BIOLICAL
SURVEY.

By H.W. JOHNSON.
B.S. Ed. 1917

[Caption supplied by library staff]

Back view of above outhouse, N.W. human excret. exposed in the business section of the town, photographed October 23rd.

[Caption supplied by library staff]
Insanitary (sic) outhouse, N.W. section, open back, photographed October 24th.

caption supplied by library staff

Insanitary (sic) outhouse, N.W. section, poor outhouse, small pig pen containing one pig at X, photographed October 24th

caption supplied by library staff
Insanitary (sic) outhouse, N.W. section, exposed back, photographed October 23rd.

[caption supplied by library staff]

Outhouse and manure pile, South-east section, a poor combination, Nov. 6th

[caption supplied by library staff]
Outhouse, S.E., cement vault, Nov. 6th
[caption supplied by library staff]

Outhouse, S.W., cement vault, Nov. 6th
[caption supplied by library staff]
Muddy pigpen, N.W., one of the many pens found on that alley, Oct. 22nd

[caption supplied by library staff]

Muddy pigpen, on the same alley, pen very muddy, Oct. 22nd

[caption supplied by library staff]
Outside view of pigpen, No. 9, Oct, 22nd

[caption supplied by library staff]

Manure pile opposite dwelling house, N.W., Oct. 24th

[caption supplied by library staff]
Manure pile containing house garbage, N.W., Oct. 30th
[caption supplied by library staff]

Garbage pile, N.W., in business district, Oct. 30th
[caption supplied by library staff]
Dumping place for street cleanings and other refuse, N.W., obnoxious weeds in foreground, Oct. 28th

[caption supplied by library staff]

Near view of above place, N.W., a great place for the breeding of flies
Back of Midway Restaurant, N.W., uncovered garbage barrel marked X

[caption supplied by library staff]

Weeds and junk, N.E., an eyesore, photographed Oct. 22nd

[caption supplied by library staff]
Remains of a mill, an eyesore, photographed Oct. 24th

[caption supplied by library staff]

Wallick's Pond, N.W., a mosquito breeding place, photographed Oct. 22nd

[caption supplied by library staff]
Chicken house, N.W., one of the many that contain house refuse, Oct. 28th
[caption supplied by library staff]

Cider mill, N.W., Oct. 28th
[caption supplied by library staff]
McElroy Meat Market, N.W., meat exposed to flies, Oct. 30th
[caption supplied by library staff]

Dwelling house with a clean yard, Nov. 6th
[caption supplied by library staff]
Dwelling house with a clean yard, Nov. 6th

[caption supplied by library staff]
Key to Pictures.

The following is a short description of some sanitary and insanitary places photographed for this survey by H. W. Johnson.


No. 2, back view of above outhouse, N.W., human excreta exposed in the business section of the town, photographed October 23rd.

No. 3, insanitary outhouse, N.W. section, open back, photographed October 24th.

No. 4, insanitary outhouse, N.W. section, poor outhouse, small pig pen containing one pig at x, photographed October 24th.

No. 5, insanitary outhouse, N.W. section, exposed back, photographed October 23rd.

No. 6, outhouse and manure pile, South-east section, a poor combination, Nov. 6th.

No. 7, outhouse, S.W., cement vault, Nov. 6th.

No. 8, outhouse, S.W., cement vault, Nov. 6th.

No. 9, muddy pigpen, N.W., one of the many pens found on that alley, Oct. 23rd.

No. 10, muddy pig pen, on same alley, pen very muddy, Oct. 23rd.

No. 11, outside view of pig pen No. 9, Oct. 23rd.

No. 12, manure pile opposite dwelling house, N.W., Oct. 24th.

No. 13, manure pile containing house garbage, N.W., Oct. 30th.

No. 14, garbage pile, N.W., in business district, Oct. 30th.

No. 15, dumping place for street cleanings, and other refuse, N.W., obnoxious weeds in foreground, Oct. 30th.

No. 16, near view of above place, N.W., a great place for the breeding of flies.

No. 17, back of Midway Restaurant, N.W., uncovered garbage barrel, marked x.
No. 18, weeds and junk, N.E., an eyesore, photographed Oct. 24th.
No. 19, remains of a mill, an eyesore, Oct. 23rd.
No. 20, Wallick's pond, N.W., a mosquite breeding place, photographed Oct. 23rd.

No. 21, cider mill, N.W., Oct. 26th.

No. 22, chicken house, N.W., one of the many that contain house refuse, Oct. 26th.

No. 23, McElroy Meat Market, N.W., meat exposed to flies, photographed Oct. 30th.

