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SANITARY SURVEY OF THE SCHOOLS OF ORANGE COUNTY, VA.

REPORT OF AN INVESTIGATION BY THE VIRGINIA STATE BOARD OF HEALTH, THE DEPARTMENT OF EDUCATION OF THE UNIVERSITY OF VIRGINIA, AND THE VIRGINIA STATE DEPARTMENT OF EDUCATION

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, December 16, 1913.

SIR: Any information about the rural schools of any part of the United States, carefully collected and so arranged as to offer any help toward the solution of the problem of their improvement or to arouse the interest of the people or their representatives on school boards and in legislative bodies, should be given the widest possible publicity. This is especially true when the information refers to the health of the children in the schools, to the condition of houses and grounds, and to the school regimen affecting health. For this reason I recommend that the manuscript transmitted herewith embodying the results of a comprehensive study of the health conditions in the schools of a typical rural county of the Southern States—Orange County, Va.—be published as a bulletin of the Bureau of Education for distribution among rural-school officers and teachers.

This survey was made by competent men under the direction of the Virginia State Board of Health, the department of education of the University of Virginia, and the Virginia State Department of Education, the United States Commissioner of Education being consulted as to the plan of it before it was undertaken. The manuscript was prepared by Dr. Roy K. Flannagan, director of inspections of the State board of health.

It will, of course, be clearly understood that no statement of conditions in this or any publication of the results of any similar school survey is to be taken as a reflection on the community in which the survey is made. The very purpose of the survey presupposes a typical community in which the conditions are not worse than the average conditions throughout the entire section.

Respectfully submitted.

P. P. CLAXTON,
Commissioner.

The SECRETARY OF THE INTERIOR.

A SANITARY SURVEY OF THE SCHOOLS OF ORANGE COUNTY, VA.

INTRODUCTION.

In January, 1913, Ennion G. Williams, M. D., commissioner of health of Virginia; Hon. Joseph D. Eggleston, retiring superintendent of public instruction (at whose suggestion the work was begun); R. C. Stearns, his successor; and W. H. Heck, Ph. D., professor of education in the University of Virginia, projected an intensive survey of the white and colored schools and school children of Orange County, Va.

Roy K. Flannagan, M. D., director of inspections of the Virginia State Board of Health, was placed in charge of the purely rural investigation, and two members of the Rockefeller Sanitary Commission, Dr. W. A. Brumfield and Dr. H. A. Lickle, assigned to hookworm investigation, were detailed to assist him. Dr. Heck secured the voluntary services of Dr. H. S. Hedges, Dr. R. L. Compton, and Dr. J. C. Flippen, of Charlottesville, members of the faculty of the University of Virginia medical department, and Marvin Harris, D. D. S., of Orange, who made inspection of all of the consolidated schools. Mr. C. P. Cowherd, district superintendent of the schools of Orange, also rendered valuable service in smoothing the path of the inspectors and every teacher in the schools visited cordially cooperated.

The investigation was designed to cover the physical condition of the children in attendance on the schools, the enrollment, the proportional attendance, the size, equipment, and appearance of buildings and grounds, heating and lighting arrangements, water supply, and sanitary conveniences. Data along collateral lines were also gathered, and the pertinent portions are included in the report.

Chapter I.

THE SETTING OF THE SURVEY AND EXPLANATORY NOTE.

Explanation.—Lest a wrong impression be created by the statement of the bald facts of this report, it should be said with emphasis in the very beginning that, however gloomy the situation appears, the dawn of better things has already broken in Orange, as it has in every other part of Virginia.

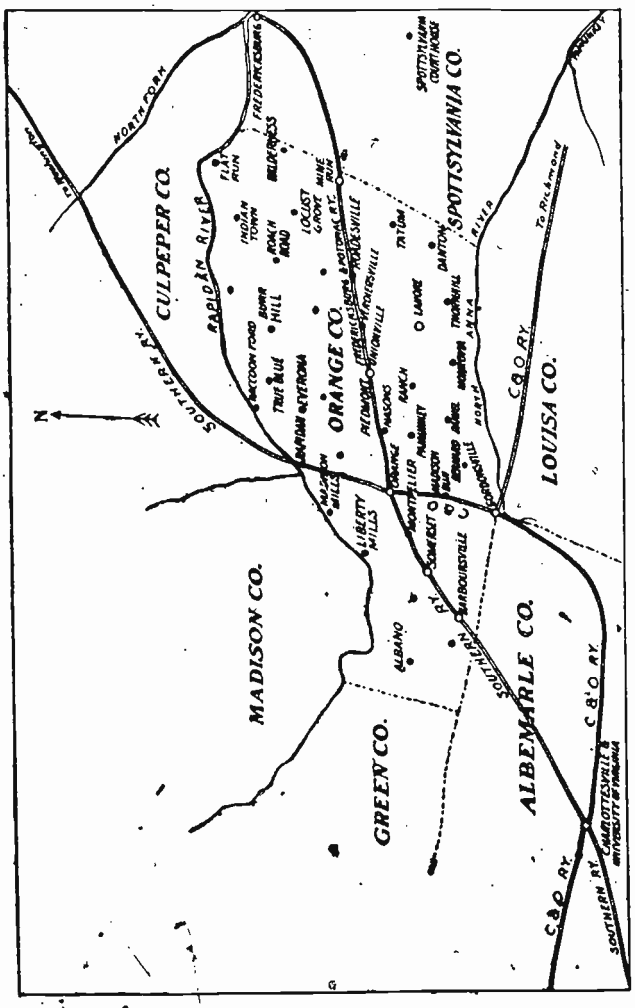
About eight years ago the State board of education of the State adopted a liberal and far-reaching school policy, and each succeeding legislature since has upheld this policy to the limit of State finances. A free hand has been given to the administrators in the development of their plans, and every corner of Virginia is showing definite and solid improvement in relation to the school situation.

A careful examination of the figures submitted as to Orange reveals the fact that nearly three-fourths of all of the white school children recorded are even now housed in buildings of a good type, with modern equipment. It is the hope of all who have taken part in this investigation that the publication of their findings may hasten the day when the remoter sections of all our counties shall be furnished the same sanitary and serviceable school facilities as the more populous portions now enjoy.

The scene of the survey.—The county of Orange was chosen primarily because of its average character. It is near the center of the State, moderate in size, with fairly good roads, having a strictly American population, about evenly divided as to whites and negroes. It is almost wholly rural, with but few very rich or very poor people in all its boundary. It is traversed by two main trunk lines of railway—the Chesapeake & Ohio and the Southern. From the county seat, Orange, there is also a narrow-gauge railroad, the Piedmont, Fredericksburg & Potomac, running due east to Fredericksburg, 36 miles away.

Orange County is 38 miles long, and though very irregular in its outline averages 9 miles in width. It is in the Piedmont section of Virginia, its western portion being mountainous and its middle hilly and rolling. The eastern end, however, flattens out as it approaches the Rappahannock River and is included in The Wilderness, where the heaviest fighting of the Civil War took place.

