

THE NORTH CAROLINA CAMPAIGN AGAINST HOOKWORM DISEASE

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The North Carolina Campaign against Hookworm Disease represents only an integral part of the general campaign which is being conducted by the co-operation of the Rockefeller Sanitary Commission and the State Boards of Health in the Southern States. The State work was formally inaugurated when by the joint action of the Rockefeller Sanitary Commission and the State Board of Health the writer was selected as State Director of the campaign and titled Assistant Secretary for Hookworm Disease. The duties of the position were assumed March 12, 1910.

The plan adopted for beginning the work embraced:—

- (1) The determination of the geographical distribution of the disease and the approximate extent of its prevalence by counties.
- (2) The employment of all available agencies to get the present sufferers cured.
- (3) The bringing about of those sanitary reforms necessary to stop soil pollution and thus prevent the further spread of the disease.

In the organization of the forces to prosecute the plan outlined above, we found that the work would have to be executed by three sets of workers, to wit, those in the central office, those in the laboratory, and those in the field. The central office work has been handled by the State Director and a clerk, with occasional clerical help; the laboratory work by microscopists whose number has increased as needs demanded until now eight men give their entire time to the work. They are nominated by the State Director of the Laboratory and when engaged in the Laboratory are supervised by him. The field work is intrusted to physicians, as District Directors, who devote their entire time to the campaign.

The work accomplished during the twenty-one months our campaign has been in progress may, for convenience of description, be considered in periods distinguished one from another by the predominating character of the work pursued.

The first period, dating from March 12th to July 1, 1910, was consumed in collecting data pertaining to the distribution and frequency of the disease in the State and the experience of the State's physicians in treating it; in securing field assistants; outlining a plan of work; preparing literature

for circularizing the State; and in securing the co-operation of the medical profession, the press, and the educational forces.

In collecting data the result of the microscopic examination of six hundred college students, representing seventy-eight of the ninety-eight counties of the State taken at random, was obtained by having specimens furnished by the students examined in the State Laboratory of Hygiene. One-third of this number, residents of fifty-four counties were infected. Letters of inquiry to the nearly 2000 physicians of the State concerning their experience with the disease were sent out. Three hundred and fifty replied, and of this number one hundred and eighty-three had treated approximately 3,200 cases. Thus was obtained in a general way the distribution and prevalence of the disease during this first period. In subsequent periods more than one thousand orphans, more than one thousand militiamen, and approximately twenty thousand school children, all taken at random, were similarly examined microscopically and the results recorded by counties. Moreover, more than one-third of the physicians in the State have now treated the disease and given us the benefit of their observations and experience. The results of this investigation therefore afford reliable data for indicating the distribution and prevalence of the disease. In ninety-nine of the one hundred counties of the State the disease is now known to be more or less prevalent.

The second period covers July and August of 1910, and was principally devoted to reaching doctors and public school teachers, and to having examinations made of the State militiamen by regiments during the encampments, and of children in the various orphanages of the State. Three splendid physicians, especially equipped for the work undertaken, entered the service in July, and devoted their time chiefly to reaching sixty county teachers' institutes, attendance on which by the teachers is required by law. At each institute lectures on the disease were delivered, the worms exhibited, the ova demonstrated with the microscope, and the essentials and value of sanitary privies emphasized. Doctors were interviewed and urged to join in the work. During this period, too, much progress was made on the infection survey, and approximately 4,300 teachers and a large number of physicians, editors and laymen were acquainted with the work. Through the mails, our Field Physicians, teachers and superintendents of education, our literature and circular letters were beginning to find their way into every county of the State. This general line of work was pursued until the public schools began to open in September.

The third period of the campaign corresponds in time with the scholastic year beginning in September, 1910, and ending in June, 1911. During this time each Field Physician, working with and through physicians and teachers, endeavored to reach the children in the schoolroom and through the children the patrons. Besides lecturing to the school, the Field

Physicians would leave fecal containers and literature with the children to be carried home, with instructions that on the following day a specimen of feces be brought to be forwarded to the Laboratory. Splendid coöperation on every hand was had in the work. In going from school to school, note was taken of the sanitary conditions found at the schools, churches and especially the homes.

With the information thus obtained sanitary and infection surveys have been made. The sanitary survey is based on the average sanitary value of the privies found at not less than one hundred rural homes in a county taken at random, each type of privy to be found having a fixed sanitary value expressed in percentages. The infection survey is based on the microscopic examination of not less than two hundred rural school children, ages six to eighteen, inclusive, taken at random for each county. Sanitary surveys have been completed in 45 counties, and in 23 of them the infection surveys have been completed.

With the beginning of this period the State, then composed of ninety-eight counties (now one hundred), was divided for convenience in distributing territory to the Field Physicians into nineteen sanitary districts. To Dr. C. F. Strosnider was assigned Dist. No. 6, composed of five eastern counties in the Tidewater section; to Dr. B. W. Page Dist. No. 12, made up of five central counties in the Piedmont section, and to Dr. C. L. Pridgen Dist. No. 16, embracing five western counties in the mountain section. With this distribution of workers a thorough knowledge relative to the disease in the three geographical sections of the State was obtained.

