

**PROCLAMATION.**

EXECUTIVE DEPARTMENT,  
*Indianapolis, 18th Oct. 1832.*

WHEREAS, many of the religious portion of the citizens of the state, of various denominations, through the medium of their pastors and other representatives, have expressed a wish to unite in fasting, with prayer to him who controls the destiny of nations, invoking a mitigation of the distress, terrors, and desolation, which have, upon other continents, marked the path of the Cholera, that scourge now visiting the states of our confederacy, and commencing its ravages on the eastern frontier of Indiana: AND WHEREAS, for purposes of concert, the Governor of the state has been called upon to designate a day, inviting the co-operation of the citizens of the state in the desired devotions:

THEREFORE the undersigned, in compliance with the wishes of his fellow-citizens, selects the SECOND MONDAY OF NOVEMBER as the day to be set apart for fasting with prayer to an overruling Providence, beseeching him to arrest the progress of the disease, with its train of calamities; and in behalf of the churches he bespeaks the aid and influence of all who believe in the efficacy of prayer.

N. NOBLE.

*Public Health in Indiana*

# Focus

**Cover illustration:** This proclamation by Indiana Governor Noah Noble (1831-1837) has been reproduced from the October 27, 1832 issue of the Indianapolis *Indiana Journal*. It illustrates well the belief that disease was caused by an "overruling Providence." The proclamation was first published in the *Indiana Journal*, October 20, 1832, but the available copy was not clear enough for reproduction.

This issue of *The Indiana Historian* examines the early years of public health science in the late nineteenth and early twentieth centuries.

Below on this page are a few suggestions about using this issue as a springboard for further investigation: "You be the historian."

On pages 3 and 4, there is a brief history of medicine and public health issues from a national perspective. The timeline throughout provides a broad context for the topic.

Indiana's efforts and progress in fighting disease and educating the public about health are reviewed on pages 5-7. Especially important was the creation of the Indiana State Board of Health in 1881.

Dr. John N. Hurty's leadership of the State Board of Health

from 1896 to 1922 is reviewed on pages 8-9. Hurty's energetic and confrontational style in the war on disease is evident in some of the materials reproduced in this issue.

On pages 10 and 11, the core problem of obtaining pure water is addressed. The drawing on the back cover relates to this topic.

Indiana's fight for healthy milk is briefly reviewed on page 12.

On page 13, the life and accomplishments of Dr. Harvey Washington Wiley are reviewed. Wiley was crucial in the passage of the first federal Pure Food and Drugs Act in 1906.

The present state of public health science is briefly considered on page 14.

Page 15 contains the bibliography and sampling of resources.

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*The Indiana Historian* provides resources and models for the study of local history to encourage Indiana's citizens of all ages to become engaged with the history of their communities and the state of Indiana.

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## You be the historian

There are many difficult words in this issue. Have a dictionary on hand to help.

- Explore the public health history of your area—town or county, for example. Use county histories, newspapers, public records in the courthouse, cemetery records, etc. Create a timeline of that history.
- Select an important event or person in your public health history and make a marker—see page 13 of the issue—as a commemoration.
- Contact public health officials in your area and the Indiana Department of Health for resources to help understand more about public health issues today.
- Dr. John N. Hurty and the State Board of Health conducted public relations campaigns against health hazards using posters and other printed materials. Survey how such campaigns are conducted now; gather sample materials. Identify a current health hazard and produce a campaign to alert others.
- Investigate the water supply for

your community. Arrange a tour of the water treatment facility and/or invite engineers to make a presentation in your classroom.

- Explore how your family and your community make sure your food is safe. Invite a teacher, nutritionist, extension agent, or other food-related professional to discuss food safety—and other food-related health issues.
- Explore how milk and other dairy products are produced and marketed today.
  - Talk to older persons in your area. How was milk bottled and delivered ten, twenty, thirty, or forty years ago?
  - What is pasteurization? Is it a process only for milk?
  - Invite a physician, health care professional, or scientist to talk with your class about medical and scientific advances and challenges.
  - Collection of "vital statistics" began in Indiana under Dr. Hurty. What are they? How are they collected? Why are they so important?

# Progress in public health

Life free from disease is an advantage that many people in the United States take for granted. Most people have confidence that food, water, and medicines are safe, and that waste products and garbage are disposed of properly. Local, state, and federal laws exist to protect citizens from food and drug adulteration and water pollution and to require immunization against certain contagious diseases. Extraordinary health

challenges remain, but scientists now have sophisticated tools and knowledge to fight diseases and health hazards that occur.

In the seventeenth, eighteenth, and nineteenth centuries, the situation was very different. Diseases of the earliest colonists in North America included smallpox, malaria, diarrheas and dysenteries, respiratory problems, measles, mumps, scarlet fever, diphtheria, and others

(Duffy, 10). Typhoid, yellow fever, and cholera also killed many people.

Until the last half of the nineteenth century, doctors knew almost nothing about the real causes of diseases. Bleeding, purging, vomiting, and blistering were standard treatments for many illnesses (*Ibid.*, 20). There were many dangerous patent medicines, including compounds such as calomel containing mercury which is poisonous (Janssen, 17).

As the population grew before and after the American Revolution, the number of people affected with diseases also increased. People knew that many diseases were contagious. Doctors did not know how diseases were spread. One popular theory was the “miasma” theory, which stated that disease was caused by the gaseous substances coming from stagnant water or decaying matter (Duffy, 24, 21-22, 41). Doctors and local officials could find many areas that fit the “miasma” theory.

During the first half of the nineteenth century, street cleaning and garbage removal was the responsibility of individual citizens. In addition, hogs, cattle, and horses were allowed to roam the streets in cities and towns. Another major problem was the disposal of human waste. Some larger cities employed people to empty privies, but most small towns had no such provisions. Drainage from overflowing privies

Leading Causes of All Deaths for Selected Years							
1850		1882		1905		1991	
U.S. statistics	Indiana statistics	Indiana statistics	Indiana statistics	Indiana statistics	U.S. statistics		
tuberculosis	tuberculosis	tuberculosis	heart/circulatory disease	heart disease			
cholera	pneumonia	pneumonia	cancer	cancer			
dysentery	typhoid fever	violence	accidents	cerebrovascular diseases			
fever	casualty	diarrheal diseases	pneumonia/influenza	pulmonary diseases			
typhoid fever	cerebrospinal meningitis	cancer	motor vehicle accidents	accidents			
pneumonia	bronchitis	typhoid fever	tuberculosis	pneumonia/influenza			
dropsy	diphtheria	influenza	diabetes	diabetes			
croup	whooping cough	cerebrospinal meningitis	nephritis/nephrosia	suicide			
scarlet fever	smallpox	diphtheria	suicide	HIV			
accident	scarlet fever	puerperal septicemia	diarrhea/enteritis	homicide			

This chart documents causes of death over time. In the later years most leading causes of death are no longer from infectious diseases. These statistics demonstrate the effect of advances in science and medicine. Statistics for 1850 and 1991 are for the United States.

Deaths of Children Age Four and under as a Percentage of All Deaths in Indiana				
1850	1882	1905	1950	1991
39.4%	34.3%	29.3%	7.4%	1.9%

This chart demonstrates the dramatic reduction of early childhood deaths in Indiana related to all people who died in Indiana (Indiana statistics).

391 to 400 BC	1000-1009	1202	1530	1717	1721	1763
Hippocrates, a Greek, founds profession of physicians, develops Hippocratic oath, and encourages separation of medicine from religion; earns title “Father of Medicine” (Hellemans and Bunch, 34).	The Canon of Medicine written about this time by Avicenna (Ibn Sina) is a five volume treatment of Greek and Arabic medicine that dominates the teaching of medicine in Europe until the 17th century (Hellemans and Bunch, 72).	King John of England proclaims the first English food law prohibiting adulteration of bread with ingredients such as ground peas or beans (“Milestones,” 1).	Paracelsus argues that medicine should be based on nature and its physical laws; he is first to suggest the use of chemical substances, such as mercury and antimony, as remedies (Hellemans and Bunch, 106).	Lady Montagu brings to England the Turkish practice of inoculating children with smallpox. She has her two children vaccinated (Hellemans and Bunch, 179).	Zabdiel Boylston introduces inoculation against smallpox into America during the Boston epidemic (Hellemans and Bunch, 181).	First American medical society is founded in New London, Connecticut (Hellemans and Bunch, 215).

# Progress in public health

## continued

and accumulating garbage often contaminated community water supplies (*Ibid.*, 69, 71, 73, 75).

Rapidly growing population, new technology, and increased manufacturing in America's cities in the nineteenth century brought additional health problems. In small towns, citizens safely grew and produced most of their own food. In larger cities, milk, meat, and canned foods were generally supplied to people by dairies, meat packers, and food processors. As early as the seventeenth century, New York and Massachusetts had laws regulating specific foods (Young, 33-34). Massachusetts, in 1785, passed what "is

generally considered the first comprehensive food adulteration law . . . in the United States" (Janssen, 17).