Some of the schools, notably "Wilderness" and "Old Mine Run," are located upon battlegrounds whose names are familiar to all. Children now play over ramparts and rifle pits overgrown with pines, but almost as distinct as they were 50 years ago, when the soldiers



MAP OF ORANGE COUNTY, VIRGINIA.

of Grant and Lee contended there. Lovers of history can not fail to take a deep interest in the fate of these little American soldiers of peace, who are seeking with inadequate facilities, albeit amid historic surroundings, to fit themselves for "victories of no less renown" than those their fathers won.

Population—Density and distribution.—The census of 1910 gives the population of Orange County as 13,486, and there are no towns within its borders which are accredited with as many as 1,000 people; Orange Court House, the county seat, has only 674, and Gordonsville, the next in size, 564. No other place except Somerset has more than 300 people.

Chapter II.

ORGANIZATION AND METHODS.

Apportionment of the work.—In the hope that the volunteers from the university, 25 miles away, would be able to complete the inspection of all of the white schools, the director and his aids from the State board of health were at first charged only with the inspection of the negro schools. There were 20 of these scattered at intervals over the county from 5 to 7 miles apart. It became apparent, however, as the work progressed that the volunteer corps of inspectors, consisting, as it did, of busy professors, physicians, and dentists who could not give continuous service, would be unable to do more than inspect the 7 high schools of the county. This obliged the force of the State board of health to return over much the same ground already traversed in order to inspect the 22 one-room white schools.

Organization and paraphernalia.—Orange Court House, the county seat, which lies at the junction of the Chesapeake & Ohio and Southern Railroads, was chosen as headquarters.

From the superintendent of schools of the county a list of the schools was obtained, with a description of the best routes of travel. At the outset it was found that the railroads could not be used, as the inspections had to be made between the hours of 9 a. m. and 3 p. m., and railroad schedules are not designed for the close connection necessary to the purposes of rural-school inspectors. A two-seated vehicle, with a pair of stout horses and a driver familiar with the county, were therefore engaged. In this carriage was placed a set of office scales with measuring-rod attachment, a suitcase containing tongue depressors, sterilizing pan, towels, head mirror, throat and nasal speculums, Snellen's eye-testing cards, containers for hookworm specimens, and a quantity of literature of the State board of health dealing with farm sanitation and the various infectious troubles of childhood. A stereopticon and acetylene tank were also carried to use in illustrating talks to patrons whenever it was possible to get them together. Each doctor was furnished with an ordinary stenographer's notebook lined in pencil for his particular part of the examination. The driver, an intelligent negro (William Ellis), was also furnished with a book, for he was placed in charge of the weighing and measuring of the pupils, some advanced pupil acting as recorder for him.

SPECIMEN PAGE FROM NOTEBOOK.[1]

Madison School, white, No. 90, Jefferson P. O., Mary Adams, teacher.

Name of pupil and of guardian.	Sex.	Age.	Height.	Weight.	Eyes.	Ears.		Throat.		Nose.		Teeth.	Glands.	Skin color.	Nutrition.	Eruption.	Previous disease.	Heart.	Lungs.	Intestine parasite.	Vaccinated.	Remarks.
						R.	L.	R.	L.	R.	L.											
			Ft. in.	Lbs.	R. L.	? Wax.	? Wax.	T+ A−	T− A−													
Boys.																						
Jesse Wilson	M.	11	4 7	71	20/20 20/20	Normal.		T+ A−	T− A−			1 permanent.	Posterior cervical.	Anemic.	Poor.		Whooping cough, measles.			Hookworm, roundworm.	Yes.	
James Wilson (F.)																						
Robt. Mann	M.	7	4	40	20/20 20/30	Normal.	Normal.	T+ A+	T+ A+			6 temporary.			Poor.		Measles.			Roundworm.	No.	
D. D. Wilson (F.)																						
William Arthur	M.	10	4 6	60	20/20 20/20	Normal; wax.	Normal; wax.	T+ A+	T+ A+	Deviation.			Anterior cervical.		Good.		Measles, mumps.				Yes.	
H. H. Arthur (F.)																						
Dan Bailey	M.	10	4 6	70	20/20 20/20	Normal.	Normal.	T− A−	T− A−					Anemic.	Fair.		Chicken pox, whooping cough.			Hookworm, roundworm.	No.	
C. B. Bailey (P.)																						
Donald Baxter	M.	13	4 11	81	20/20 20/20	Normal.	Normal.	T+ A−	T+ A−					Anemic.	Fair.		Chicken pox, whooping cough, mumps.		? Bronchial breathing.	Hookworm, roundworm.	No.	
C. A. Baxter (F.)																						
Clarence Baxter	M.	14	5 3	101	20/20 20/20	Normal.	Normal.	T− A−	T− A−						Good.		Whooping cough, measles, chicken pox.			Hookworm, roundworm.	No.	
C. A. Baxter (F.)																						
——																						
Artie Bass	F.	8	1 2	50	20/20 20/20	Normal.	Normal.	T− A−	T− A−				Posterior cervical.	Anemic.	Fair.		Whooping cough, measles, chicken pox.			Hookworm, roundworm.	No.	
C. B. Bass (F.)																						

Baby Rivers[1]	F.	7	8	60	20/20	Normal.	Normal.	T− A+	T− A+		Tempo-rary all bad.			Good.	Measles.		Round-worm.	Yes.
John Rivers (F.)					20/20													
Bertha Walter	F.	5	3	8	20/30	Normal; wax.	Normal; wax.	T+ A+	T+ A+		Tempo-rary teeth; bad.		Anemic.	Good.	Measles.		Round-worm.	No.
James Walter (F.)				45	20/20													
Frances Casey	F.	6	4	60	20/20	Normal.	Normal.	T+ A+	T+ A+				Postcervical.		Measles, whooping cough.			No.
L. H. Casey (F.)					20/30									Good.				

[1] The names are fictitious.

Methods.—On arriving at a school the instruments were placed on the stove to boil, and a preliminary talk was given to the pupils in which emphasis was laid upon the inspectors' function as physicians whose business consists in stopping the causes of sickness rather than in giving medicine for ailments which ought never to be. After a brief and simple explanation of what was proposed, the scales were set up near the door and the weighing and measuring commenced. A chair or bench was placed near a window and, with a head mirror and his speculums ready, one of the doctors made the inspection of the throat, nose, ears, and teeth. The boys were taken first, for they were usually less nervous, and their readiness to submit invariably reassured the girls.

Another doctor hung up the Snellen's card. Ability to read the line of letters marked 20 at 20 feet roughly indicates normal vision. One eye at a time was tested, a book or card being placed over the other, both being open. Normal vision was expressed fractionally as $\frac{20}{20}$. The eye which can only read the line marked 30 at 20 feet is expressed as $\frac{20}{30}$, and is but two-thirds of normal. The ability to read only the 40 line indicates $\frac{20}{40}$ vision or one-half of normal sight. The eye man was required also to take the name and age of the child, the name and address of parent or guardian. He also tested the hearing by a watch at from 18 inches or 2 feet for normal hearing, or a whisper at 20 feet if the room was sufficiently quiet.

