

NPIP STORY

A brief history of NPIP and other related topics.

I want to present to a story about the beginning of the boiler industry as it is told. And as I tell this story I want to show how the process where problems turn to opportunities and progress creates new problems.

My sources for this story is from: Why did the chicken cross the road by Andrew Lawler. Delmarva's Chicken Industry by William Williams, and Partners in Poultry Improvement.



In the late nineteenth century, this was the poultry industry. Many farm families kept chickens. As you can see in this picture, nest were simple boxes, eggs were hand gathered. The barn present some ventilation holes with a sliding board adjustment. one thing I notice is that there is no vegetation indicating that there is quite a few chickens somewhere nearby. This picture shows enough nest for 30 hens.

The common practice was to order 50 chicks early in the spring. Raise the flock and eat the males as soon as they could be sorted out fryers first, boilers next roasters later and stewing hens as the laying flocks egg production began to wane. Good layers would be carried through the winter for Easter eggs. And the process would begin again next year. 50 chicks each spring fed the family for a year.



Here is a picture of a circa 1905 Queen incubator. It looks big enough to hold 30 dozen eggs. The oil burner on the side provided the heat.

But in 1923, a mistake that no one will admit to, caused Vernon Steen to send Celia Steele 500 chicks instead of the 50 she needed. They decided to raise them and sell them. By 1926, She and Wilmer were raising 10,000 each year.



Here is said to be a photograph of the Wilmer Steele's poultry farm. That could very well be 10,000. notice the small 12x12 barns with two windows and a door. Birds were fed and watered outside the building. The main purpose for the building is for roosting and sleeping at night. The barn kept the varmints out at night.

During a twenty year time the New York price of eggs and chicken nearly doubled. Chickens were mostly sold live.



This peninsula here is called Delmarva, a blend of the sates Delaware, Maryland and Virginia. Notice the large cities around this most excellent farmland. New York Philadelphia , Baltimore, and Washington.

Here is the thing that tied them together. The poultry trains were running from New York back to Sussex county Delaware. I wanted to tell you how many birds cold be on the train but I not sure. I will point out that they weren't all chickens. see that goose on the left end.

Soon everybody was making money like the Steele family. As the population of chickens increased in Sussex County, the opportunity for disaster was also growing.

By the early 1930's, up to 80% of the chicks being sent to Sussex county were dying. The cause Bacillary White Diarrhea. Remember these are the days when everyone was an organic farmer.



The control of bacillary white diarrhea depends on two factors: First, the detection of infected breeding hens by means of the serum agglutination test, and their removal from the flock; and second, the protection of the newly hatched uninfected chicks against infection in incubators, brooders, and houses.

Flocks free from the disease are needed to supply healthy breeding stock. Avoid purchasing eggs or breeding stock from infected flocks. Isolate all exposed or infected chicks. Destroy all dead chicks by burning. Intestinal antiseptics, including sour milk, may be regarded as palliative remedies, but should not be depended upon to prevent the development of the disease in infected flocks.

Incubators, brooders, and houses should be cleaned and disinfected. Hot lye water (1 pound of lye to 40 gallons of water) applied with a broom or brush with a spray pump is a reliable disinfectant

Valuable information and assistance can be obtained from your local veterinarian in controlling infectious diseases of the character.

It was understood that BWD was being transmitted through the egg to the chicks.



BWD was first recognized in 1899, about 50 years after Louis Pasteur was doing his work in France.

BWD is caused by the bacillary bacteria, meaning rod shaped. in 1913 a blood test was developed that could identify poultry that had been exposed to *Salmonella pullorum*.



As the plague was going through the young poultry industry The IBCA began meeting to discuss how to stop this problem. Two diseases, bacillary white diarrhea disease and a respiratory disease called typhoid were indentified. it was discovered that an organism call *Salmonella Pullorum* and another called *Salmonella Typhimurium* were the cause and blood test could identify the flocks that carried the disease.



in 1935 an agency of the government was funded federally and states were given the responsibility of administrating the National poultry improvement Program (NPIP). NPIP would sign up member hatcheries and breeder flocks. the goal was to stop the disease by eliminating it from the breeder flocks.



Flocks were blood tested for the antigen of Pullorum and typhoid disease. If no antoibiotics were found the flock was designated as Pullorum free. member hatcheries would work to become Pullorum free and them states would announce that they were Pullorum free. The last state to be

listed as Pullorum free was West Virginia in 1946. No known case of Pullorum has been detected since 1973 although the organism is still present in wild upland birds and in countries outside the USA.

In 1955 NPIP expanded its searches for communicable disease in poultry to the mycoplasma classes mainly MG, MS, MM. These are also egg transmissible so it was necessary to remove infected breeder flocks from the industry. Mycoplasma flocks are still present in all the poultry groups, but the monitoring does help keep the spread minimized. In 2005 the NPIP began monitoring for avian influenza. That disease caused widespread devastation in 2015.



The next modification point in the history of the NPIP was the establishment of the Meat and Poultry Inspection Act in 1957. The condemnations at the processing plant due to airsacculitis were extreme in some cases. The losses were due in part to Chronic Respiratory Disease in chickens and pleropneumonia-like organism (PPLO) in turkeys. Mycoplasma gallisepticum (MG) was determined to be the causative organism in both of these conditions. MG was found to be egg-transmitted like pullorum disease and was added to the NPIP plan disease plan.