American pharmacists and physicians were also concerned about the purity of drugs and medicines. This concern helped establish the first two schools of pharmacy in the U.S.—in Philadelphia in 1820 and in New York City in 1828. By the 1840s, there was enough concern about drug adulteration that the U.S. Congress passed the Drug Importation Act of 1848. This law required all drugs entering the U.S. through its six major ports to be analyzed for "quality, purity, and

fitness for medical purposes" (Young, 7, 6, 10, 14).

Throughout the rest of the nineteenth century, more states passed pure food and drug legislation. The Pure Food and Drugs Act of 1906 was the beginning of federal regulation of food and drugs in the U.S. (Young, 3).

During this same period, public health evolved as a medical discipline and a governmental function. Reviewing public health in Indiana in 1916, Dr. William F. King, assistant state health commissioner, provided his definition of the field of public health:

Public health is synonymous with preventive medicine, and preventive medicine had its real beginning with the discoveries of Pasteur . . . . Pasteur proved that so-called contagious diseases were due to germs . . . and he said, "It is within the power of man to drive all contagious and infectious diseases from the earth" (King, 272).

The life expectancy of a male infant at birth in Massachusetts or New Hampshire in 1789—just a few years after the American Revolution—was 34.5 years (Cummings, [238]). The life expectancy of a white male born in 1990 was 72.9 years (*Statistical Abstracts of the U.S.*). The dramatic increase in life expectancy can be traced to the efforts of scientists in private businesses and government agencies to protect and improve the public health of American citizens (Duffy, 134, 148-49).

Flu Pandemics: Then and Now		
Year	What happened in 1918	What COULD happen in 1998
World Population	1.8 billion	5.9 billion
Primary mode of transportation	Troop ships, railroads	Jets
Time for virus to circle the globe	4 months	4 days
Preventive measures	Gauze masks, disinfectants	Vaccines
Treatments	Bed rest, aspirin	Some antiviral drugs
Estimated dead	20+ million	60 million?

Adopted from Time, February 23, 1998, p. 63.

This chart demonstrates how the flu—an infectious disease—spread in 1918 and how it COULD spread in 1998. The short time today for a disease to spread globally presents major challenges for public health scientists. What is a pandemic? What other pandemics have there been in history? Are there any pandemics today?

1765	1785	1789	1793	1795	1796	1800	1808
John Morgan founds first medical school in America at the College of Pennsylvania (Hellemans and Bunch, 217).	Massachusetts enacts first general food adulteration law in the United States ("Milestones," 1).	Life expectancy of male infants at birth in Massachusetts and New Hampshire is 34.5 years (Cummings, [238]).	An epidemic of yellow fever in Philadelphia kills about 10% of the population (Hellemans and Bunch, 243).	Napoleon offers prize for practical method of food preservation. Francois Appert eventually receives prize by introducing process of bottling or canning, heating, and then sealing (Hellemans and Bunch, 245).	English physician Edward Jenner performs first inoculation against smallpox by infecting a boy with cowpox (Hellemans and Bunch, 245).	Benjamin Waterhouse is first U.S. physician to use new smallpox vaccine—on his son (Hellemans and Bunch, 251).	August 20 Vincennes <i>Western Sun</i> , August 20, 1808, states the cause of diseases affecting town are to be found in the decaying grasses growing along the river.



The inhabitants of this town have been frequently fevered afflicted with the ague and fever, & bilious complaints, which commonly occur in the months of August and September; and it is now well known by every person of the least observation that they are to be attributed, in a great measure to the putrefaction of the grass growing in the river opposite to the village. A great depression of the river which generally occurs in August, almost suspends the motion of its waters, about a mile in length, and in width, about half the river. In this part of the river the grass grows luxuriantly; and as soon as it begins to float on the surface of the waters, it putrefies, and becomes the source of all the agues and fevers that afflict the town. A few hours labour of the people of the town would remove the nuisance; and yet, from the time the place has been inhabited, not a solitary exertion is recollected to have been made to remove a sprig of the grass. A few, of the knowing ones may have paraded the bank of the river, bewailed the indolence of the wretched inhabitants, and returned to their dwellings, cursed the country for its unhealthy climate, and awaited with stupid gaze, their turn of the disease. Who, and where are the trustees of the town? What are they doing and what is their duty? Is not the preservation of the health of the town an important branch of it? And is it not well recollected that the town was incorporated with a view expressly to that object? The river is now nearly at its lowest stage of depression, the grass begins to appear; a few have fallen sick; and will the people incur the risque of a four or five weeks illness, rather than employ a few hours in removing the cause that will inevitably produce it? If they will, they really deserve the curses of Heaven in every shape in which they can be inflicted.

# Health of Hoosiers

Early settlers in Indiana endured the hardships of establishing homes, towns, and farms in the wilderness. In addition, these settlers faced seasonal fevers, frequent epidemics, and many other devastating illnesses.

People did not know what caused these terrible diseases. Doctors, with little or no training, treated patients using primitive methods and unregulated medicines, and hoped for the best. A few people believed that steps could be taken to help improve the health of the public. One such

person was Elihu Stout, editor of the Vincennes *Western Sun*, whose editorial from 1808 is reproduced on this page.

By the 1830s, some Indiana towns had established boards of health (Thornbrough, 668). Town officials also enacted laws regulating sanitation and providing for quarantine. The success of these attempts was limited. "Disease was still pretty much considered to be a result of sin, and pestilence was usually regarded as a dispensation of Providence" (Rice, 48). The proclamation, on the cover of this

From the Cincinnati Chronicle.  
**PREVENTION OF CHOLERA.**  
*Fellow-Citizens.*—Let us profit by the experience of the world. It has pleased Providence to afflict us with pestilence, but he has mercifully suffered it to approach gradually, and we have the observations of others to guide us. [ . . . ]

1. That no one should get drunk; [ . . . ]
2. That, in diet, we should limit ourselves to beef, mutton, veal, poultry, good ham in moderation, eggs, milk, tea, coffee, chocolate, light bread, potatoes, rice, and boiled onions.
3. That we should avoid the rain and night air, keep our rooms dry with fires, lodge warm, and dress, as much as possible, in woollens. [ . . . ]
5. That no one, on any account, should neglect the lax or disordered state of the bowels, which in almost every case precedes the spasms and vomiting; and which, if neglected, will be certainly followed by the more fa-

tal symptoms. He who is attacked with this complaint of the bowels, however slight, should immediately bathe his feet, and take to his bed; drink herb tea and gruel, (abstaining from all other food,) put a poultice of mush or bitter herbs over his bowels, and send for a physician, or take a pill of ten grains calome and one of opium. [ . . . ]

6. Lastly, That no one should fly from the city. [ . . . ]

The whole atmosphere is poisonous. The disease is not catching. [ . . . ]

a well ordered and cheerful home is a great preventive; [ . . . ] let every one remain where he is, pursue his ordinary occupations, keep his mind employed, and be prepared to combat the disease, should it invade him, which, under these regulations, is not likely to happen.

DANIEL DRAKE, M. D.  
 Friday, Oct. 12, 1832.

In 1832, Dr. Daniel Drake of Cincinnati, Ohio explained how people could help themselves survive the cholera epidemic (excerpted from the *Madison Indiana Republican*, October 18, 1832). Drake was a well-known physician of the period.

Elihu Stout, editor of the Vincennes *Western Sun*, used his newspaper on August 20, 1808 to encourage people to help improve health conditions. He warned against the dangers of decaying grasses by the Wabash River, the source for drinking water. He also advocated cleaning up the town's streets, especially removing carcasses of dead animals which were allowed to rot where they lay. Note the use of an "f" for an "s" in many words; it is an early writing style.