The other assistant required the boys to remove their coats and loosen their collars, so as to get the stethoscope bell over the apices of the lungs. He also listened to the heart, recorded what he found abnormal about the skin, glandular system, or the general nutrition. He examined as to vaccination and asked questions as to previous sickness from which the child may have suffered. When the boys had thus all passed under the eye and ear of the inspector they were sent to the playground, and the girls, having already been weighed and measured, came in for their inspection.

It may be urged that an examination of the lungs, which only notes troubles at the apices or of the heart, which is made through the clothing, or of eyes by Snellen's card is too cursory and unscientific to be of value. To do more than loosen the collars of the girls in the publicity of a one-room school, even though the boys are excluded, would probably raise such a storm of opposition that the entire inspection for the country would be delayed indefinitely. The data of the lung and heart tests, therefore, are necessarily short of what a real examination in the quiet of an office would show and must be read with that understanding. Certain defects of vision, as well as some adenoid growths, may have slipped through the sieve of this inspection. No apology is offered then for a method which to some may partake too much of the rule of thumb. The contention

is made, however, that the above plan was practical and feasible, and it served to disclose over 75 per cent of the defects which tend to stunt the growth, physical and mental, of the rural child.

Hookworm diagnostic method.—When the inspection of the children was concluded, one of the assistants, usually Dr. Brumfield, gave a short talk to the assembled school on the prevalence, dangers, and means of spread of hookworm infection, asking the cooperation of teacher and pupils in making the inspection complete by including the test for intestinal parasites. Containers for specimens of the bowel discharge, with labels upon them for name and address, were left for distribution to each pupil, and arrangement was made for their delivery the following day to the nearest express office for shipment to the laboratory of the State board of health.

Steps to meet the immediate need.—Stereopticon lectures on public health at six points in the county enabled the inspectors to meet many parents and discuss with them privately the defects discovered in their children. To those parents who could not be reached in this manner a letter was afterwards sent from the State board of health giving them the facts found.

Inspection of building and grounds.—The human side of the investigation being concluded, the inspectors turned to the environment. The room was measured, a sketch of the floor plan was made, locating desks, stove, windows, and doors. Such facts as the method of disposal of body wastes, location and character of water supply and delivery, provision for cleaning and ventilation were all carefully inquired into.

In addition to recording the above facts, if there were points of special interest about the exterior of the building a photograph was taken of it, including teacher and pupils.

The following blank, previously prepared, greatly facilitated the inquiry:

STATE BOARD OF HEALTH.

Commonwealth of Virginia.

SCHOOL INSPECTION.

Date.....

County.....District.....School.....Inspector.....
Nearest P. O.....Color.....Pupils.....Boys.....Girls.....No. Teachers.....
Teacher or Prin.....P. O.....District clerk.....P. O.....
Building, erected.....Material.....Area school grounds.....

Rooms	Pupils.			Size.				Windows.					Ventilation.					
No.	On roll.	Present.	Seats.	Length.	Width.	Height.		No.	Size panes.	No. panes.		Shades.	Top sash.	Vent board.	Fresh air F.	Foul air F.	Jacket stove.	System in use.
1																		
2																		Observed conditions.
3																		
4																		

Sketch arrangement window, desks, and stove in each room:

1 2 3 4

Heating, method.....Kettle on stove.....Efficiency.....
Sweeping: Floors oiled.....Dry or damp.....When.....By whom.....
Dusting: Dry or damp.....When.....By whom.....
Cleanliness: Floors.....Desks.....Walls.....Windows.....

[REVERSE.]

Furniture, sufficient seats ..... How many sized desks ..... Adapted to pupils ..... Other furniture .....
Are desks properly spaced? ..... Source, public or private ..... Pump .....
Water supply: Safe, doubtful, or dangerous ..... Protection ..... Bucket .....
Private supplies: Well, type ..... Depth ..... Protection ..... Piped or carried .....
Spring, type ..... Distance ..... Cooler .....
Sanitary fountain, type ..... Location .....
Water served: Spigot ..... Individual ..... How kept? .....
Bucket ..... Covered .....
Drinking cup, common ..... Disposal .....
Sewerage, public or private system ..... No. ..... Location ..... Condition .....
Closets, water ..... Location ..... Condition .....
Closets, earth, boys, No. ..... Type ..... Location .....
Girls, No. ..... Type .....
How often ..... Under direction of .....
Cleaning, by whom .....

Chapter III.

RESULTS OF THE INSPECTION.

Much of the data which follow applies only to the one-room white schools and to the colored schools, since the questions of the volunteer inspectors who examined the white schools did not have quite the scope of the State board of health inquiry. A glance at the statistical table will show where the difference lies.

School population, enrollment, and attendance.—The school population of Orange County is recorded as 4,008, and upon this basis State school funds are apportioned to it; but the inspectors were unable to find from the records of the schools more than 2,609 enrolled. From the face of the returns, therefore, it would seem that 1,399 children were absolutely avoiding the public schools of this county; but worse than this, the inspectors found only 1,793 present in the 49 schools visited. If education in rural Virginia is taken with so little seriousness by parents and children as this state of things seems to indicate, something very radical must be done to meet the situation. If 30 per cent of the whites and 40 per cent of the colored enrollment are absent habitually from schools having only a six months' session, the future of such communities must be socially very dubious, for the percentage of ignorance which a continuance of these conditions must bring forth will act as a clog to all progress. Perhaps the location of so many of these school buildings in uninviting places and the absence of anything attractive either outside or inside of their walls may furnish the clue to much of this indifference.

Physical defects of the eyes.—Out of 315 white children examined in the one-room schools 73 per cent were of normal vision; in the colored schools 651 were examined, and 77 per cent were normal. In the graded white schools, out of 659, 83 per cent were found normal. It would be hasty to conclude that the better-arranged lighting in the modern consolidated school was responsible for the better eyesight of the pupils there, though that doubtless does figure to some extent. The modern school building in rural Virginia is of too recent introduction to have brought about such a marked difference in eye conditions as the figures show.

The improved sanitation in the larger centers of population, where the consolidated schools are usually located, is bound to result in less anemia and malnutrition, and consequently better eyesight than in the back districts where little attention is paid to these matters. Serious eye defects are more prevalent in graded schools attended by older children, being 7 per cent of the total against 4 per cent among

the purely rural white and colored schools. This fact must be accounted for on the ground that serious eye defects increase with age, while minor defects of sight disappear with growth and body development.

Hearing.—It would not be wise to put too much dependence in the figures given with regard to hearing, since the consolidated schools had the advantage of a room set apart for examination, and the specialists making the tests necessarily detected defects not easily discovered in a one-room school full of lively youngsters. The white and colored rural schools, it will be observed, showed 4½ per cent defective hearing, while the village schools ran up to 12½ per cent, a difference out of all reasonable proportion.

Enlarged tonsils and adenoids.—It is noticeable that the purely rural and the white village schools show about the same proportion of enlarged tonsils, namely, 30 and 31 per cent, respectively. The cause of the large proportion among the negroes, 40 per cent, does not appear on the surface and should be checked up by the results of other investigations. This should also be done with reference to the marked discrepancy between the results of the examination for adenoids in village and country schools, since the consolidated schools showed only 26 per cent adenoids, while the white one-room schools had 40 per cent and the colored schools 37½ per cent. Some of this may be accounted for on the ground of the more mature age of the high-school children, but this ought also to show materially in the tonsils, which it distinctly does not.