What is mycoplasma? Mycoplasma is a single cell organism with a fragile cell wall, therefore it cannot live in the environment very long.



But it can live dormant in birds and not cause the symptoms that we see in these photos.

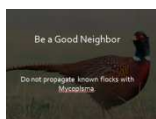


There are other Mycoplasmas; MS Mycoplasma Synoviae MM, Mycoplasma meleagridis. All of the pathogenic mycoplasma are egg transmitted from one generation to another.



Review: Dates So, What shall we do?

NPIP has been successful operation it is under the direction of the APHIS under the USDA. 9 CFR 146. It is administered by each state through a state coordinator under the state veterinarian. The state coordinator monitor and promotes membership. Which is still a voluntary program. Hatcheries are still list as pullorum free. Some would say that the program is obsolete because pullorum is eradicated. But pullorum is not eradicated and could return to the poultry industry. More importantly mycoplasma is still prevalent problem. The more the industry participates in the program the more likely these disease can be removed for the environment.



Be a good neighbor- Do not propagate known flocks with Mycoplasma

test, isolate, eradicate use antibiotics to reduce replication - Avilosin be a good neighbor

Remember when pullorum was eradicated from the poultry flocks there were no antibiotics, no high class disinfectants. And the blood test was rare and expensive. So how was it accomplished?

Through the process of evaluate and slaughtered. Breeder flocks were isolated and flocks with symptoms were not used as breeders. As testing became more prevalent the process was refined to the goal of only originating chicks from pullorum clean breeders. The last state was declared pullorum free in 1947, two decades after IBCA began it campaign against it.

Our access to testing is much cheaper so a method of test and eradicate is feasible.

As a breeder:

Advertising your flock as mycoplasma free

Only sell suspect chicks to terminal locations

Keep breeder flocks in separate location that could be depopulated for 30 days if nessarry.

A few hundred yard can keep MG from moving from bird to bird

Do not allow pen to pen or bird to bird contact

Do not sell suspect chicks to breeder locations

Do not buy adult birds and put them on a location with your breeder flock

As a grower:

Ask your chick supplier if they our mycoplasma free.

Plan to empty your farm yearly or move all carry over birds to a offsite locations and depopulate it later.

What is a terminal location It is a ranch that will be 100% depopulated each year

Have a biosecurity plan.

Ending

DCO (disease causing organisms) like MG must replicate to survive. MG can only replicate in a bird. Once the bird is gone MG dies off quickly.

MG 's weakness is it must be in a bird or egg to survive. By understanding how MG is passed from bird to bird, we can stop it. MG easily moves from bird to bird, but it dies quickly, less than 30 days, away from the bird.



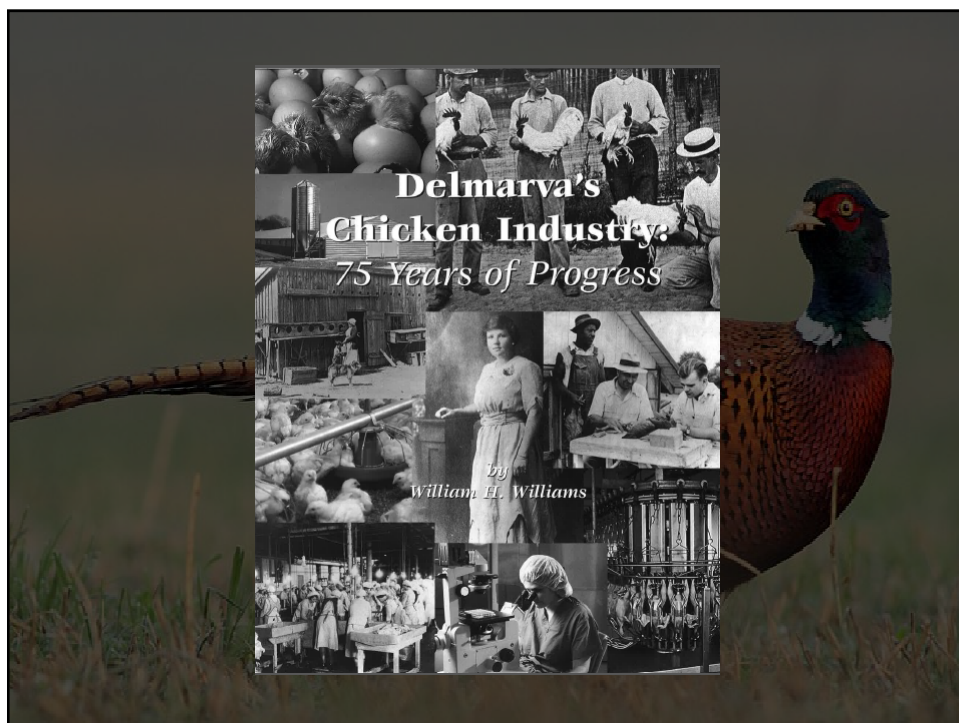
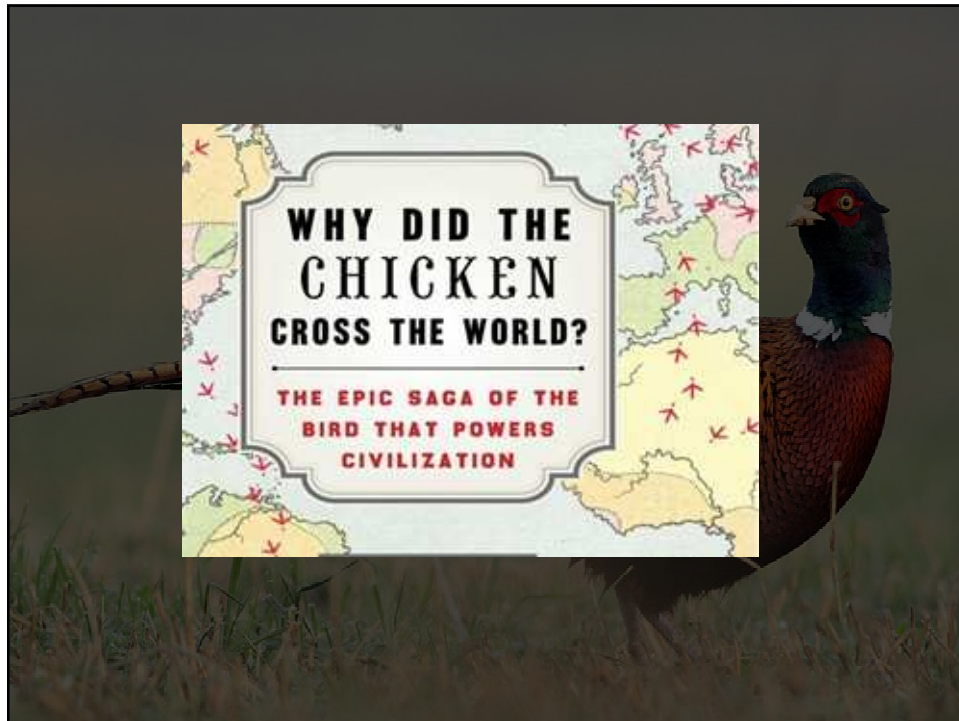
MG can be prevented from entering your farm and it can be eradicated from your farm. Antibiotics like Aivlosin will help, but it will not work alone. They suppress the replication of the DCO but to eradicated you must eliminate the infected birds. So when I say don't buy adult birds what I'm saying is don't mix adult birds with birds that you don't want to kill off once a year as a part of your depopulation. If your depopulating your farm on a yearly basis then MGs not going to be an issue from year-to-year.