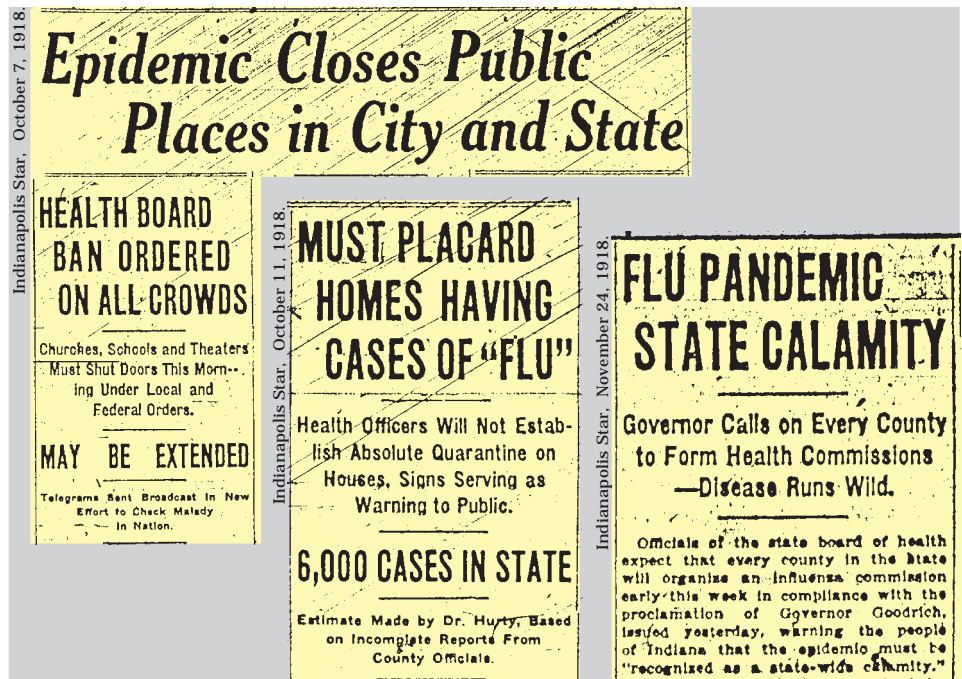
1816	1817	1832	1843	1844	1847	1849	1850
Théophile René Laënnec of France invents the stethoscope (Hellemans and Bunch, 265).	Pandemic of cholera spreads over India, East Africa, and Asia (Hellemans and Bunch, 265).	October 18 Cholera epidemic prevails throughout Indiana. Governor Noble proclaims second Monday in November as day of fasting and prayer (Indianapolis <i>Indiana Journal</i> , October 27, 1832).	Oliver Wendell Holmes of Massachusetts advises doctors to prevent childbed fever (puerperal fever—common to mothers after childbirth at the time) by washing their hands and wearing clean clothes (Hellemans and Bunch, 311).	The Commission for Enquiring into State of Large Towns establishes a connection between dirt and epidemic disease in England (Hellemans and Bunch, 311).	American Medical Association is founded (Hellemans and Bunch, 315).	Indiana Medical Society is founded in Indianapolis (Russo, 40).	4.5% of Indiana's population lives in towns of more than 2,500; by 1880 this number had risen to 19.5% of Indiana's population (Thornbrough, 555).

## Health of Hoosiers continued

issue, by Governor Noah Noble about the 1832 cholera epidemic provides a good example of that widespread belief.

The cholera epidemics in 1832 and 1849 encouraged attempts by Indiana physicians to organize crusades against diseases. In June 1849 in Indianapolis, the Indiana State Medical Society was created. It noted that treatment of disease was important, but it promoted the relatively new idea that prevention of disease was vital. In its first years, the society requested the Indiana General Assembly to pass a law requiring registration of births, marriages, and deaths so that data could be collected to help in disease prevention. In 1851, a society committee lobbied the General Assembly to enact legislation requiring drug manufacturers to reveal the exact ingredients of their compounds (Russo, 40-41). It took decades to accomplish these valuable measures.

In 1852, the General Assembly did pass legislation giving city governments authority to establish boards of health and to prevent pollution of streams with sewage, rubbish, and dead animals. Cities could “destroy putrid animal or vegetable matter” and compel building owners to clean up dirty buildings. Cities were also authorized to establish quarantine regulations. However, sanitary and public health regulations



These excerpts from the *Indianapolis Star* illustrate the effect of the 1918 worldwide flu pandemic in Indiana. How did this pandemic affect your community? Are there senior citizens who remember it, and can you talk with them about their memories?

seem generally to have been ignored (Thornbrough, 571).

Luther D. Waterman, M.D., president of the Indiana State Medical Society, chastised the General Assembly and encouraged his fellow doctors in his 1878 address:

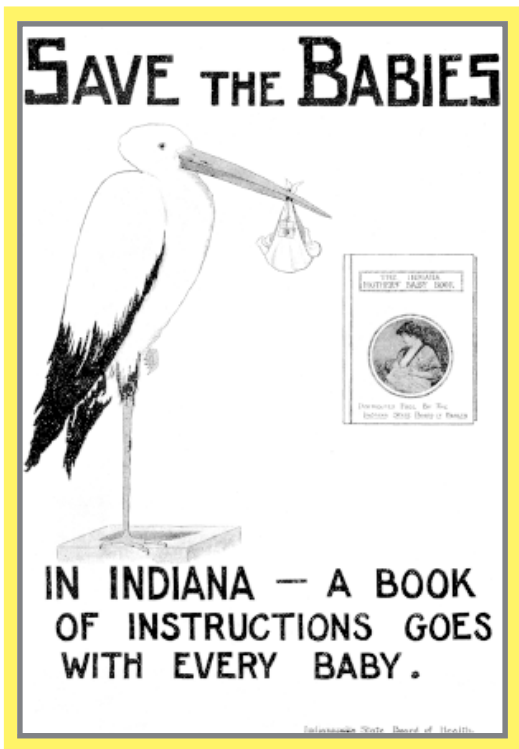
We must not cease our labors, as a body, until the citizens of this State have pure air to breathe, pure water to drink, unadulterated food and medicines, live in buildings that are not sources of infection to themselves or their neighbors, and have an intelligent body of agents to warn and protect them from preventable, indigenous, and importable causes of disease (ISMS, *Transactions*, 1878, p. 3).

In the 1870s, the Indiana State Medical Society began to

promote the idea of a state board of health. Finally, the General Assembly passed legislation on March 7, 1881 creating the Indiana State Board of Health. Five thousand dollars per annum was appropriated for the work of the board for two years (Rice, 56, 61).

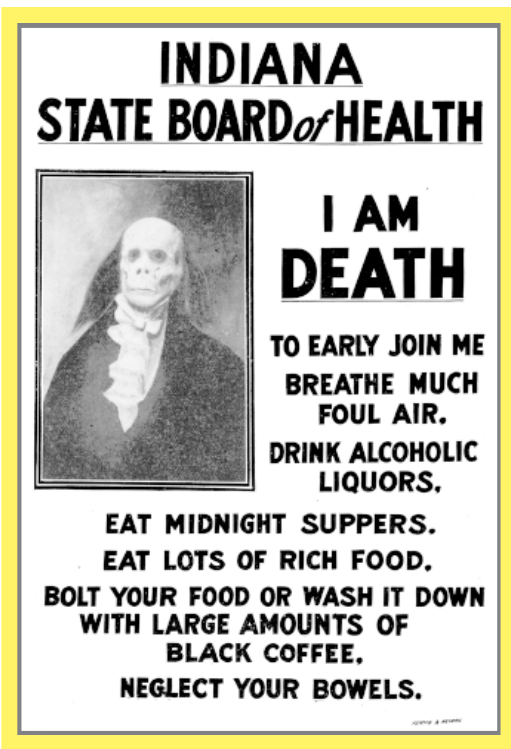
The early years of the Indiana State Board of Health were not very productive because of lack of funds and changes of personnel (*Ibid.*, 61-64). It worked to establish local boards of health in counties, cities, and towns of the state. It devoted much time to organizing a system of registration of vital statistics. It tried to educate physicians and local health

1850	1854	1854	1856	1860	1862	1865	1868
California passes a pure food and drink law ("Milestones," 1).	A city ordinance gives the Indianapolis Board of Health broad powers over vaccination against smallpox (Thornbrough, 572-73).	Englishman, John Snow, shows that prohibiting use of well contaminated with sewage reduces incidence of cholera in the vicinity of the well (Hellemans and Bunch, 325).	Massachusetts law prohibits adulteration of milk, and three years later prohibits the feeding of distillery waste to cows (Cummings, 55).	England enacts a Food and Drugs Act (Grun, 425).	President Lincoln appoints a chemist to serve in the new Department of Agriculture—the beginnings of the Bureau of Chemistry ("Milestones," 1).	Joseph Lister of England introduces phenol as a disinfectant in surgery, reducing surgical death rate from 45% to 15% (Hellemans and Bunch, 337).	January 16 A patent for a refrigerator car is granted to William Davis, Detroit, Michigan. Davis also designs first refrigerated railroad car which is built 1869 (Carruth, 299).



One campaign of the Indiana State Board of Health under Dr. John N. Hurty focused on the care and health of newborn babies. The board distributed *The Indiana Mothers' Baby Book*, pictured in this poster. "The book was reprinted for a number of years and literally thousands of copies were distributed." The poster was originally printed in the *ISBH Bulletin*, October 1915 (Rice, 310, 312).