Teeth.—Examination of the teeth revealed a really serious state of affairs for those children to whom it would seem that dentists were most accessible, namely, those living in proximity to the large village schools, for these showed 86 per cent with defective teeth, 63 per cent of these defects being in their permanent teeth. The rural white schools showed 47 per cent defective, a little more than half of these having permanents involved. The negroes were much better, only 28 per cent of them having bad teeth, though 58 per cent of this number had permanent teeth in bad condition.

To what extent the malnutrition so prevalent in country children is due to bad teeth it is impossible to estimate, but dental defects must unquestionably have a decided bearing. The rapidity with which the teeth of the present generation are decaying is raising in the minds of many thoughtful men serious apprehensions of what the future may bring forth if the causes of this rapid decay are not discovered and guarded against.

Glands.—Glandular enlargements of the neck are more than twice as prevalent among negroes as among whites, the proportions being 25 and 12. Strumous affections and the manifest susceptibility to throat troubles, indicated by undue proportion of enlarged tonsils among negroes, account for this excess of enlarged glands. The moral

delinquencies of colored people make them peculiarly liable to blood diseases, of which glandular enlargements are a prominent symptom. To bear out this assertion, questions put to the teachers of the negro schools developed the fact that 8.2 per cent of the pupils were illegitimate.

Malnutrition and anemia.—It was peculiarly startling to note the large percentage of poorly nourished children in this part of the country which from climatic and other natural advantages should be as healthful as any locality on the globe; 25 per cent of the whites and 37½ per cent of the colored were below par in this respect; 30 per cent of the white rural children and 5 per cent of the colored had a plainly visible anemia. It will be apparent to all that the diagnosis of anemia in negroes is not as simple a matter as it is in whites. Therefore the finding of 5 per cent may as well be ignored, since there were easily five times that. It is worthy of note that there were twice as many anemic boys as girls. To those familiar with the part hookworm plays in causing anemia in southern children this difference between boys and girls is not surprising. It is simply a matter of the earlier use of shoes by girls, who thus cut off, by protecting their feet, the reinfection to which the bare toes of boys are subjected.[1]

Vaccination and previous sickness.—Sixty-nine per cent of the children of this county showed good vaccination scars. Considering the fact that there had been no outbreak of smallpox in Orange for years to frighten the people into vaccinating their children, this high percentage of protection speaks well for them.

Questions as to what sickness the children had previously suffered, developed that 14 per cent of the whites and 28 per cent of the negroes had never been sick at all. Good health, so far as the whites were concerned at least, proved a little less contagious than mumps, which had a record of 16 per cent. Whooping cough took the biggest toll, 57 per cent of them having passed through its convulsive terrors. Measles had spread its red and all-enveloping torture blanket over 42 per cent of them. Chickenpox had affected 28 per cent, but 2 per cent only had had diphtheria and scarlet fever, and 1½ per cent typhoid fever; 30 per cent of the white children and 5 per cent of colored had suffered from pneumonia, yet only 2 per cent of the whites showed active lung disease, while 5 per cent of the negro

[1] In order that this allusion may be better understood by those not familiar with the life cycle of the hookworm, it should be stated that this parasite is a white worm which, when full grown, is about half an inch long and about the size of No. 40 spool cotton. Its eggs, microscopic in size, are deposited upon the soil in the excrement of infected people and there hatch in the open air. The little worms are so minute and so numerous at this stage that they readily penetrate the skin of barefooted children. Entering the blood current they eventually reach the intestinal canal, where they fasten themselves to the mucous membrane and suck the blood. They inject at the same time a poison which intensifies the ill effects of their presence.

Hookworms do not multiply in the body, and the direct damage that each worm can do is limited to its lifetime, since the eggs must be hatched outside. Reinfection is generally necessary in order to cause serious symptoms. It is thus readily seen that soil pollution, in the South particularly, is little short of a crime.

children were thus affected. Heart disease was a negligible quantity, only six-tenths of 1 per cent being found in the white children and one-tenth of 1 per cent in colored children.

With universal knowledge of the contagiousness of the so-called children's diseases, with the disabilities and death resulting from their ravages in almost every family circle, t would seem that the "common sense of most" would express itself better than it does; but children are sent by their elders into the environment of contagion without a protecting hand to shield them, except in the large centers of population. The record shows that the country child needs medical inspection and proper safeguard more than his cousin of the city. To devise ways and means for providing them therefore is the part both of humanity and of patriotism.

Intestinal parasites. The examination for intestinal parasites which was conducted as part of the investigation throws a broad and significant light upon the alarming percentage of poorly nourished and anemic children observed. Not all of the rural schools furnished specimens for examination, and of those that did, not all the pupils were represented. Yet the laboratory reports of the whites showed 25½ per cent infection. The colored schools were but 19 per cent infected. The consolidated schools, as was to be expected from the better sanitary environment of the pupils, showed a lower percentage, 14½ per cent.

A division of these positive cases, white and negro, according to years reveals that approximately—

22½ + per cent occur in those under 8 years of age.
34½ + per cent occur in those between 9 and 11 years.
41½ + per cent occur in those over 12 years.

Comparison of the heights and weights of anemic children (many doubtless suffering from hookworm, even though not examined therefor) with the heights and weights of normal children gave the following interesting results:

The average height of—

Normal boys, 4 feet 5 inches; normal girls, 4 feet 6 inches.
Anemic boys, 4 feet 6 inches; anemic girls, 4 feet 7 inches.

The average weight of—

Normal boys, 88.6 pounds; normal girls, 90.6 pounds.
Anemic boys, 66.4 pounds; anemic girls, 62.3 pounds.

A difference of 1 inch of height in favor of the anemic boys and girls, while the weight of the normal boy overbalanced the anemic by 22.2 pounds, and the normal girl outweighed her anemic sister by 28.3 pounds. Here is a problem in child development well worth a more careful study.

The influence of the round worm, too, in the production of anemia would seem from the record to be by no means a negligible factor and is worthy of more attention than it has received.

Chapter IV.

RURAL SCHOOL BUILDING EQUIPMENT AND ENVIRONMENT.

We shall leave out of the following discussions the consolidated graded schools, for in general they represent modern ideas of construction and equipment. Moreover, in every instance they displace from three to six of the little "drab" schoolhouses in the "brush" which long have constituted the only temples of culture for the average farmer's child. It will be seen that all of these rural schools are either of the one-room "old-field" variety or old abandoned tenant houses, churches, or storerooms. One white and one colored schoolhouse had been whitewashed within recent years, and two had once been painted.

Location.—For the most part these schools are located in the midst of woods or on bleak, windswept hillsides, remote from dwellings, beautifully illustrating and preserving in Squeers-like fashion the "splendid isolation" and democratic independence which was the ideal of former times. Education is a thing more or less removed from daily experience; therefore let it be worked into our children in a place apart, a kind of "tobacco bed," as it were; we shall take care to transplant the shoots to the farm when the young idea has sprouted sufficiently. So the institution, with all of its old-time characteristics, still abides.