No. 24, dwelling house with a clean yard, Nov. 6th.
No. 25, dwelling house with a clean yard, Nov. 6th.
BIOLOGICAL SURVEY OF THE NORTH-WEST SECTION OF THE TOWN, ADA.

Biological survey of the town Ada, with a population of about three thousand, situated near the divide between Lake Erie and the Ohio river, in the County of Hardin, State of Ohio.

In taking up this report, the condition found in the North-West section of this town, will first be described and commented upon. Causes for the insanitary conditions found will also be given. Next, the problems that concern this town as a whole will be discussed. In the second part of this report, the Sewerage and Drainage System, Milk Supply, Wastes Disposal System, and the Ice and Water Supply will be taken up. In the last part of this report, a general summary of the report will be given, in which will be discussed the movements for civic and sanitary improvements now under way, the general attitude of the citizens towards new sanitary improvements, what the town officials have done or are doing to make this town a more healthful place to live in, and how the general health of this town can be improved.

Report on the North-West Section.

In taking up this report, references will now and then be made to the pictures which accompany this report. These pictures were taken by myself, and, with the exception of No. 6, 7, 8, 23, and 24, were taken in the North-West section of this town; that is, in the part north of the Penna. R.R. and west of Main St.

In making this survey many insanitary privies, called by some the "common privy," were found. This subject is first discussed because it is of great moment in avoiding unnecessary sickness and death. Human excreta exposed becomes a breeding place for flies and a means for the spreading of bacterial and parasitic diseases. For this reason, privies should be made sanitary beyond all doubt. In brief, there were found
three kinds of privies: First, those with open backs which exposed the excreta to the flies and animals, and, at the same time, allow the soil to become polluted by the seepage; second, those with closed backs but lacking water-tight vaults; third, those that had water-tight, covered vaults. Some of the privies examined had been well disinfected, others had a sickening smell about them. Photographs No. 1, 2, 3, 4, 5, and 6 well illustrate the insanitary privy, while photographs No. 7 and 8 show privies with cement vaults which would be sanitary if screened or properly disinfected.

Among the insanitary things, many pig pens were found. There is no doubt that pig pens are very insanitary in towns or cities. On account of this fact, this town should prohibit the keeping of pigs within the corporation. Nearly all the pens were small and muddy. Pictures No. 9 and 10 are examples of such pens.

The uncovered manure piles were almost as common along the alleys as the insanitary privies. Horse manure is one of the best breeding substances for house flies. The town ordinance, compelling the covering or screening of manure piles, should be rigidly enforced. Photograph No. 13 shows a manure pile opposite a dwelling house. No. 13 shows a large manure pile that contains house garbage.

The disposal of garbage and rubbish is of great importance. The practice of throwing garbage on the ground is to be condemned. Very few garbage containers were found. None of these were provided with covers. In many alleys, there were piles of combustible and non-combustible rubbish. The rubbish condition is illustrated by pictures No. 17 and 18, while No. 19 shows a pile of garbage near a hotel.

During rainy weather, the dirt streets and alleys were very muddy. The paved streets are cleaned by hand. On account of this fact, there is an excessive production of dust on windy days. The street cleanings, composed mostly of horse manure, are dumped into a low place along
Gilbert street, near the Penna. R.R. crossing. The dumping ground is shown by photograph No. 15, with an obnoxious weed patch in the foreground, while No. 16 gives a near view of the same place.

Photograph No. 21 shows a cider mill. The pulp is thrown on the ground where it becomes a breeding place for flies.

In many places chickens were kept in small filthy pens, in which garbage and other refuse were thrown.

On the inspection of the High School building, the water closets appeared to be very clean, but the floor was somewhat dusty, brooms being used to clean it. No evidence of expectoration upon the floor was found.

In the two meat markets, no provisions were observed for preventing flies from contaminating the meat. The interior of one of the markets is shown by photograph No. 33. In like manner, vegetables and fruits were exposed to flies in the grocery stores.

In closing this part of my report, it would be unjust to leave the impression that no sanitary places were found. There were many places with clean front and back yards. In some lots vegetables were planted, which is a good solution for the eradication of the unsightly back yard. The last two photographs are examples of places that are sanitary and beautiful.

Sewerage and Drainage of the Town Ada.