Dr. John N. Hurty had a very confrontational style in his war on disease. According to Rice (253), this is "A typical Hurty Poster of this Period [circa 1911-1915] Grim, Morbid and Terrifying." Look at health and medical advertisements today. How do they compare with Hurty's?



officers about the causes and controls of diseases (*ISBH Monthly Bulletin*, 35:11 [November 1932], 163, 164). Many Indiana physicians and citizens did not yet believe in the germ theory of disease (Phillips, 470).

In 1896, John N. Hurty, M.D. was elected secretary of the Indiana State Board of Health, a position he held until 1922. Under his leadership, the effectiveness of the Indiana board was ranked sixth in the nation in an American Medical Association study in 1914-1915 (Madison, 309).

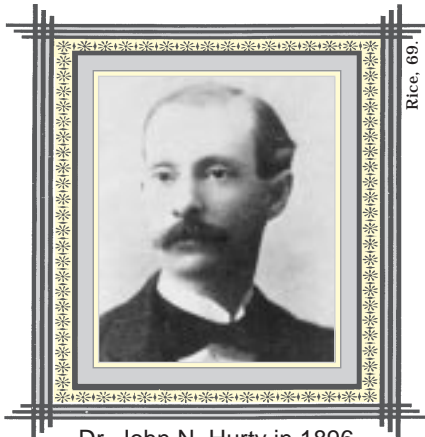
According to Madison, "By the 1920s, the professional physi-

cian had achieved wide, though not complete, acceptance as the primary source of medical care" (308). By that time also, the State Board of Health had made advances in controlling "diseases transmitted by impure water, milk, and food" (309). But the work of the board—and others—was needed, especially in the area of impure water:

Lakes, rivers, and streams were grossly polluted by domestic waste and by industrial wastes from canneries, oil refineries, meat-packing plants, and factories. Perhaps the most obviously offensive sources of pollution were the many city and town sewer systems which simply discharged raw waste directly into the closest river (310).

1874	1878	1878	1880	1880	1881	1881	1882
Illinois passes first general state food law (Cummings, 97).	President of the Indiana State Medical Society emphasizes contaminated water, adulterated food, and "air impregnated with noxious gases" as causes of disease (Thornbrough, 668-69).	Survey of Indiana physicians shows that there is general acceptance among them that typhoid, malarial fever and cholera are caused by germs (Thornbrough, 667-68).	Louis Pasteur develops the germ theory of disease (Hellemans and Bunch, 355).	By this time all major Indiana cities have some sort of sewers, mainly to carry off rain. No more than 10% of private houses in Indiana have indoor plumbing (Thornbrough, 572).	Indiana General Assembly votes to establish a State Board of Health (Thornbrough, 668).	New York, New Jersey, and several other states pass pure food laws (Cummings, 97).	Robert Koch discovers bacterium that causes tuberculosis, the first definite association of a germ with a specific human disease (Hellemans and Bunch, 359).

# Hurty leads the fight



Dr. John N. Hurty in 1896.



This cartoon honors Dr. Hurty's service to Indiana. It expresses the positive effect that Hurty's bill in the Indiana General Assembly could have for Indiana. Hurty had resigned from the State Board of Health and been elected to the General Assembly in 1922. The cartoon appeared in the Indianapolis *Times*, January 11, 1923. The bill was defeated in February (Rice, 376).

Dr. John N. Hurty was appointed head of the Indiana State Board of Health in 1896. One history of public health in America, cites Hurty as one of six "civic health leaders who influenced health reform at the state and national levels" (Duffy, 222).

John Newell Hurty was born on February 21, 1852 in Lebanon, Ohio. When he was fourteen, his family moved to Paris, Illinois. Here he met Colonel Eli Lilly. Hurty later recalled, "Col. Eli Lilly beguiled me into the drug business. . . . shaped my life work" (Rice, 10).

Lilly was part owner of the Binford and Lilly Red Front Drugstore. From 1869 to 1871, Hurty was Lilly's apprentice. Encouraged by Lilly, Hurty attended the Philadelphia College of Pharmacy and Science for one year, returning in 1872 (*Ibid.*, 17, 18-19).

In 1873, Lilly left Paris for Indianapolis, where he opened a pharmaceutical laboratory with Dr. John Johnstone, a dentist. At Lilly's request, Hurty joined them as their chief chemist. In 1879, Lilly and Johnstone ceased their partnership. Lilly went on to found Eli Lilly and Company, the Indianapolis pharmaceutical corporation (*Ibid.*, 19).

In 1879, Hurty opened his own drugstore at the corner of Ohio and Pennsylvania streets. In the basement, he set up one of the first analytical laboratories in the

state. He tested the purity of wines for local hotels, paints and lubricants for the railroads, coal for the power company, and water for the Indianapolis Water Company. He also created cosmetics for local theatre troops (*Ibid.*, 19-20, 30-31).

Over the next ten years, Hurty began his long association as a faculty member with both the Indiana Dental College and the Medical College of Indiana. In 1884, he established, and for a time taught at, the School of Pharmacy at Purdue University. In 1891, Hurty earned his medical degree from the Medical College of Indiana (*Ibid.*, 38-39, 25, 36).

Hurty fought for and achieved many advances in the twenty-six years he led the State Board of Health. The chart of laws passed on the next page shows the broad range of daily life and business that was connected to the public health of citizens.

In 1922, he resigned to run for the Indiana General Assembly. He was elected in 1922. His major goal was passage of legislation to strengthen the State Board of Health. His efforts were defeated, (*Ibid.*, 370, 373-376). He died on March 27, 1925.

Sources: See Justin E. Walsh, gen. ed., *A Biographical Directory of the Indiana General Assembly*, Vol. 2, 1900-1984 (Indianapolis, 1984), 209-210, for specific biographical information.

1883	1883	1889	1890	1896	1898	1899
Robert Koch discovers bacterium that causes cholera and shows that cholera can be transmitted by food and drinking water (Hellemans and Bunch, 361).	Dr. Harvey W. Wiley of Indiana becomes chief chemist of the U.S. Department of Agriculture ("Milestones," 2).	Indiana State Board of Health officially endorses germ theory in its published report (Phillips, 470).	Life expectancy of white males at birth in the U.S. is 42.5 years (Statistical Abstracts of the U.S.).	March 5 Dr. John N. Hurty is elected to the secretaryship of the Indiana State Board of Health (Russo, 44).	June 2 Paul-Louis Simond, fighting the bubonic plague pandemic in Bombay, India, realizes that fleas on rats transmit the disease to humans (Hellemans and Bunch, 391).	Indiana General Assembly passes comprehensive food and drug legislation (Phillips, 471).



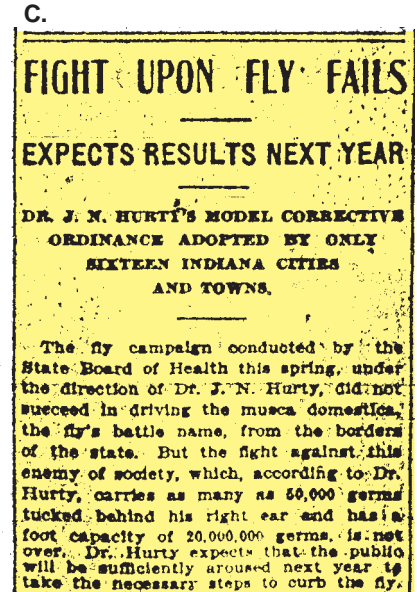
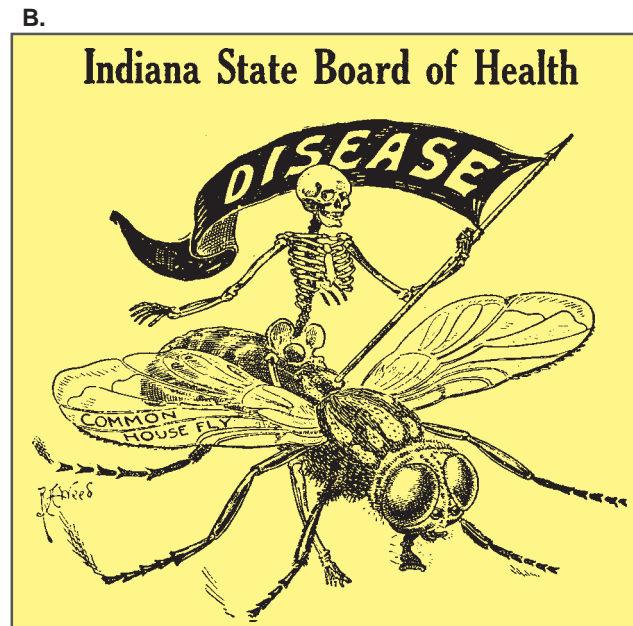
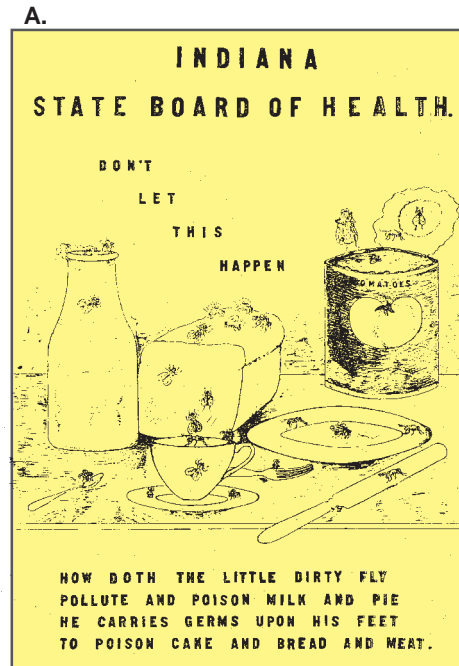
**Some achievements in Indiana under Hurty's administration at the State Board of Health**