A contrast.—At only one of all the schools visited was there any attempt to cultivate the æsthetic by rendering the grounds or exterior of the school attractive. One little school on the border of Spotsylvania County, with intrenchments of The Wilderness battlefield 50 yards away, a young pine forest crowding almost to the very door, had a teacher who was creating a spirit among the pupils and patrons of the school which is a prophecy of better things. There was a clean school yard with pebble-lined walkway, jonquils here and there just bursting into bloom; and moreover a big space had been cleared in the pines for a playground, which, under the leadership of their teacher, the scholars used to the fullest extent. Is it a wonder that the children of that neighborhood cried to go to school?

The patrons, too, were backing up the teacher's every request, and real educational work was done. This was one school; 41 other white and colored schools in Orange were pursuing different methods with indifferent success. Only 4 schools had shades in the windows,

and they were colored schools; the average light space, however, was only 48 square feet, or 6 per cent of floor space, and the shades were not the blessing they were meant to be.

In no one-room school were the windows properly arranged. Some even had windows in front of the desks; all had windows on both sides of the rectangular room. In one white school, just erected, the building plan showed no improvement over the rest in lighting or in ventilating. In 40 schools the cubic air space was less than 4,000 cubic feet per school, or 255 cubic feet per pupil. Two schools were in old churches that were big enough for all purposes, and on the February day which found the inspectors there they were certainly airy enough. These two schools are not included in the above figures. Ventilation in all the schools was by windows and doors only. The top window sash could not be lowered for a breath of fresh air in 12 of the 22 white schools inspected nor in 15 of the 20 colored schools; and there was not a vent board in the lower sash of any school, white or colored, in the county.

The old box stove was used for heating in each of the schools. Wood was the fuel used in all cases except in one building near the railroad. No jacketed stove was found in any one-room school. That any effective mental exercise is possible in such places with the stove going full blast is due to the very loose construction of many of the buildings themselves, admitting unauthorized air in devious ways.

Desks and walls.—Out of 42 schools, 32 still cling to the ante bellum unpainted pine-board desks, with an occasional seat low enough for the feet of the little tots to touch the floor. Fourteen schools, including one graded school, had an insufficient number of desks. Two of the schools visited, one white and one colored school, had no desks at all. Forty schools (including two graded schools) had dingy, undecorated walls. Twenty white schools are swept and dusted every school day; fourteen have the floor sprinkled with water first. The use of dustless floor powders, damp sawdust, or oil has not yet reached even the experimental stage among the rural schools of Orange. Eleven white schools are cleaned by the pupils, five by the teachers, and six by both working together. The colored schools are swept daily by the pupils in every case but two, where it is done by the teachers. Eleven out of the twenty use no water during the process. The opportunity for the spread of lung diseases in the fog of dust raised by the children at work with their dry sweeping is complete in every detail.

Water supply and waste disposal.—The water supply of all of the purely rural schools was insufficiently protected. Thirty-seven wells and springs were positively dangerous by reason of opportunities for gross surface pollution, and 18 were more than 200 yards away from

the school. In the 22 white schools there were 14 open water-buckets and 8 coolers; and in the 20 colored schools, 17 buckets and 3 coolers. In 18 white schools and in 12 colored, individual cups were used by the pupils. In several of the schools it was noticed that these cups were hung upon nails driven in the wall under which the name of the owner was written; the cups were also labeled. A good crockery cooler in combination with such a method of handling individual cups and proper discipline would meet the rural water situation admirably, especially in those localities where the source of water supply is far away. The bubbling fountain has not yet reached the country districts of Orange, and unless the schools are better located, they will probably not come into use for a long time.

Waste disposal.—The facilities for the disposal of excreta at the rural schools of Orange County leave much to be desired, and the use or the non-use of those facilities is still more objectionable. Seventeen white and nineteen colored schools had at least one closet, but only four white schools had two sanitary closets, though eleven colored schools were thus provided. There were 18 schools having one or more insanitary privies, 1 of them being a consolidated school, and 6, i. e., 1 colored and 5 white schools, had absolutely none of any kind. It is not, however, upon the closets themselves that the severest strictures should be placed, but upon the very manifest neglect of them by the male pupils. So long have these necessary outbuildings been nonexistent at school and at the farm, that habit, "that molder of the conduct of us all," proves stronger than the mere suggestion made by its unaccustomed presence on the school grounds. The school teacher, usually a young woman, hesitates to instruct and admonish the boys as to the use and care of the closet, and so it ordinarily stands unshielded in its corner, simply an offense to the eye, when it is not to the nose, used only when the weather is too bad to make the woody retreat available. It is in this connection that the visit of a physician to the schools at least once yearly would seem to be a necessity, for all the expense would be justified if the medical inspector did no more than call attention to the dangers of soil pollution and give the boys and girls separately talks upon the proper care of the bodily functions so essential to good health.

Conclusion.—This report of the medical survey of the schools of Orange would lack much of completeness if there were not some statement of conclusions reached and some constructive suggestion offered for the amelioration of evil conditions found.

Staring us in the face with great persistence is the fact of a demonstrated need of medical inspection in the country. What shall be done about it? The answer must be adequate public health organization for the country, joined actively in cooperation with the school authorities in a serious consideration of the physical side of education;

for the time is past when mental and moral instruction can be deemed apart from a thorough appreciation of, and definite training for, physical well-being in the child. State and local boards of health in the South are as yet too poorly supported financially to do much more than scratch the surface of the problem. The initiative must, therefore, be taken by school and civic leagues or other organizations of women or of men who, feeling the need, shall be able to interest physicians in the matter and to get them to take it up voluntarily so as to learn what their own local problem is. When a community comes face to face with the defects of its children, then medical inspection for that community will become a continuing order. It must not be assumed that medical inspection is an end. It is but a beginning. Correction must follow, or the work goes for naught. Parents must be notified, and provision must be made for that large number of parents in every community who must be induced, I might almost say *compelled*, to do a proper part by their children.

To this end a "district visitor" is a factor second only in importance to the inspector himself. This visitor should not be difficult to secure. A tactful person who has already qualified would answer; many communities possess such. Perhaps some popular teacher to whom the wider service in the open air might appeal, or better, if funds become available, a trained social service worker who visits the houses of all, but especially those in out-of-the-way and forgotten corners, could be made to work unmeasured blessings.

The State of Virginia, and the South must have better rural school buildings with better equipment both inside and out; but the greatest need of all is "better" school children, with rosy cheeks and bright eyes, instead of pale faces and vacant stares; children with plump arms and legs, instead of thin and bloodless ones; children whose brains are fed by a rich, red flow of healthy blood, instead of a watery stream poisoned by a leech-like, filth-born parasite. Indeed, the problem is one of the conservation of the raw material which furnishes the grist to the educational mill.

Good school buildings and surroundings, good textbooks, modern curriculums and methods, properly equipped teachers, all of these must come, but first and foremost a live, lively, happy and responsive animal ready with abounding health and mental altertness to absorb the truth in whatsoever guise presented. The machinery to bring about this result must be provided at whatever cost, since the future of our Southland is at stake.

SCHOOL STATISTICS.