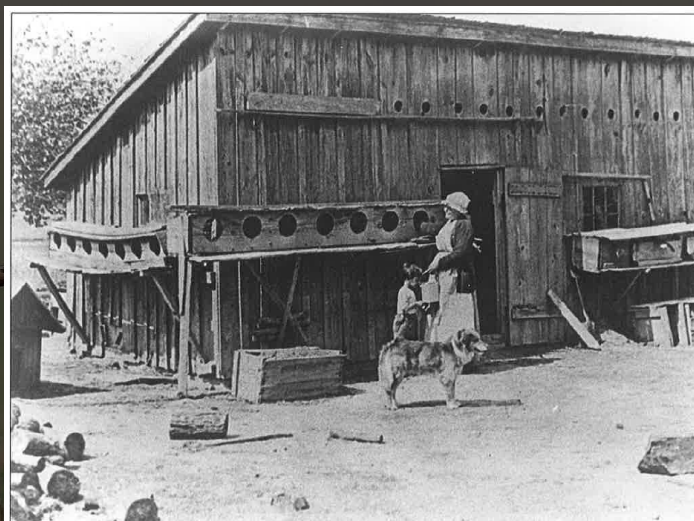
A brief history of NPIP

And other related topics

contents

- The beginning of the broiler industry
- A mistake creates opportunity
- Opportunity creates progress
- Progress creates problems
- The disease
- The solution
- The success
- NPIP
- New problems
- MG
- Bio-security





