
*Alyea, Edwin P.	Durham	Beam, H. M.	Roxboro
Amoss, Harold L.	Durham	*Beam, R. S., OALR	Lumberton
Anders, McT. G., (Hon.)	Gastonia	Beasley, E. B.	Fountain
Anderson, Chas. A., (Hon.)	Burlington	Beckwith, R. P.	Roanoke Rapids
*Anderson, R. S.	Rocky Mount	Bell, A. E.	Mooreville
Anderson, Thomas Eli, (Hon.)	—	*Bell, Carl W.	Raleigh
	—Statesville	Bell, F. O.	Burlington
*Anderson, W. B.	Durham	Bell, J. C.	Maysville
Anderson, Wade H.	Wilson	*Bell, G. E.	Wilson
Angel, Edgar	Franklin	Bellamy, Robert H.	Wilmington
Angel, Furman	Franklin	Belton, J. F.	Winston-Salem
Archer, Isaac J.	Black Mountain	Benbow, J. T.	Winston-Salem
*Armstrong, C. W.	Salisbury	Bender, E. L.	New Bern
*Asbill, David S.	Statesville	*Bennett, E. C.	Elizabethtown
*Ashby, E. C.	Mount Airy	Bennett, Jos. H.	Wadesboro
*Ashby, J. W.	Raleigh	Berry, John	Greensboro
Ashe, J. R.	Charlotte	*Best, D. E.	Goldsboro
*Ashcraft, J. E., (Hon.)	Fayetteville	*Best, Henry B.	Wilson
Ashford, Chas. Hall	New Bern	Biggs, Montgomery H.	Rutherfordton
*Ashworth, B. L., (Hon.)	Marion	Bigler, V. L.	Albemarle
*Ashworth, W. C., (Hon.)	Greensboro	Billings, G. M.	Morganton
*Averitt, K. G., (Hon.)	Cedar Creek	*Bitting, Numa Duncan	Durham
*Avery, E. S.	Winston-Salem	*Bittinger, S. M.	Sanatorium
		*Bizzell, M. E.	Goldsboro

*Present at 1933 Meeting at Raleigh.