	Rural white one-room schools.	Rural colored schools.	Consolidated graded schools.	Total.
Number of schools examined	22	20	7	49
Number of teachers	22	24	31	77
Length of session.....months	6	5	9	
School population of county				4,008
Enrollment	464	1,149	996	2,609
Number present	327	669	797	1,793
Percentage of attendance	70	60	80	70
AGE.				
Average age of boys.....years	11.8	11.3	11.1	11.4
Average age of girls.....do	11.4	11.5	12.7	11.8
Average age.....do	11.6	11.4	11.9	11.6
HEIGHT.				
Average height of boys.....feet-inches	4—7	4—5	4—6	4—6
Average height of girls.....do	4—5	4—6	4—6½	4—6
Average height.....do	4—6	4—5½	4—6½	4—6
WEIGHT.				
Average weight of boys.....pounds	73.0	84 8	92.0	83.3
Average weight of girls.....do	87.1	81.0	87.1	85.5
Average weight.....do	80.5	82.9	89.5	84.4
EYES.				
Number pupils examined	315	651	659	1,625
Pupils eyes normal	230	504	564	1,298
Pupils eyes defective	85	147	95	327
Pupils eyes less than 20/40	74	121	64	259
Pupils eyes seriously defective	11	26	49	86
Percentage eyes normal	73	77	83	77.7
Percentage eyes defective	27	23	14.5	21.5
Percentage seriously defective	4	4	7.5	5.1
EARS.				
Number pupils examined	316	681	659	1,655
Pupils hearing normal	301	644	577	1,522
Pupils hearing defective	14	37	82	133
Percentage hearing normal	95.5	95.5	87.5	92.8
Percentage hearing defective	4.5	4.5	12.5	7.5
THROAT.				
Pupils examined	315	671	515	1,501
Tonsils normal	218	413	355	1,086
Tonsils enlarged	97	258	160	515
Percentage enlarged	30.5	38.5	31	33.3
Adenoids normal	189	419	380	988
Adenoids enlarged	126	252	137	515
Percentage enlarged	40	37.5	26.5	34.7
NOSE.				
Pupils examined	315	671	517	1,503
Pupils nose normal	172	498	303	973
Deviated septum	143	173	214	530
Percentage with deviation	45	26	22	31
TEETH.				
Pupils examined	319	672	554	1,545
Number with perfect teeth	167	483	78	728
Number with defective teeth	150	187	478	817
Number with permanents defective	79	109	303	491
Number with temporaries defective	71	80	175	326
Percentage with defective	47	28	86	53.7
Percentage with permanents defective	53	58	63	58
Percentage with temporaries defective	47	42	37	42
GLANDS.				
Number with enlarged cervical	25	56		81
Number with enlarged tonsillar	13	115		128
Total with enlarged glands	38	171		209
Per cent with enlarged glands	12	25		18.6
NUTRITION.				
Number examined	316	663		779
Number well nourished	237	422		657
Number poorly nourished	79	241		320
Per cent with poor nutrition	25	37.5		41.2

SCHOOL STATISTICS—Continued.

	Rural white one-room schools.	Rural colored schools.	Consolidated graded schools.	Total.
ANEMIA.				
Number pupils anemic	94	34		128
Anemic boys	63			
Anemic girls	31			
Percentage anemic	30	5		17.5
Percentage boys anemic	67			
Percentage girls anemic	33			
ERUPTION.				
Number with acne	6	1	10	17
Number with scabies		16		16
Number with other eruptions			10	10
Per cent with eruption	2	3	4	1.14
VACCINATION.				
Number examined	326	675		1,001
Number vaccinated	207	503		710
Percentage vaccinated	63	74.5		68.7
PREVIOUS SICKNESS.				
Pupils questioned	326	675		1,001
Number reporting none	46	191		237
Per cent	14	28		21
Whooping cough	198	362		560
Per cent	61	53.5		57.2
Measles	143	266		409
Per cent	44	39.5		41.7
Chicken pox	108	153		261
Per cent	33	23		28
Mumps	59	98		157
Per cent	18	14.5		16.2
Pneumonia	30	5		35
Per cent	9	.7		4.8
Diphtheria	12	14		26
Per cent	4	2		3
Typhoid fever	6	12		18
Per cent	2	1.7		1.8
Scarlet fever	6	0		6
Per cent	2	0		1
ORGANIC DISEASE.				
Lungs	6	32		38
Percentage	2	5.5		37
Heart disease	2	1		3
Percentage	.6	.1		.35
HOOKWORM AND DATA IN RELATION THERETO.				
Average number pupils per school	15	16		
Number of schools examined	15	10	4	29
Number of pupils examined	262	447	270	979
Number of boys tested	142	217	128	487
Number of girls tested	120	230	142	492
Number of boys infected	35	51	14	100
Number of girls infected	32	33	25	90
Total infected	67	84	39	190
Percentage boys infected	24.6	23.5	11	19.7
Percentage girls infected	26.6	14.3	18	19.6
Percentage pupils infected	25.6	19.5	14.5	19.65
Boys up to 8 years infected	8	13	4	25
Girls up to 8 years infected	7	6	5	18
Total	15	19	9	43
Per cent	22.5	22.6	23	22.5+
Boys from 9 to 11 infected	15	11	4	30
Girls from 9 to 11 infected	8	10	13	31
Total	23	21	17	61
Per cent	34.3	25	43.5	34.2+
Boys 12 and over infected	12	27	6	45
Girls 12 and over infected	17	14	7	38
Total	29	41	13	83
Per cent	43	48.8	33	41.6+
Total pupils with marked anemia	94	34		128
Average age of—				
Anemic boys	10.9	9.6		10.2
Anemic girls	10.7	9.8		10.25
Anemic	10.8	2.63		10.2
Normal boys	12	11.4		11.7
Normal girls	11.1	11.6		11.35
Normal	11.6	11.6		11.5

SCHOOL STATISTICS—Continued.