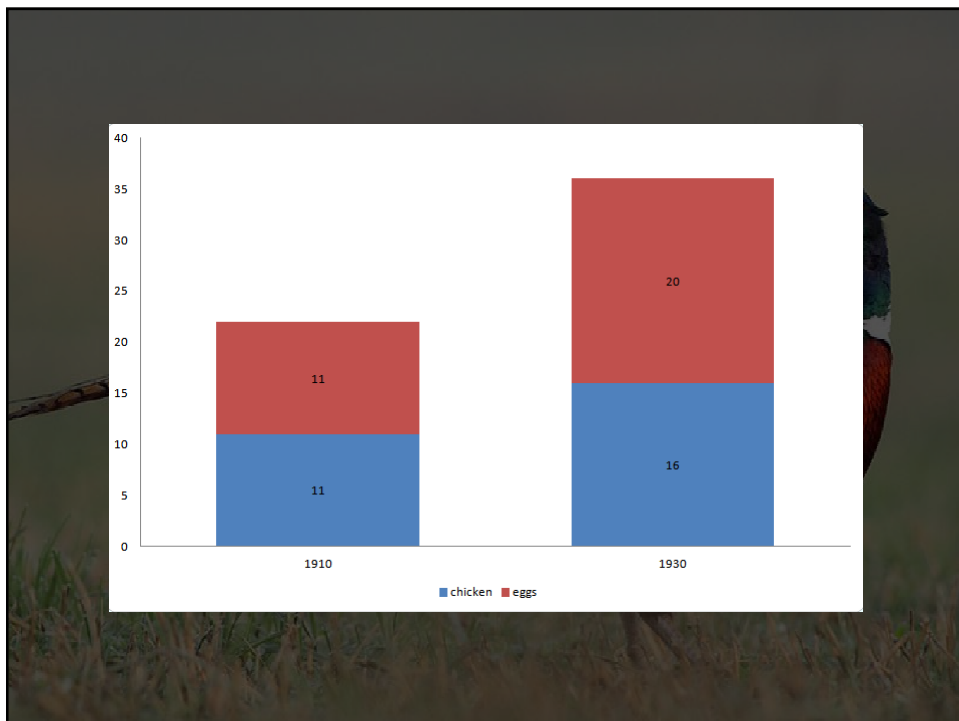
Chicken house, late nineteenth century



Mrs. Wilmer Steele of Sussex County, Delaware, is often cited as the pioneer of the commercial broiler industry.

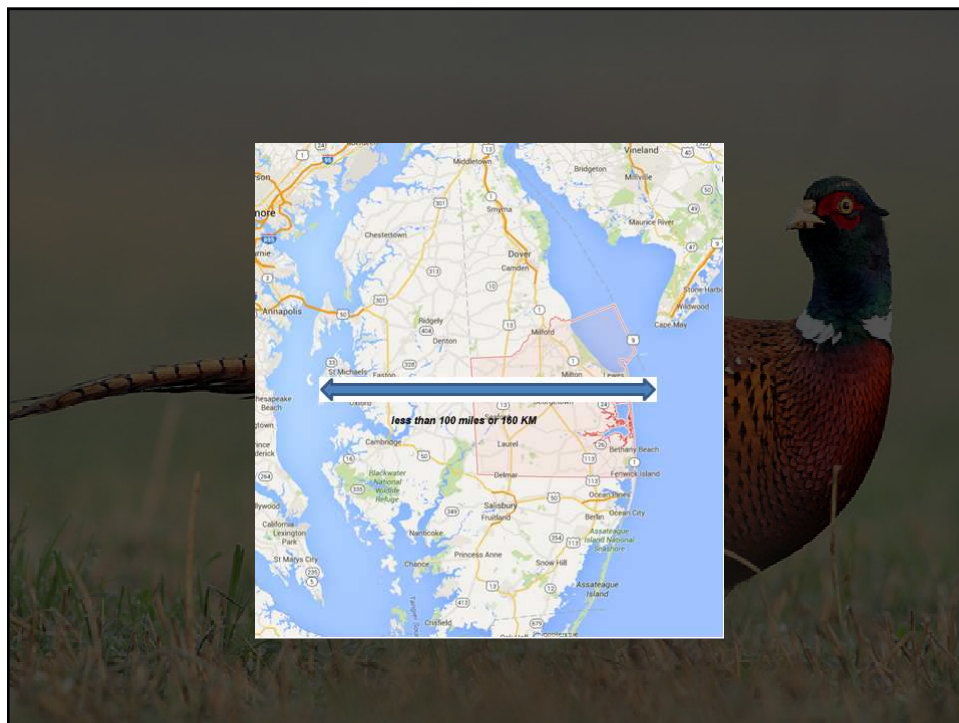
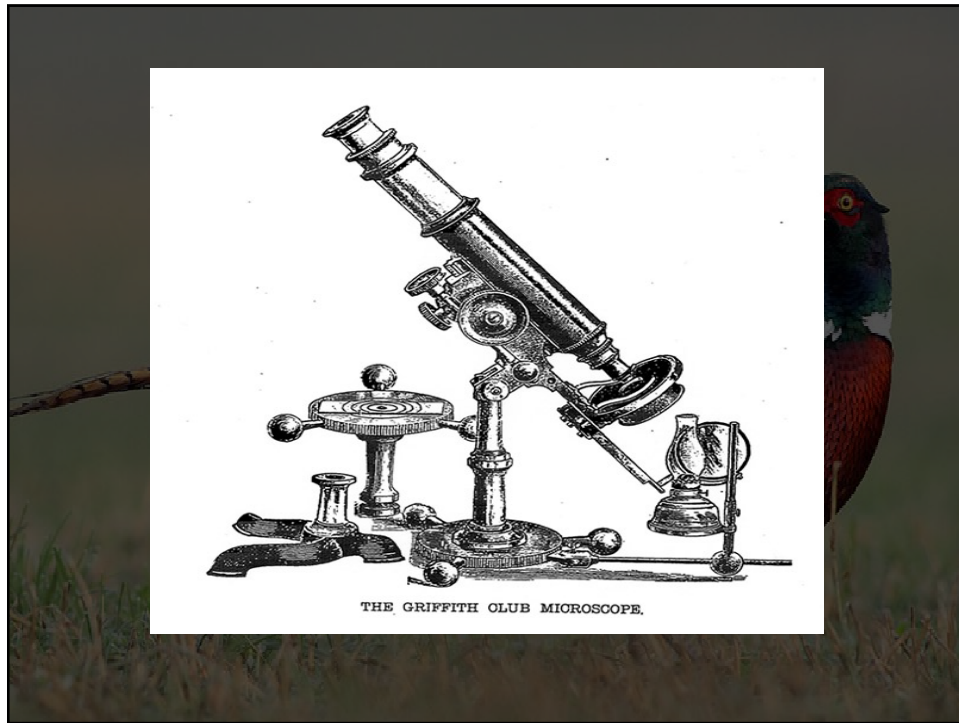
An accident turned Sussex County into the nation's most populous county for chickens. In 1923, Celia Steele of Ocean View ordered 50 chicks for her egg-laying flock. Vernon Steen of Dagsboro delivered 500, which she chose to nurture, according to William H. Williams' "Delmarva's Chicken Industry: 75 Years of Progress." Eighteen weeks later, she had 387 birds weighing about 2.5 pounds apiece. They sold for 62 cents a pound – the equivalent \$8.61 today. In 1924, she ordered 1,000 birds. And by 1926, she and her husband Wilmer were raising 10,000.