The question of the proper disposal of sewage is a very vital one, for the protection of public health depends largely upon the adequate disposal of sewage. Many towns have been able to reduce their death rate from tuberculosis and typhoid fever over one-half by installing modern sewerage systems. Sewage disposal during the middle ages was much neglected, for this neglect we may attribute to a great extent the terrible ravages of diseases that swept over Europe.
Ada has not a first class sewerage system. No plant for the
disposal of the sewage is provided. The sewers from Ada empty into
Hog Creek. As the sewage from Ada flows into Hog Creek, people living
along the creek are menaced by a greater danger from diseases than they
would be if this town had a modern sewage disposal plant. All indoor
closets emptying into the sewers are supposed to first empty into a
cesspool where the heavy material settles and the liquid part flows
into the sewers. This method renders the sewage less dangerous, but
it gives us the dangerous cesspool.

The cesspool holds the waste in a state of putrefaction, and,
on account of this fact, it gives off unpleasant gases. If the cess-
pool is near a cellar or well, the liquid may add a dangerous menace to
the health of the community.

Ada needs a modern sewage disposal plant. Most disposal plants
are provided with filter beds made of stone, cinders, and, or some
other material; also, if the stream is small and used for public water
supply or for the watering of stock, a chemical treatment is applied
to the sewage. As street drainage and house sewage are both carried
in the same sewer, it would be a bigger economic problem for this town
to install a disposal plant than if there were two separate systems of
sewers, one for street drainage, the other for house sewage.

Closely connected with sewage disposal is the drainage problem.
Sewers cannot remove the surface water quickly unless conditions are
such that the water will drain from the streets. Ada has about six and
one-half miles of improved streets, which, considering the slope of
the land, drain rapidly after a storm. There are about the same
number of miles of unimproved streets which are muddy in winter and
dusty in summer. Many of the almost impassable dirt streets in muddy
weather could be greatly improved by better grading. Not alone should
the town provide for the adequate removal of surface water, but it
should drain ponds which are or may be a menace to the public health. Near the end of West Highland avenue, there is a small pond known as Wallick's Pond. A few years ago, a case of typhoid fever occurred near it. I was told by one of the town officials that this pond was the cause of the typhoid case. The banks of this pond are being used as a dump pile, a very dangerous practice which should be prohibited by the council. Less than fifteen feet from bank of this pond is an outdoor closet that is dangerous in that its drainage may contaminate the water. If for no other reason, this pond should be filled up so that people could have some peace without being annoyed by mosquitoes.

Wastes Disposal.

The proper collection and disposal of town wastes should receive as much attention as that of sewerage and drainage. Ashes, street cleanings, garbage, rubbish, manure, and night soil are some of the wastes that it is necessary to remove, if the people are to be healthy. Ashes are hardly insanitary, but they are unsightly. The town should provide means so that ashes and rubbish could be used in filling up low land. Perhaps, the most important of town wastes is garbage. Ada has provided no means for the removal of garbage. A large part of the garbage is thrown on the ground, where it decays. This is very insanitary. This town should have an ordinance providing for the frequent removal of garbage, and also providing that the garbage containers be water tight and provided with a cover to exclude flies.

As it is not known what people may be harboring disease germs in their intestines, all night soil should be regarded as a virulent poison. Provision should be made for the disposal of this in a sanitary manner. It should be removed in closed containers. The practice of hauling night soil into the country and scattering it on the fields or truck patches should be prohibited. Farmers who collect the night soil may
endanger lives in their community, as typhoid fever and other infectious diseases may be thus transmitted. Furthermore, the people who eat vegetables grown in contaminated soil are also endangered. If human excreta were deposited in sanitary privies and properly disposed of, by burial or by chemical treatment, the hookworm and tapeworm diseases as well as typhoid fever would be unheard of.

Street cleaning should demand more recognition in this town. Provisions should be made for the frequent sprinkling of the streets in dry weather. The most sanitary method for cleaning streets is by flooding or by vacuum cleaners. Neither of these methods are used here. What is still more, the streets are not even swept clean.

MILK SUPPLY OF ADA.

There are two parties, Ortho Brown and Wilson, who make a business of supplying milk to this town. Neither party has a large dairy. They collect most of their milk from the farmers in their neighborhood. This is not a good plan, for there is more or less delay connected with such a system; next, there is a great difference of sanitation on different farms, dust from the stable floor or mud from the barnyard may contaminate the milk; lastly, there is danger of contaminated water being used to wash the bottles. On the inspection of Ortho Brown's dairy, the equipment, although not measuring up to city standards, was far ahead of that usually found on farms. There was no pasteurizing apparatus, but a tank was provided for the cooling of the milk. This town should have an inspector who should look after the milk supply and see that everything is kept sanitary. There are two cream stations in Ada, but most of their cream is sold to the large cities where part of it is renaturated and made into butterine.
WATER AND ICE SUPPLY OF ADA.