	Rural white one-room schools.	Rural colored schools.	Consolidated graded schools.	Total.
HOOKWORM AND DATA IN RELATION THERETO—contd.				
Average height of—				
Anemic boys.....feet, inches..	4–6	4–4½		4–5½
Anemic girls.....do....	4–7	4–5		4–5½
Anemic.....do....	4–6½	4–5		4–6
Normal boys.....do....	4–5	4–4½		4–4½
Normal girls.....do....	4–6	4–5½		4–6
Normal.....do....	4–5½	4–5		4–5½
Average weight of—				
Anemic boys.....pounds..	66.4	67.7		67
Anemic girls.....do....	62.3	68.5		65.4
Anemic.....do....	65	68		66.5
Normal boys.....do....	88.5	86		87½
Normal girls.....do....	90.6	86.1		88½
Normal.....do....	89½	86		87½
NUTRITION AND HOOKWORM				
Anemic cases, nutrition good	16			
Anemic cases, nutrition poor	21			
Per cent anemic, nutrition good	43			
Good color cases, nutrition good	23			
Good-color cases, nutrition poor	7			
Percentage good nutrition and color	70			
ROUNDWORM.				
Total number tested	262			
Anemic cases, nutrition good	21			
Anemic cases, nutrition poor	20			
Good-color cases, nutrition good	30			
Good-color cases, nutrition poor	8			
Percentage of—				
Anemic cases, nutrition good	51			
Good-nutrition color	80			
SCHOOL BUILDINGS AND GROUNDS.				
Number of buildings	22	20	7	49
Number of pupils (average per school)	15	16		
Unpainted buildings	20	20	1	41
Grounds more than 1 acre	15	12	6	33
Grounds 1 acre or less	7	8	1	16
Attempts toward beautifying	1		1	2
Cubic air space in 20 schools.....cubic feet..	4,114	3,772		3,943
Average cubic air space per pupil	274½	235½		
Square feet of light per school	52	45		
Window shades		4		4
Schools with—				
Adequate number desks	17	12	6	35
Inadequate number desks	5	8	1	14
Modern desks	10		7	17
Crude desks	12	20		32
Painted or whitewashed walls	4		5	9
Dingy, undecorated walls	18	20	2	40
Water supply—				
Within 200 yards	17	7	7	31
Beyond 200 yards	5	13		18
Safe			7	7
Doubtful	9	6		15
Dangerous	13	14		27
WATER DELIVERY.				
Cooler or sanitary fountain	3	3	7	13
Open bucket	14	17		31
Individual cups	18	12	7	37
Common cup	4	8		12
SEWAGE DISPOSAL.				
Schools with—				
2 sanitary privies	4	11	6	21
1 sanitary privy	4			4
2 insanitary privies	4	6	1	11
1 insanitary privy	5	2		7
No privy	5	1		6

BULLETIN OF THE BUREAU OF EDUCATION.

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No. 15. Monthly record of current educational publications. Index.
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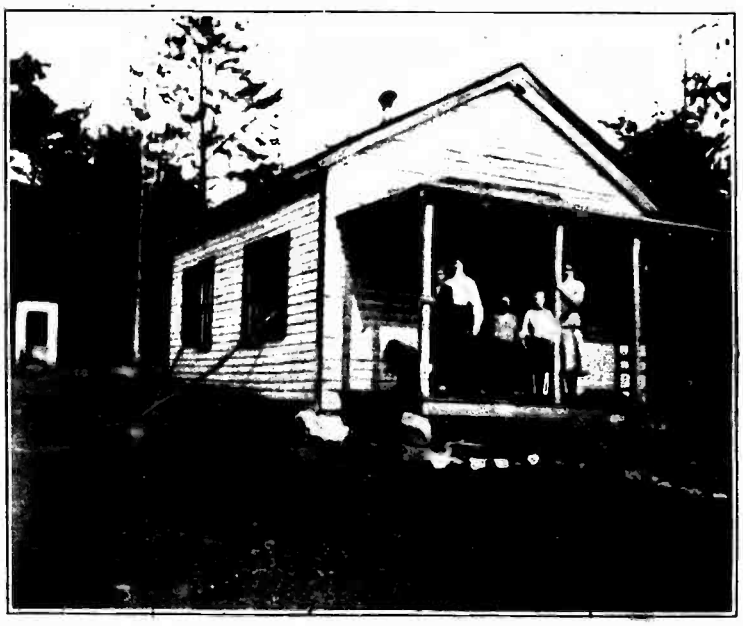
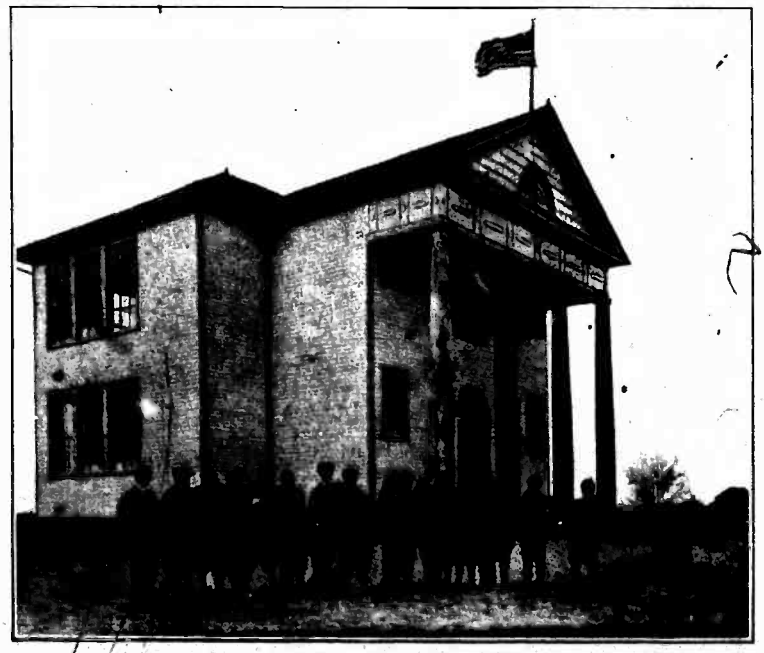
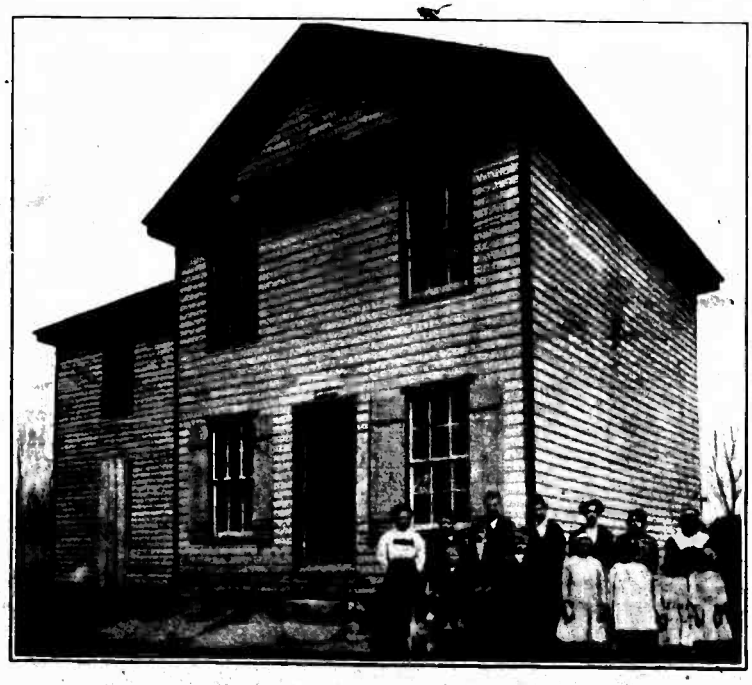