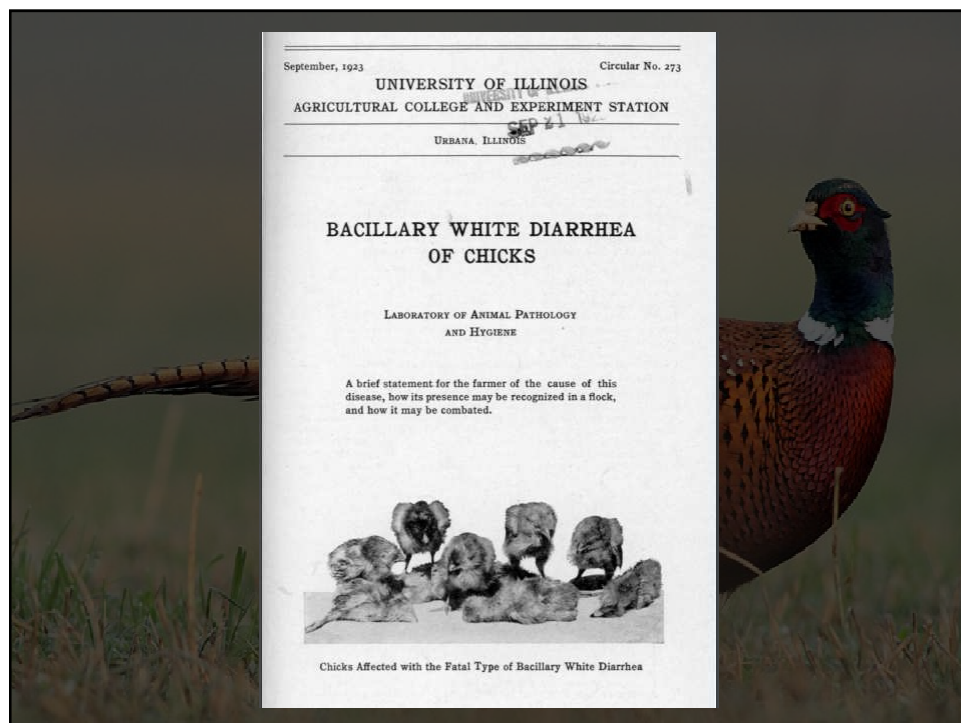





Delmarva Peninsula









BACILLARY WHITE DIARRHEA OF CHICKS

Name.—Bacillary white diarrhea is known also as white diarrhea, septicemic white diarrhea, and bacillary septicemia of chicks.

Definition.—Bacillary white diarrhea is a specific, highly contagious disease of young chicks. It is one of the few diseases that may be transmitted directly thru the egg to the offspring. The disease may also exist in mature stock, but it often remains unrecognized, since there are no visible characteristic symptoms, as in the case of chicks. Some obscure losses in mature breeding stock, however, are traceable to this infection.

Cause.—The specific cause of bacillary white diarrhea is a microscopic organism known as *Bacterium pullorum*. This organism belongs to the colon-typhoid group and is credited with the production of a powerful bacterial poison. In affected chicks at autopsy the organism may be found in the blood, in the unabsorbed yolk, and in the internal organs. The feces of sick chicks contain large numbers of *Bacterium pullorum*. The organism is harbored in the ovaries of chronically affected hens, from which point it may gain entrance to the egg.

Symptoms.—Chicks infected thru the egg manifest symptoms in a few hours after hatching. In the acute type of the disease affected chicks (three to twelve days old) are drowsy and dejected in appearance. The feathers are ruffled, the wings droop, and the chick sways back and forth when in a standing position. Diarrhea often develops, with a "pasting up behind." Death follows in a few hours or at most in a few days. Chronically affected chicks that survive for a longer time appear lame, unthrifty, and dull, with a tendency to the development of a large abdomen. Mildly infected chicks grow to maturity, and while they appear to be healthy, harbor an ovarian infection and eventually become active spreaders of the disease.