- 1899 - Pure Food and Drug Law
- 1903 - Quarantine Law
- 1907 - Sterilization Law
  - Anti-toxin Law
  - Drug Sample Law
- Pure Food and Drug Law, amended in 1911
- 1909 - Sanitation of Food Producing Establishments Law
- 1911 - Prevention of Infant Blindness Law
  - Hydrophobia Law
  - Renovated Butter Law
  - Cold Storage Law
- 1913 - Vital Statistics Law
  - Sanitary Schoolhouse Law
  - Medical School Inspection Law
  - Anti-Rat Law
  - Public Water Supply Law
  - Weights and Measures Law
  - Clean Milk Can Law
  - Public Playgrounds Law
  - Establishment of Sanitary Districts
  - Housing Law
  - County Hospital Law
  - Sanitary Mattress Law
  - Fertilizer Reduction Plant Law
  - Mausoleum Law
  - False Advertisement Law
  - Cigarette Law
  - Transportation of School Pupils Law
  - Schoolhouse Civic and Recreation Center Law
  - Child Neglect Law, amended in 1915
- 1915 - Anti-Tuberculosis Law
  - Full Sized Sheet Law
  - Drainage, Sanitary and Reclaiming District Law
  - Sanitary Packing and Shipping of Rags and Paper Stock Law
  - Cutting Weeds Along Public Highways Law

Source: J. N. Hurty, "Review of Public Health Work in Indiana," in Lee F. Bennett, ed., *Proceedings of the Indiana Academy of Science 1916* (Indianapolis, 1917), 233-35.

## Guard against flies

The danger of flies—as carriers of “filth-borne diseases” such as typhoid fever—was a major campaign of the Indiana State Board of Health under Dr. John N. Hurty. **A:** This health poster “in true Hurty style” shows and tells the dangers of flies (Rice, 140). **B:** This vivid image was on a State Board of Health postcard with a message about filth to “Dear Citizen” from “A Housefly and Family” (Rice, 143). **C:** The newspaper clipping gives some indication of statewide inaction in 1909.



Indianapolis Star, September 5, 1909.

1902	1902	1906	1907	1912	1918	1920
U.S. Congress appropriates funds to establish food standards and to study the effects of chemicals on digestion and health ("Milestones," 2).	Congress passes law organizing U.S. Public Health and Marine Hospital Service thus establishing for the first time a federal role in public health (Duffy, 240-41).	<b>June 30</b> Pure Food and Drugs Act is passed by Congress; on same day, Meat Inspection Act passes requiring federal inspection for all plants in interstate commerce (Carruth, 402, 404).	Indiana General Assembly revises its food and drug legislation, aligned more closely with federal Pure Food and Drugs Act ( <i>Outdoor Indiana</i> , September 1970, 33).	Dr. John Hurty, Indiana State Board of Health, is elected president of the American Public Health Association (Russo, 46).	<b>October 10</b> Due to influenza epidemic, Indiana Board of Health issues order banning all public gatherings in the state until October 20 ( <i>Indianapolis Star</i> , October 10, 1918, 1).	Life expectancy of white males at birth in the U.S. is 56.34 years; all other males, 47.14 ( <i>Statistical Abstracts of the U.S.</i> ).

# Obtaining pure water

A supply of pure water was one of the crucial elements for Indiana's earliest settlers. Often that supply was a pure spring or stream, or—if necessary—a well had to be dug.

As towns grew, water had to be provided and regulated. For example, in 1814, Jeffersonville, Indiana trustees passed the following ordinance to protect the town's public wells:

if any person or persons, after the date here of shall let the Bucket go down the well without supporting it by the handle or windlass or shall wrench [rinse] clothes at the well, or water horses with the buckets, he or she so offending shall on conviction thereof be fined fifty cents with costs for each offense (*BROADSIDES: Indiana, The Early Years, Resource Guide* [Indianapolis: Indiana Historical Bureau, 1987], p. 226).

Throughout the nineteenth century, the population of Indiana

grew—and so did its industries. City and town officials found it more and more difficult to provide clean water and to deal with accumulating waste and garbage. Physicians and scientists were also beginning to understand diseases and connect them with sanitary conditions.

The Indiana State Board of Health under Dr. John N. Hurty emphasized testing of water supplies throughout the state. The board's laboratory was finally authorized by the General Assembly in 1905; it was opened in 1906 (Rice, 179, 180). The board also educated the public and officials about the need for controlling water pollution.

In its *Annual Report* for 1906, the board reported on the public water supply in the first annual report of its laboratory of hygiene:

The water supply, furnishing as it does water for drinking and domestic purposes, becomes an important factor in determining the health of a community. Indeed it is the most important of all the agents which administer to healthful life. Certain diseases are largely water borne, particularly diseases of the intestinal tract, such as cholera and typhoid fever, and the quality of water supplied to perhaps 90 per cent. of a town's population, is of first importance. This is realized more and more and the consumers today refuse to drink water that a few years ago was used without the slightest fear. . . . Water supplies should be constantly subjected to rigid inspection.

In 1911, the State Board of Health undertook a major survey of the part of the Ohio River that borders Indiana. Scientists traveled the Ohio River in a houseboat outfitted with testing equipment.

The principal object of the survey was to ascertain the suitability of the river as a source of domestic water supply and . . . to determine to what extent Indiana cities and manufacturing concerns are responsible for the pollution of the water (*Annual Report*, 1911, p. 335).

A major conclusion of the 1911 survey was

that, in its raw state, the river water is contaminated and unfit for drinking purposes at any point along the survey. . . . river water should not be used, as is now the case at several cities, without purification. It can only be made safe by filtration and chemical treatment (ISBH, *Annual Report*, 1911, pp. 400-1).

In 1913, the State Board of Health was authorized by the General Assembly to enforce pure water supplies in cities or towns (*Indiana Laws*, 1913, pp. 63-64).



The houseboat used in the Indiana State Board of Health Ohio River survey in 1911 (Jay Allen Craven, "A Sanitary Survey of the Ohio River Bordering Indiana" [Thesis submitted to the faculty of Purdue University for degree of civil engineer, June 1912], frontispiece).

1925	1927	1928	1930	1930	1932	1935	1935
Indiana General Assembly passes law requiring pasteurization of milk or tuberculin testing of cattle (Madison, 314).	A separate law enforcement agency is formed—the Food, Drug, and Insecticide Administration. In 1930 its name is changed to the Food and Drug Administration ("Milestones," 3).	Alexander Fleming discovers penicillin in molds; it is not used clinically until the 1940s (Hellemans and Bunch, 451).	The Postum Company begins marketing frozen foods for the first time (Hellemans and Bunch, 457).	Sliced bread is introduced (Hellemans and Bunch, 457).	German chemist Gerhard Domagk discovers first sulpha drug—Prontosil (Hellemans and Bunch, 461).	Domagk uses Prontosil on his daughter to prevent infection; its success makes Prontosil famous as the first "wonder drug" (Hellemans and Bunch, 469).	Congress passes Social Security Act which immediately provides millions of dollars for public health services (Duffy, 258).

## Clean Water Testing Dates of tests

Private water supplies		1906	1911	1916
<b>deep wells tested</b>		<b>150</b>	<b>205</b>	<b>442</b>
good		111	166	353
bad		25	18	75
doubtful		14	21	14
<b>shallow wells tested</b>		<b>342</b>	<b>559</b>	<b>706</b>
good		125	252	263
bad		177	232	426
doubtful		40	75	17
<b>Public water supplies</b>				
<b>deep wells tested</b>		<b>57</b>	<b>88</b>	<b>135</b>
good		42	76	124
bad		10	2	11
doubtful		5	10	0
<b>shallow wells tested</b>		<b>40</b>	<b>14</b>	<b>66</b>
good		11	13	52
bad		20	1	14
doubtful		9	0	0

The Indiana State Board of Health obtained its first laboratory in 1906. It immediately began testing water supplies from throughout the state. This chart illustrates the results of testing wells over an eleven year period. In 1906, there were an estimated 351,000 private wells serving 1,757,000 citizens. There were 141 towns with public water supplies serving 891,000 citizens (ISBH, *Annual Report*: 1906, pp. 136-37, 143, 145; 1911, p. 315; 1916, pp. 96, 98). Shallow wells—like the one on the back cover of this issue—are at high risk of pollution; does this chart support that statement?