May and June of this period represent something of a transition from the schoolroom work previously pursued to that being followed at present. It was used to reach a number of schools and teachers' institutes, and in making infection and sanitary surveys in counties taken at random. On May 1st, Dr. P. W. Covington entered the service as a Field Director, and, like the other three physicians, industriously applied himself to the work in hand.

The fourth and present period dates from July 1st, and has been characterized by the operation of state and county dispensaries for the free examination and treatment of the disease. The dispensaries were successfully operated first by the Porto-Rican Anemia Commission, and later, during the present year, in Mississippi and Alabama gave highly satisfactory results. In North Carolina since July their operation has been marked by splendid accomplishments.

To begin this phase of the work, the counties of Robeson, Sampson, Columbus and Halifax, all in the eastern part of the State, where the infection is heaviest, were assigned to Drs. Page, Strosnider, Pridgen and Covington respectively. Each man set to work to secure the written endorsement for the proposed work of the County Boards of Health and of Edu-

cation, the County Superintendents of Health and of Schools, and of every practicing physician in the county. These endorsements were presented to the Board of County Commissioners with a request that it make an appropriation of from \$200 to \$300 to be used in defraying the costs of drugs, publicity work, and the traveling expenses of a microscopist to assist the physician in charge. Each man secured his appropriation, and soon the dispensaries were opened. They were made popular, and during the first thirty dispensary days 12,500 treatments were administered. The commissioners and other authorities of nearby counties were invited to investigate by visiting, or otherwise, the dispensary work. They were impressed, because with moderate effort twenty-five counties (see map) have now made provision for having the free dispensaries.

The latter part of September, Dr. T. E. Hughes entered the service. He and three microscopists are paid out of a \$5,000 appropriation secured from the State for the campaign. Consequently dispensaries are now simultaneously operated in series of five counties, instead of four. Up to this time the dispensary work has been completed in thirteen counties, is in operation in five counties, and there are now on the waiting list seven counties.

The dispensary work is conducted in the following manner: Five widely separated points in a county are selected. At each point an available building, usually a public schoolhouse, is secured for the dispensary. On advertised days of the week the Field Physician and his microscopist spend at least six hours at each dispensary. On corresponding days of the four to six subsequent weeks that the county work continues the dispensaries are similarly opened. Thus people in every section of the county are afforded an opportunity weekly for examination and treatment until the number of successive treatments needed to effect cures have been received. The people assembling at the dispensaries, in addition to being examined and treated, are lectured to and supplied with pamphlets on the disease and the sanitary privy.

The masses of the people are thus educated to know the importance of the disease, its recognition, cure and prevention by actual demonstration. They bring in specimens of feces, see the examination made, and perhaps recognize the ova, see the worms after treatment, and as a result of the cure undergo marked transformation in their physical and mental conditions. In short, the sufferers are being cured and the right kind of public sentiment is being created to put an end to soil pollution and other unsanitary practices. After the dispensaries are running it is not unusual to treat on the average one hundred people daily at each dispensary. In some counties the boards of education have passed orders for the building of sanitary privies at all public schoolhouses. These where available, are

pointed out to the people as models, and they are encouraged to build and use them at their homes.

The foregoing description has emphasized those activities which have characterized each of the four periods of our campaign. Our efforts have by no means solely confined to them. Time will not permit an account of many interesting phases and incidents of our endeavors. I trust, however, that a brief general summary of what our daily records show may convey some idea of the entire scope of the work.

Of the 1,879 physicians in the State 1,290 have been interviewed; 1176 have given written accounts of their experience with the disease; 702 have circulated literature concerning it; and 816 of them have reported treating 24,315 cases of the disease. These, added to the 22,333 cases treated since July 1st in dispensaries, total 46,648 treated cases.

The State Association of County Superintendents of Schools has formally endorsed our work, probably three-fourths of the 10,000 public school teachers have received our literature; 8000 of them have been lectured to; 700 schools have been visited, and approximately 25,000 school children have been microscopically examined.

Short articles have been supplied to each of the two hundred and twenty newspapers at intervals of one to three weeks, and have generally been published. In counties having the dispensaries, illustrated pages have been published, and posters and handbills broadcasted.

Approximately 22,355 circular and personal letters and 224,179 bulletins, pamphlets and leaflets have been distributed.

The types of privies at 15,500 homes, 1050 schoolhouses and 500 churches have been inspected, supplying complete sanitary surveys in 4 counties.

One hundred eighty public lectures have been delivered to about 19,592 people; 36,387 people have had microscopic examinations for the infection made. Since July 1st, in round numbers, \$600 worth of thymol at wholesale prices has been dispensed.

The county superintendents of health are beginning to devote more time to this disease and to the general medical inspection of school children, and to the sanitary inspection of school premises.

In short, the people are having their eyes opened. They are beginning to appreciate the meaning of the disease, and are actively joining in the warfare against it. They realize that the success of the campaign means more than the eradication of a single disease. Skepticism and squeamishness are rapidly disappearing. Backed by this evidence we are convinced, even though the duration of our campaign is not to be numbered in days or months, that sufficient momentum has already been gained to insure the rapid and final eradication of hookworm disease.