Diagnosis.—Illness in young chicks accompanied by diarrhea is not always caused by the bacillary white diarrhea organism; chilling or improper feeding and housing may lower the vitality of young chicks and result in weakness, loss of appetite, and diarrhea. The only means of definitely distinguishing between such ailments and bacillary white diarrhea is by bacteriologic examination. In mature infected breeding stock, bacillary white diarrhea may be diagnosed by the serum agglutination test, or by examination of the ovaries at post mortem. Infected ova


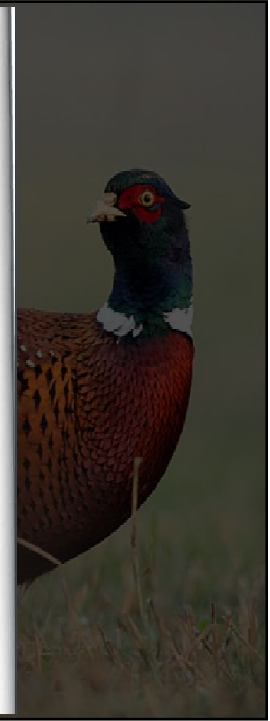



FIG. 1.—CHRONICALLY AFFECTED CHICKS THAT SURVIVED AN ACUTE ATTACK OF THE DISEASE. SUCH CHICKS MAY GROW TO MATURITY AND BECOME CHRONIC "CARRIERS"





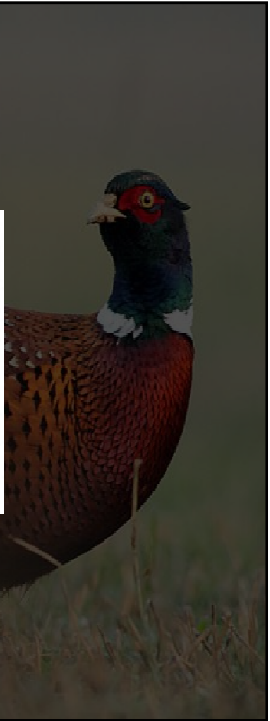
Prevention.—The control of bacillary white diarrhea depends on two factors: *First*, the detection of infected breeding hens by means of the serum agglutination test, and their removal from the flock; and *second*, the protection of newly hatched uninfected chicks against infection in incubators, brooders, and houses.

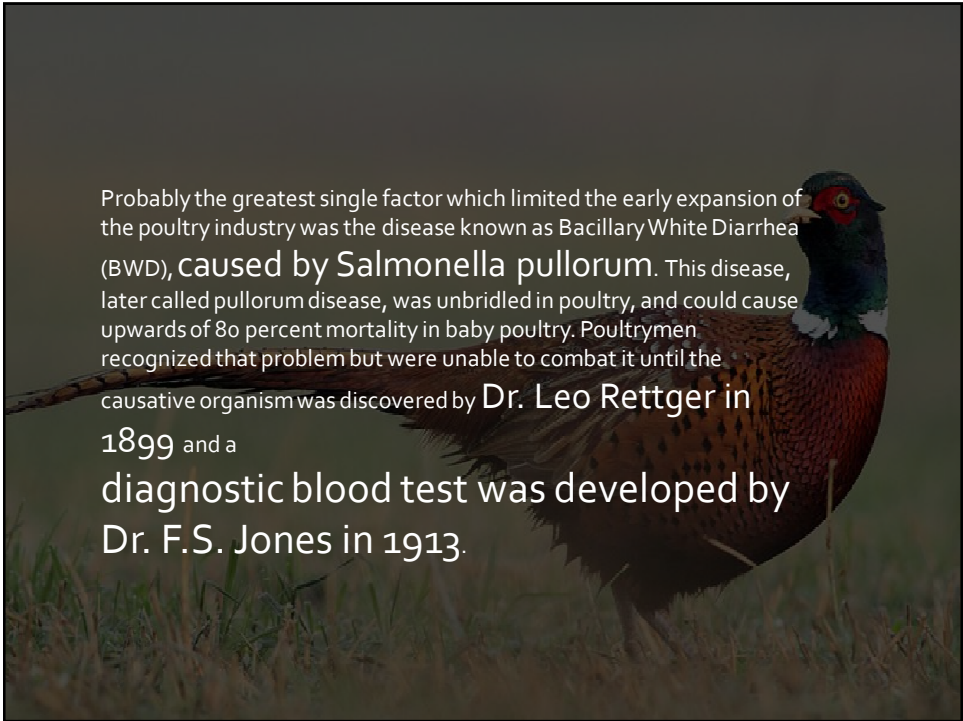
Flocks free from the disease are needed to supply healthy breeding stock. *Avoid purchasing eggs or breeding stock from infected flocks.* Isolate all exposed or infected chicks. Destroy all dead chicks by burning. Intestinal antiseptics, including sour milk, may be regarded as palliative remedies, but should not be depended upon to prevent the development of the disease in infected flocks.

Incubators, brooders, and houses should be cleaned and disinfected. Hot lye water (1 pound of lye to 40 gallons of water) applied with a broom or brush will aid in cleaning. A 3-percent compound cresol solution (U. S. P.) applied with a spray pump is a reliable disinfectant.

Valuable information and assistance can often be obtained from your local veterinarian in controlling infectious diseases of this character.

The Laboratory of Animal Pathology and Hygiene is equipped to make serum agglutination tests. Instructions for collecting blood samples for this test will be found in a separate insert. The test consists of mixing samples of blood serum with a suspension of known *Bacterium pullorum* and incubating the mixture at body temperature (37½° C.) for twenty-four hours. At the end of this time the serum from non-infected hens shows no reaction, while the serum from chronically infected hens causes a clumping, or agglutination, of the bacterial suspension. The test is generally applied in the late summer or early fall months after the flock has been culled. While the value of the test in detecting infected breeding stock over one year of age is well established, it must be remembered that the eradication of the disease is largely dependent upon the vigorous use of sanitary measures, as well as upon the detection and disposal of infected birds.