A. WILDERNESS WHITE SCHOOL.



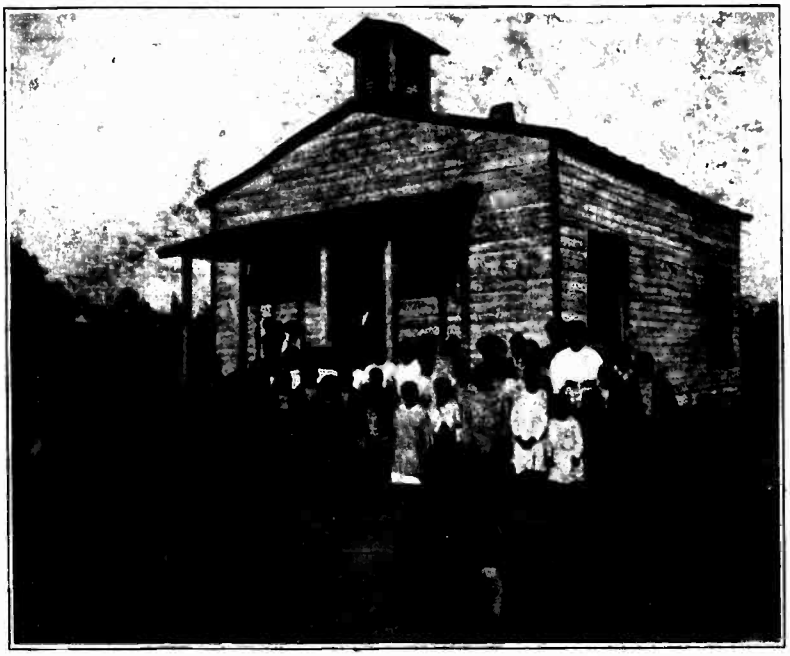
B. MINE RUN HIGH SCHOOL, NEAR MINE RUN BATTLEFIELD.

A. NASON'S SCHOOL, WITH INSPECTOR'S CARRIAGE.



B. ZA WHITE SCHOOL—AN OLD STOREHOUSE.

No desks in this school.

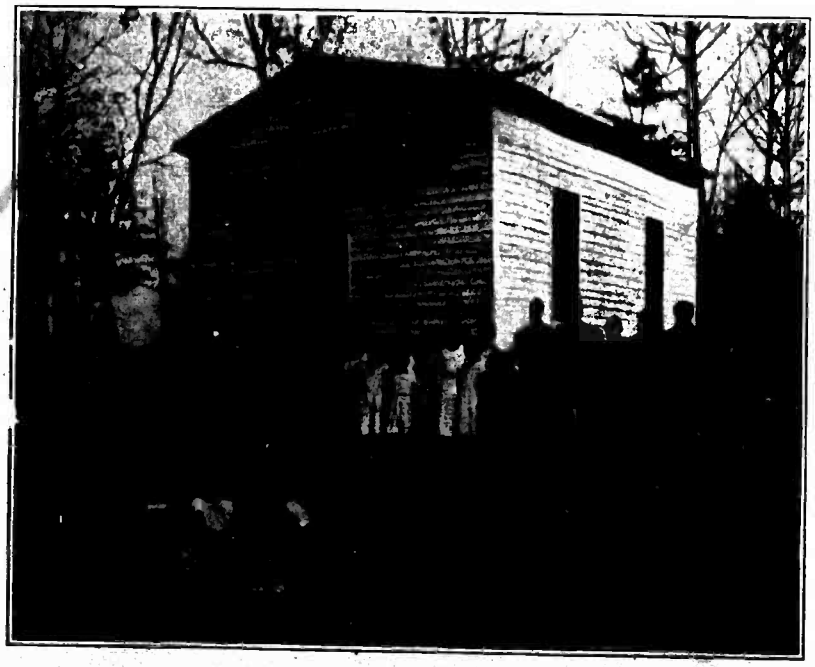


A. GEETOWN COLORED SCHOOL.

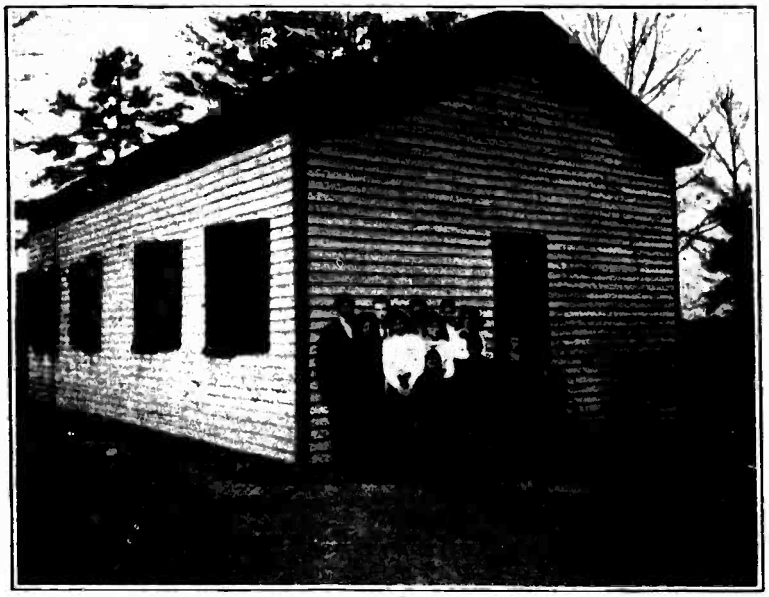
B. MOUNT NEBO WHITE SCHOOL.

On the grounds of an attractive church building.

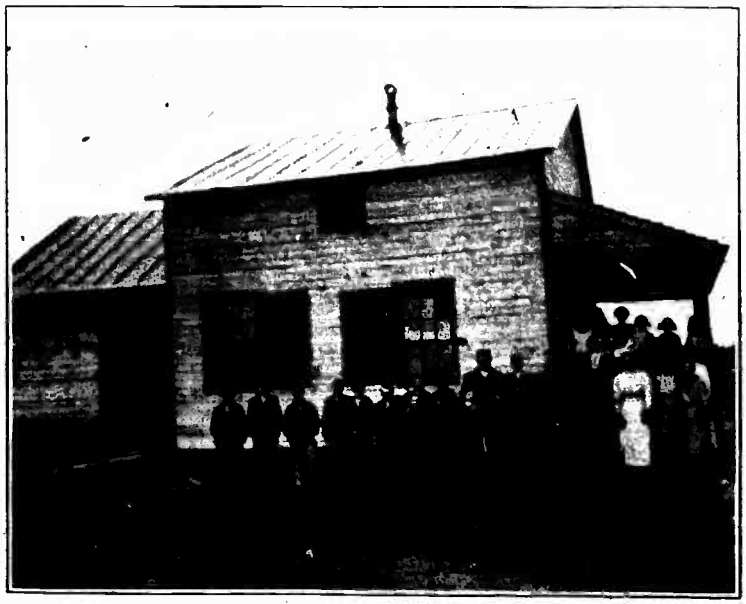
A. INTERIOR OF TIBBSTOWN COLORED SCHOOL



B. MOUNT CALVARY COLORED SCHOOL.



A. LOCUST GROVE WHITE SCHOOL.



B. MALLORY WHITE SCHOOL.

In an abandoned store building.

A. MONROVIA WHITE SCHOOL.

In an abandoned colored tenant house.

B. TRUE BLUE WHITE SCHOOL.

A. THE NEW SCHOOL.

Built 1913, ignoring regulations of State board of education as to architecture.

B. TATUM COLORED SCHOOL.

The building is owned by the old colored man shown in the picture.

THORNHILL SCHOOL (WHITE), IN A NEGRO SETTLEMENT.