## Manufacturing Concerns in Indiana Discharging Waste into the Ohio River, 1911

CITY OR TOWN.	Name of Company.	Number of Employees.	Product.	Source of Water Supply.	WASTE.		Remarks.
					Kind.	Amount. Gallons per Day.	
Lawrenceburg	Rosedale Distillery Co.	80	Whiskey	Wells	Distillery slop		Feed 700 cattle.
Lawrenceburg	Greendale Distillery Co.	40	Whiskey	Wells	Distillery slop		Feed 450 cattle.
Lawrenceburg	Squibbs Distillery Co.	20	Whiskey	Wells	Distillery slop		Feed 500 cattle.
Rising Sun	Rising Sun Canning Co.	50	Tomatoes	Wells	Peelings and wash water	500	
Markland	Markland Canning Co.	40	Tomatoes	Wells	Peelings and wash water	325	
Madison	Snider Catsup Co.	125	Catsup	Well and city water	Peelings and seeds	650	
Madison	Eagle Cotton Mills	300	Sheeting, yarn, etc.	Well and city water	Spent liquor and dye	15,000	
Madison	J. S. Schofield and Sons' Co.	45	Blankets, flannels, etc.	City water	Spent liquor and dye	1,250	
Bethlehem	Bethlehem Canning Co.	40	Tomatoes	Well	Peelings and wash water	650	
New Albany	August Barth Co.	70	Leather	Well	Lime-bark liquor, hair and dirt	10,000	
New Albany	Indiana Leather Co.	35	Leather	Well	Lime-bark liquor, hair and dirt	2,000	
New Albany	Day Leather Co.	50	Leather	Well	Lime-bark liquor, hair and dirt	10,000	
New Albany	Anchor Stove Co.	100	Stoves	Well	Acid water	15,000	
New Albany	Geo. Moser Co.	60	Leather	Well	Lime-bark liquor, hair and dirt	8,000	
Alton	Alton Canning Co.	40	Tomatoes	River	Peelings and wash water	250	
Cannelton	Cotton Mills Co.	300	Sheeting	Well	Wash water	25,000	
Tell City	Tell City Canning Co.	42	Tomatoes	City water	Peelings and wash water	650	
Tell City	Krogman's Distillery	4	Whiskey	Well and city water	Distillery slop		
Tell City	Tell City Woolen Mills	48	Woolen goods	River	Wool wastes	10,000	
Rockport	United Box Board Co.	50	Strawboard	Wells	Spent liquor, lime, etc.	1,000,000	
Evansville	Globe Paper Co.	40	Corrugated paper	City water	Silicate of soda		
Evansville	Sunny Side Coal Co.	45	Coal and coke	City water	Acid water	3,000	
Evansville	Evansville Packing Co.	115	Meats	City water	Wash water		
Evansville	Daudistel Packing Co.	12	Meats	City water	Wash water		
Evansville	Crescent Coal Co.	140	Coal	City water	Acid water	8,000	
Evansville	Indiana Canning Co.	100	Tomatoes	Well	Peelings and wash water		Solid matter taken to crematory.
Evansville	Evansville Plating Works	17	Plating	City water	Acid water	10,000	
Mt. Vernon	Mt. Vernon Strawboard Works	75	Strawboard	River	Washings	600,000	Use 200 bbls. of lime per day.

This chart resulted from the 1911 survey of the river by the Indiana State Board of Health (*Annual Report*, 1911, p. 355). Are there still companies manufacturing these products today? How do they address the problems of waste pollution?

1936	1938	1939	1939	1940	1940	1942	1945
<b>March</b> A special session of the Indiana General Assembly passes a law enabling the state to receive monies from the federal Social Security Act of 1935 (Madison, 325).	After a 5 year battle, Congress passes the Food, Drug, and Cosmetic Act, a major revision of the 1906 law ("Milestones," 3).	Birds Eye markets first precooked frozen foods (Hellemans and Bunch, 479).	First food standards are issued—canned tomatoes, tomato puree, and tomato paste ("Milestones," 3-4).	Howard Florey and Ernst Chain develop penicillin as an antibiotic in England (Hellemans and Bunch, 483).	Freeze drying, developed first for medicine, is used for food preservation in the U.S. (Hellemans and Bunch, 483).	Study by the American Public Health Association finds Indiana far behind most states in providing public health services (Madison, 328).	Fluoridation of the water supply to prevent dental decay is introduced into the U.S. (Hellemans and Bunch, 489).

# Fighting for healthy milk

Early in his administration at the Indiana State Board of Health, Dr. John Hurty took on the fight for healthy milk. As the cartoon and caption on this page suggest, children were the most frequent victims of impure milk.

Hurty had the law behind him to fight against bad milk, but he lacked money and staff to enforce it. His recommendations for costly pasteurization and bottling of milk brought protests from many dairymen. Hurty and others urged that pasteurization of milk be carried out at home to kill germs (Rice, 162, 167).

The State Board of Health had the power to close dairies and did so. Sometimes the sanitary conditions at the dairy—not the adulteration of milk—caused the closure. In a paper presented at a conference of health officers in June 1899, Dr. A. W. Bitting, Purdue University outlined four inspection elements:

A complete milk and dairy inspection . . . the milk as to quality . . . the presence of adulterants . . . the examination of the cattle for diseases . . . and of the surroundings (ISBH, *Annual Report*, 1899, p. 185).

In addition to assuring purity of milk at the start of the supply

line, delivery steps also needed to be controlled. According to Rice (161),

The milkman in the city distributed milk from door to door, dipping it from an open can—and sometimes drinking from the dipper himself . . . The milk was left on the doorstep in a pan of some sort. If the pan was not taken in promptly it is likely that the cat might beat the housewife to it.

An April 1900 *Bulletin* of the State Board of Health, mentions “sticks, hairs, insects, blood, pus and filth in milk. The same Bulletin says that by careful measurement the citizens of Indianapolis consume *over one ton of manure* in a year’s time” in milk (Rice, 162).

The most serious adulteration of milk—especially for children—was the use of formaldehyde as a preservative. As early as July 1899, the *Indianapolis News* reported prosecutions of dairymen who added formaldehyde to milk. Many children—including infants at the Indianapolis Orphans Home—died from contaminated milk (*Ibid.*, 164).

Regardless of prosecutions, better knowledge, and the cooperation of many dairymen who wanted pure milk, the fight went on for many years (*Ibid.*, 168). By 1909, however, dairymen and health officers were carrying out their second annual convention “To Study Sanitary Milk Production and Distribution . . .” (Convention Program).

According to Rice (161) “in 1896 it was a very serious matter indeed if a mother could not nurse her own child. . . . few such children even lived to adult life. . . . The biggest reason for all this was . . . the very poor quality of the milk which was available for baby feeding and for use by the public in general.” This cartoon by Gaar Williams visualizing the situation appeared in the *Indianapolis News* (date unknown, circa 1900). The caption reads, “It looks like a tough battle for the little fellow” (Rice, 163). Williams was a famous Hoosier cartoonist.



1946	1949	1950	1952	1952	1953	1955	1959
U.S. agency to control malaria in war areas becomes Communicable Disease Center, known today [1990] as the Center for Disease Control (Duffy, 279).	X-rays from a synchrotron are used for the first time in medical diagnosis and treatment (Hellemans and Bunch, 509).	Life expectancy of white males at birth in the U.S. is 66.31 years; all other males, 58.91 ( <i>Statistical Abstracts of the U.S.</i> ).	Polio epidemic strikes U.S. affecting 47,665 persons (Hellemans and Bunch, 513).	Jonas Salk develops vaccine against polio; used for mass inoculations starting in 1954 (Hellemans and Bunch, 515).	Evarts Graham and Ernest Wydner show that tars from tobacco smoke cause cancer in mice (Hellemans and Bunch, 517).	In U.S., deep freezers capable of freezing fresh food go on sale (Hellemans and Bunch, 521).	Three weeks before Thanksgiving, U.S. cranberry crop is recalled to test for presence of a weedkiller (“Milestones,” 5).

# Indiana's champion in Washington

Indiana also provided a champion for public health in the federal government. Harvey Washington Wiley was crucial in the passage on June 30, 1906 of the federal Pure Food and Drugs Act. Federal law is still necessary to regulate food and drugs in interstate commerce, which is not protected by state laws.