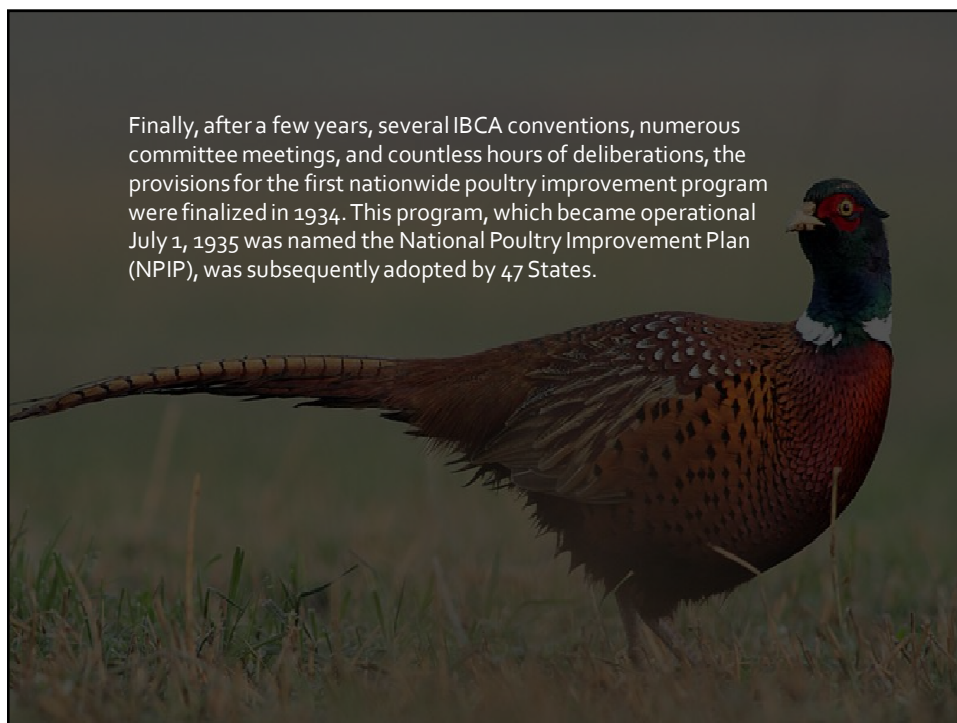
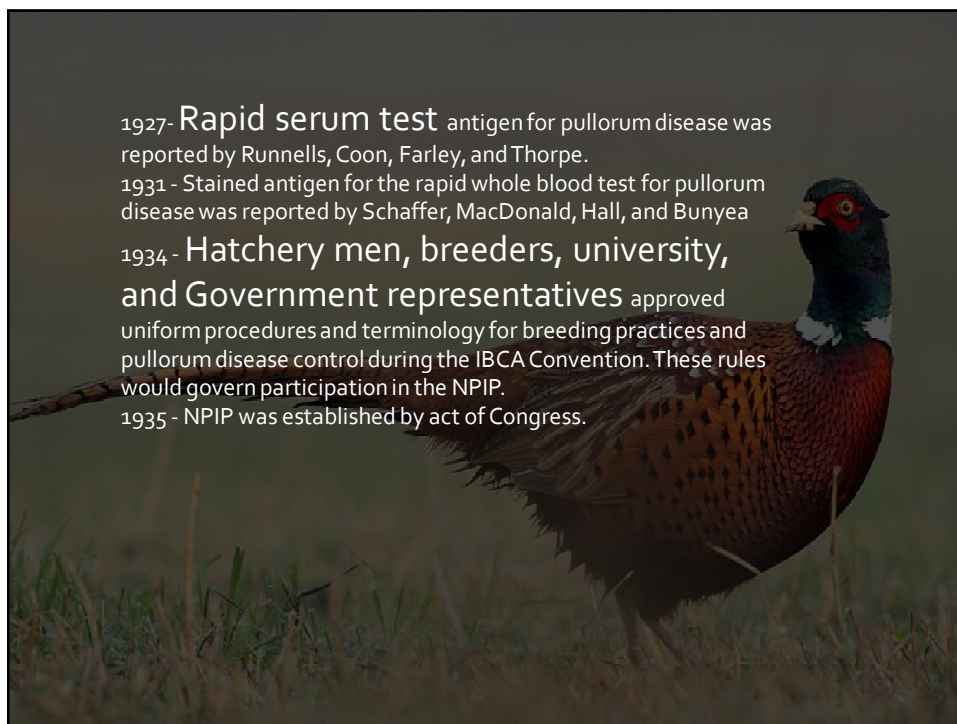