Saturday morning, October the second, I made a visit to the Ice and Storage plant. This is the only plant that supplies Ada with ice and the facilities to store perishable things.

The Ice and Storage plant is located in the North-Eastern section of Ada, along the Penna. R.R. I think the plant is as free from outside contamination, such as dust and smoke, as any other location in town.

The inspection of the plant was very interesting as well as instructive. The engineer was very kind to show me thru the plant and at the same time explain the process of making ice.

In making ice, ammonia, which boils at a very low temperature, is used. The ammonia gas is liquified by means of pumps. The pressure of compression in this plant was 135 lb. to the square inch. The heat generated by the liquid ammonia is absorbed by water running over the pipes.

When the liquid ammonia has cooled, it is again allowed to expand; but the pipes are immersed in brine, a concentrated solution of salt. The surrounding brine is chilled to a zero temperature by the rapidly evaporating liquid which absorbs heat. The water which is to be frozen is placed in sheet-iron, box-shaped buckets. When the water has frozen, the pans are lifted out by hooks and the ice cake is taken out.

The water used is made from condensed steam. Thus, there is very little chance of the ice being contaminated. However, there is danger of germs being present on the outside of the ice cake, for the ice is stored in a room the floor of which is covered with dirt carried in by muddy shoes, also the wagons used to haul the ice are also contaminated in the same manner.

The storage part of the plant appeared to be in good sanitary condition. The only fault noticed was a rancid and oppressive odor which seemed to come from the elevator pit. At the time of my visit, there were about seven thousand cases of eggs in the storage rooms, besides this there
were many packages of butter and other perishable products. The rooms which contained the eggs were kept at a temperature of 32 degrees F., just above the freezing point. The room in which the butter was stored was about 14 degrees F.

On the afternoon of Saturday, October 4th, I attempted to inspect the town water plant. I was refused admission. For this reason, I am not able to give an account of the plant. However, I found out that there were four wells twelve hundred feet deep, lined with waterproof casing to the solid rock. As deep wells are probably the safest sources of water supplies, on account of their remoteness from surface contaminating sources, I think Ada's water supply is above suspicion.


For the year 1914.

Deaths by contagious diseases.

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<th>Age of Females</th>
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### Miscellaneous diseases

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### Ada Village Officials

- **Mayor**: West Montgomery
- **Treasurer**: A. E. Warren
- **Clerk**: Frank Detrick
- **Solicitor**: S. P. Axline
- **Civil Engineer**: T. J. Smull

### Council
- L. D. Sells
- D. C. Mohler
- A. J. McElroy
- J. D. Judkins
- J. C. Paling
- Isaac Burkholder
- Oliver Parshall, Street Commissioner
- Henry Tremaine, Policeman

### Board of Health
- Dr. Scuder
- Dr. Smith
- Dr. Tipple
- Geo. Rothrock
- John Kanele
General Summary of this Report.

Nothing is of more importance than good health. Among the worst conditions found in Ada are the lack of sanitary privies and proper wastes disposal. Notwithstanding this fact, Ada is not such an unhealthy place to live in. In the year 1914, thirty-eight deaths occurred in this town. Of the thirty-eight, six died of contagious diseases, twenty-one of old age, and four were still born. The per cent. of deaths for that year was about 1-3/10%. In the year 1909, the death rate in the United States was 1-5/10%; in Columbus 1-4/10%; in Cincinnati 1-6/10%. The low death rate and the large number of deaths from old age show that Ada is at least up to the average as a healthful community.

For some time the council has been considering the advisability of constructing a modern sewage disposal plant, also of buying a street cleaning machine.

The general attitude of the citizens towards sanitary improvements has been the same in this town as in most other places. When the town commenced to pave the streets and put in sewers, some of the property holders said that it was robbery. However, when electric lights and gas were put in, there was no general kick for they were controlled by private companies.

The town officials could do a great deal to make this town a more healthful place to live in. They should see that weeds are cut, privies made sanitary, manure piles screened or covered, and garbage, and rubbish disposed of. As there has never been a general epidemic in this town, the health officers have never been called upon to suppress a deadly contagious disease. However, it is just as important that means be taken to prevent an epidemic. The council has passed many good ordinances, it also has adopted the laws of the Ohio State Board of Health. The mayor has not enforced the laws and ordinances.
He is a mere figurehead.

If the health laws of this State and the town ordinances were enforced, the general health of this town would be greatly improved. The realization of sanitary improvements can be hastened by instilling in the minds of the people a general knowledge of the benefits derived from the betterment of insanitary conditions. "Every person engaged in educational work should acquire a general knowledge of sanitary science and thus advance the cause of public health work."