Wiley was born on October 18, 1844 on a small farm near Kent, Jefferson County, Indiana (Wiley, 13). In 1868, he apprenticed with Dr. S. E. Hampton in Milton, Kentucky to learn the rigors of being a country doctor. He studied at the Indiana Medical College in Indianapolis and received his M.D. in 1871 (*Ibid.*, 91-93, 95, 97).

Wiley was elected chairman of chemistry at the Indiana Medical College in 1872. He attended Harvard University, 1872-1873, and received a bachelor of science degree. He became professor of chemistry at Purdue University, Lafayette, Indiana in 1874 (*Ibid.*, 98, 112n, 122).

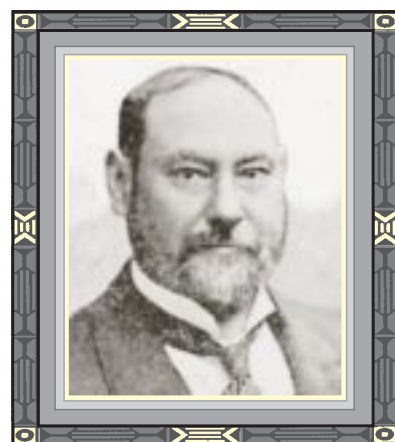
During a visit to Europe in 1878, he met with some of the world's best chemists: "I found myself more and more interested in chemistry and the science of nutrition." After returning to Purdue, his research was focused: "I carried back a passion for examining food products, especially sugars." By the spring of 1883, Wiley notes, "My investiga-

tions of food adulterations had led me to believe that tremendous changes had to be brought about before there would be anything like the protection the public needed from impure and dangerous substances" (*Ibid.*, 138, 150, 154).

On April 9, 1883, Wiley was sworn in as chief of the Division of Chemistry of the U.S. Department of Agriculture (*Ibid.*, 159). He remained with the department until 1912. He is best remembered for the "vital role . . . [he] played during the long fight to extend federal protection to the consumers of food and drugs" (Anderson, 1).

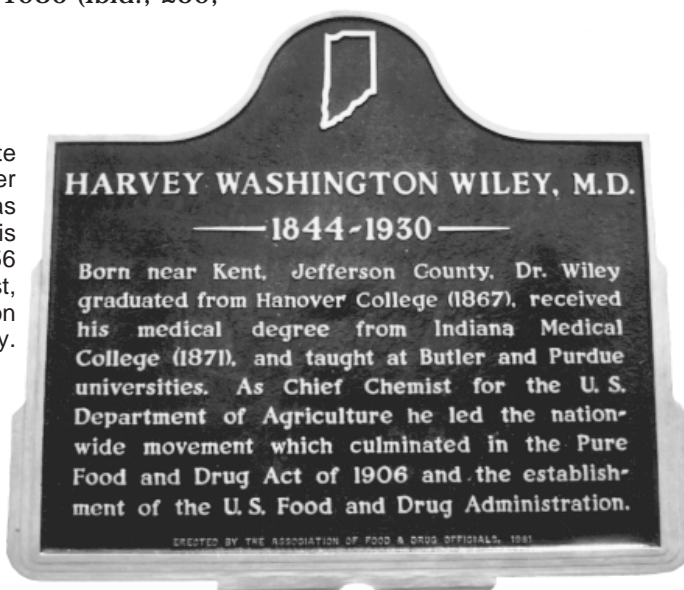
Wiley continued the fight for pure food through his writings and as director of the Bureau of Foods, Sanitation, and Health of *Good Housekeeping Magazine*. He died on June 30, 1930 (*Ibid.*, 259, 278).

This Indiana state historical marker honoring Wiley was installed in 1981. It is located at SR256 and CR850 West, Kent, Jefferson County.



Dr. Harvey Washington Wiley.

The Indianian, December 1897, cover.



Indiana Historical Bureau.

1962	1965	1968	1970	1970	1972
Kefauver-Harris Drug Amendments pass. Congress requiring drug manufacturers, for the first time, to prove to the FDA the effectiveness of their products before marketing them ("Milestones," 5).	Drug Abuse Control Amendments are enacted to regulate problems caused by abuse of depressants, stimulants, and hallucinogens ("Milestones," 6).	April James L. Goddard, commissioner of U.S. Food and Drug Administration, refuses to permit canned ham that has been radioactively sterilized to be used by the U.S. Army (Helleman and Bunch, 561).	December 2 Environmental Protection Agency begins its work. Established by President Richard Nixon in July, the EPA's first director is William D. Ruckelshaus of Indiana (Carruth, 674).	December 31 National Air Quality Control Act calls for ninety percent reduction in automobile exhaust pollution by 1975 (Carruth, 677).	October 18 Over President Nixon's veto, Congress passes the Water Pollution Control Act requiring industry to stop waste discharges into water by 1985 (Carruth, 689).

# Public health challenges continue

The centennial anniversary of Indiana's Pure Food and Drug Law of 1899 will be in 1999. An issue of *The Indiana Historian* on the topic of public health seemed to be an appropriate tribute.

Current practices and widespread articles about public health concerns—three of which are illustrated here—present an opportunity to look at and consider changes over time in public health.

The items reproduced on this page—as well as items on the timeline—indicate the continuing challenges for agencies and individuals seeking to maintain the health of the world's population.

As the diagram on page 4 indicates, health and disease must be global concerns, especially because of the quick and easy access provided by air travel.

In the nineteenth and early twentieth centuries, public health pioneers worked with minimal knowledge and tools fighting ignorance and poverty. There was a constant need to balance economic and political interests with progress in public health.

After mid-twentieth century advances in medicine and sanitation, scientists believed that they had defeated infectious diseases. Recent outbreaks have demon-

strated the error of that belief.

Populated areas continue to increase, and their demands on the environment grow as well. Today, for example, many sources of water for cities and towns remain the same as they were for Indiana's early settlers. Obtaining pure water from those sources, however, is a much more complex operation.

Although they have advanced knowledge and tools, scientists are still facing extraordinary public health challenges. As the twenty-first century approaches, public health scientists are still pioneers.

The New York Times, January 4, 1998.

## Deadly Bacteria a New Threat To Fruit and Produce in U.S.

By CHRISTOPHER DREW and PAM BELLUCK

Anna Grace Gimmestad, 16 months old, was just beginning to put her infant stamp on the world. She would parrot the whir of a helicopter, pause on each stair step to kiss her parents through the banister.

By these accounts, managers brushed accusations from a young consumer inspector that a batch of produce was too rotten to use — highly decayed, one out had a worm in it

## 4-front war declared on infectious diseases

By Anita Manning  
USA TODAY

WASHINGTON — The outline of a global attack on infectious diseases that kill millions of people each year will be unveiled Monday by the U.S. Agency for International Development

medical side. It's because of the conditions of poverty and hunger that these diseases breed and spread."

USAID's goal is to reduce by at least 10% the number of deaths caused by infectious diseases other than AIDS by 2007. Among strategies:

► Teach doctors and pharmacists in here most t prescrip-

USA Today, March 6, 1998.

### SCIENCE & SOCIETY

## The troubling ghosts of scourges past

*Deadly infectious diseases are coming back, and the germs are more clever than ever*

Last year, a drug-resistant strain of tuberculosis swept through New York State prisons and killed 13 men. In a university hospital in Pennsylvania, a deadly drug-resistant blood in-

posed to have been defeated. Last week, a National Academy of Sciences report blamed decades of medical complacency for the resurgence of bacterial diseases. What's more, microbes are

U.S. News and World Report, October 26, 1992, p. 70.

1977	1981	1982	1990	1997
Last recorded case of smallpox found in the wild is in Somalia. Smallpox thought to be extinct except in research laboratories (Hellems and Bunch, 581).	U.S. Centers for Disease Control recognizes AIDS for first time (Hellems and Bunch, 587).	In the aftermath of poisoning of Tylenol capsules, the FDA issues regulations requiring tamper-resistant packaging. Federal Anti-Tampering Act of 1983 makes it a crime to tamper with packaged consumer products ("Milestones," 7).	Nutrition Labeling and Education Act passes Congress requiring all packaged foods to have nutrition labeling. All health claims for foods must meet standards defined by the Secretary of Health and Human Services ("Milestones," 8).	<b>December 3</b> The FDA approves the use of irradiation to kill bacteria such as <i>E. coli</i> in beef. The process is already in use for poultry, fruits, vegetables, and spices. Interest in irradiation increased after meatpacker had to recall 25 million pounds of contaminated hamburger ( <i>Christian Science Monitor</i> , Archives www page, December 3, 1997, p. 2).

# Selected Resources

## Bibliography

- Anderson, Oscar E., Jr. *The Health of a Nation: Harvey W. Wiley and the Fight for Pure Food*. Chicago: University of Chicago Press, 1958.

Provides a detailed and balanced assessment of the contributions of Wiley.

- Carruth, Gorton. *The Encyclopedia of American Facts and Dates*. New York: Harper Collins Publishers, 1993.

Comprehensive, easy-to-read timeline of American history.

- Cummings, Richard Osborn. *The American and His Food: A History of Food Habits in the United States*. Chicago: University of Chicago Press, 1940.

A general history of food and its physical and social impacts on America.

- Duffy, John. *The Sanitarians: A History of American Public Health*. Urbana: University of Illinois Press, 1990.

Comprehensive history of the growth of public health in America.

- Grun, Bernard. *The Timetables of History*. New York: Simon and Schuster, 1991.

Comprehensive, easy-to-read timeline of world history.

- Hellemans, Alexander, and Bryan Bunch. *The Timetables of Science*. New York: Simon and Schuster, 1988.

Contains chronology of most significant achievements in science history.

- Indiana State Board of Health (now Indiana State Department of Health).

The Indiana State Library has an extensive collection of annual reports, monthly bulletins, health brochures and flyers, and other materials dating from 1881 to present. The Indiana State Archives has the official records of the agency.

- Janssen, Wallace F. "America's First Food and Drug Laws." *FDA Consumer*, 9:5 (June 1975), 12-18.

A brief introduction to the history of the first food and drug laws.

- King, W. F. *One Hundred Years in Public Health in Indiana*. Indianapolis:

Indiana Historical Society, 1921.

This interesting survey was originally delivered as a speech in 1916.

- Madison, James H. *Indiana through Tradition and Change: A History of the Hoosier State and Its People, 1920-1945*. Indianapolis: Indiana Historical Society, 1982.

Contains a very informative chapter on public health.

- "Milestones in U.S. Food and Drug Law History." <<http://vm.cfsan.fda.gov/milestone.html>>. August 1995.

A Food and Drug Administration timeline of the history of food and drug regulation in the United States.

- Phillips, Clifton J. *Indiana in Transition: The Emergence of an Industrial Commonwealth, 1880-1920*. Indianapolis: Indiana Historical Bureau and Indiana Historical Society, 1968.

Chapter on public health is very informative.

- Rice, Thurman B., *The Hoosier Health Officer: A Biography of Dr. John N. Hurty*. Collected reprints of articles appearing in the Indiana State Board of Health *Bulletin*, 1939-1946.

The articles are by a colleague of Hurty. A mixture of primary documentation and personal opinion, they give insight to the personal and professional sides of Hurty.

- Russo, Dorothy Ritter, ed. *One Hundred Years of Indiana Medicine, 1849-1949*. [Indianapolis]: Indiana State Medical Association, 1949.

This book was published in connection with the centennial of the Indiana State Medical Association. It is a compilation of articles which gives general overviews of aspects of Indiana's medical history.

- Thornbrough, Emma Lou. *Indiana in the Civil War Era, 1850-1880*. Indianapolis: Indiana Historical Bureau and Indiana Historical Society, 1965.

Informative chapter examines public health issues.

- Wiley, Harvey Washington. *Harvey*

*W. Wiley: An Autobiography*. Indianapolis: Bobbs-Merrill Company, 1930.

A well-written, easy-to-read, and enjoyable account of Wiley's life from his childhood on a southern Indiana farm to his public health career.

- Young, James Harvey. *Pure Food: Securing the Federal Food and Drugs Act of 1906*. Princeton, New Jersey: Princeton University Press, 1989.

A detailed history of the origins of and politics behind the Pure Food and Drugs Act.

## Suggested student resources

- Fradin, Dennis Brindell. *Medicine: Yesterday, Today, and Tomorrow*. Chicago: Childrens Press, 1989.

A brief history and the current status of medicine are surveyed in this work for intermediate readers.

- Kalman, Bobbie. *Early Health & Medicine*. New York: Crabtree Publishing Company, 1983.

The work provides an easily read survey of health and medicine for intermediate readers.

- Ritchie, David, and Fred Israel. *Health and Medicine*. New York: Chelsea House Publishers, 1995.

An excellent resource for intermediate readers, with an emphasis on public health. Part of Life in America 100 Years Ago series.

- Senior, Kathryn. *Medicine: Doctors, Demons & Drugs*. New York: Franklin Watts, 1993.

This work provides a concise overview of the history of medicine for any level reader. Part of Timelines series.

## Additional Resources

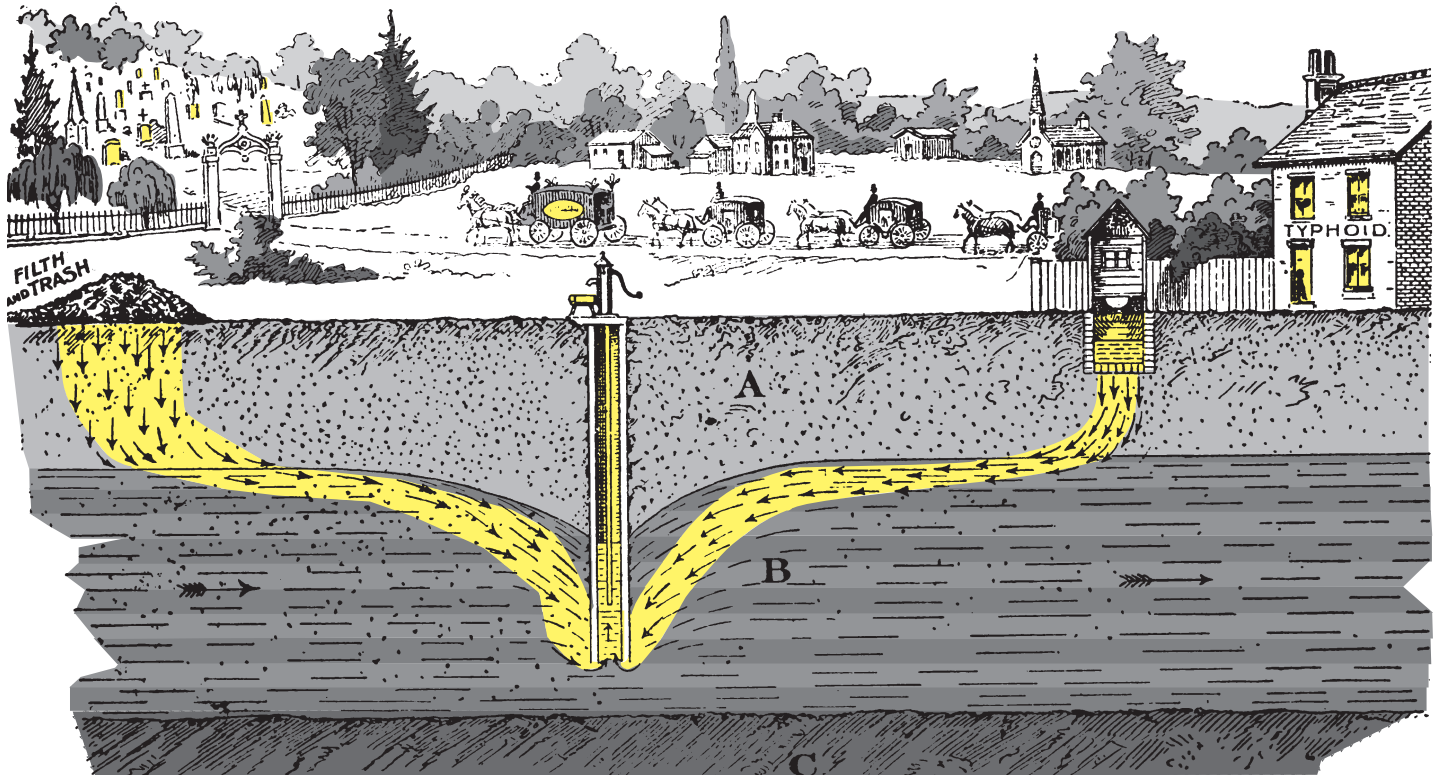
- Indiana State Department of Health.

Literature and videos are available through the Health Promotion Center by calling 317-233-7257. Its address is 2 North Meridian Street, Indianapolis, Indiana 46204.



## Indiana Historical Bureau

140 North Senate Avenue ■ Room 408 ■ Indianapolis, Indiana ■ 46204-2296 ■ 317-232-2535 ■ TDD 317-232-7763



This illustration in black and white was the first image to be used in an Indiana State Board of Health *Monthly Bulletin* (1:4 [October 1899], 7). It shows the pollution of a shallow well by a privy and a trash pile. The house on the right labeled "typhoid" indicates the result of the pollution. In the middle of the illustration is a funeral party going from the house to the cemetery on the left (Rice, 89). Image enhanced by *The Indiana Historian*.