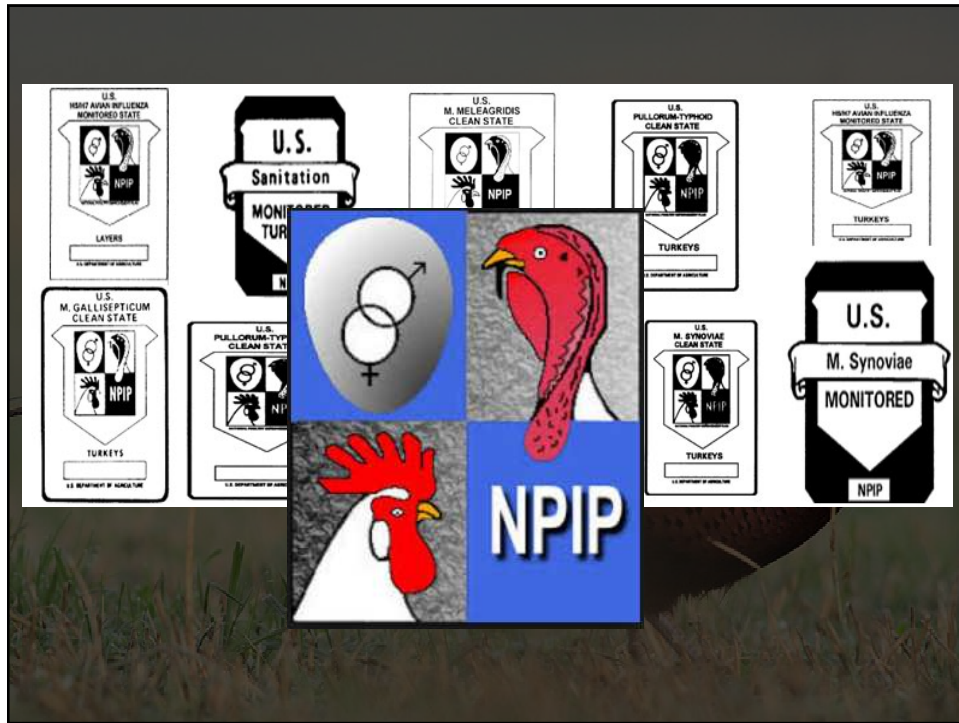


Probably the greatest single factor which limited the early expansion of the poultry industry was the disease known as Bacillary White Diarrhea (BWD), caused by *Salmonella pullorum*. This disease, later called pullorum disease, was unbridled in poultry, and could cause upwards of 80 percent mortality in baby poultry. Poultrymen recognized that problem but were unable to combat it until the causative organism was discovered by Dr. Leo Rettger in 1899 and a diagnostic blood test was developed by Dr. F.S. Jones in 1913.



In the early 1930's members of the poultry breeding and hatching industries, through the International Baby Chick Association (IBCA), started to recognize the advantage of a national program for the improvement of poultry.







The next modification point in the history of the NPIP was the establishment of the **Meat and Poultry Inspection Act in 1957**. The condemnations at the processing plant due to airsacculitis were extreme in some cases. The losses were due in part to **Chronic Respiratory Disease** in chickens and plueropneumonialike organism (PPLO) in turkeys. **Mycoplasma gallisepticum (MG)** was determined to be the causative organism in both of these conditions. MG was found to be egg-transmitted like pullorum disease and was added to the NPIP as a plan disease for turkeys in 1965 and for turkeys in 1966.

What is Mycoplasma?

Mycoplasmas are bacteria lacking rigid cell walls. These fragile organisms cannot survive very long outside of the host. All of the pathogenic avian mycoplasmas (MG, MS, MM and MI) can be transmitted vertically (egg transmission) from one generation to the next, and laterally to neighboring birds or populations of birds by contact (direct or indirect) or by airborne mechanisms.



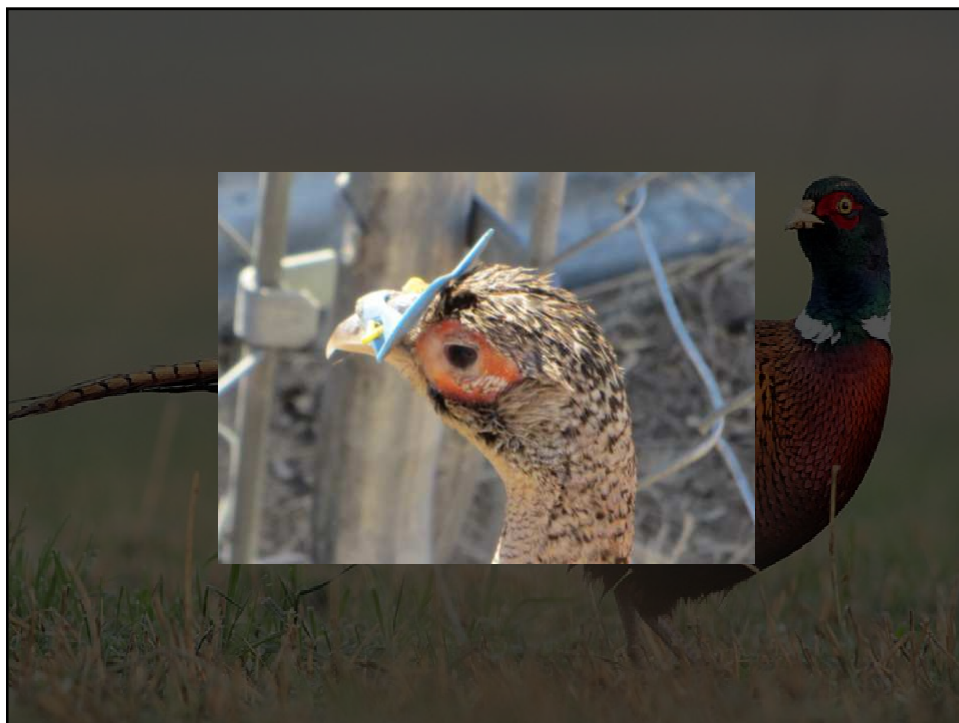
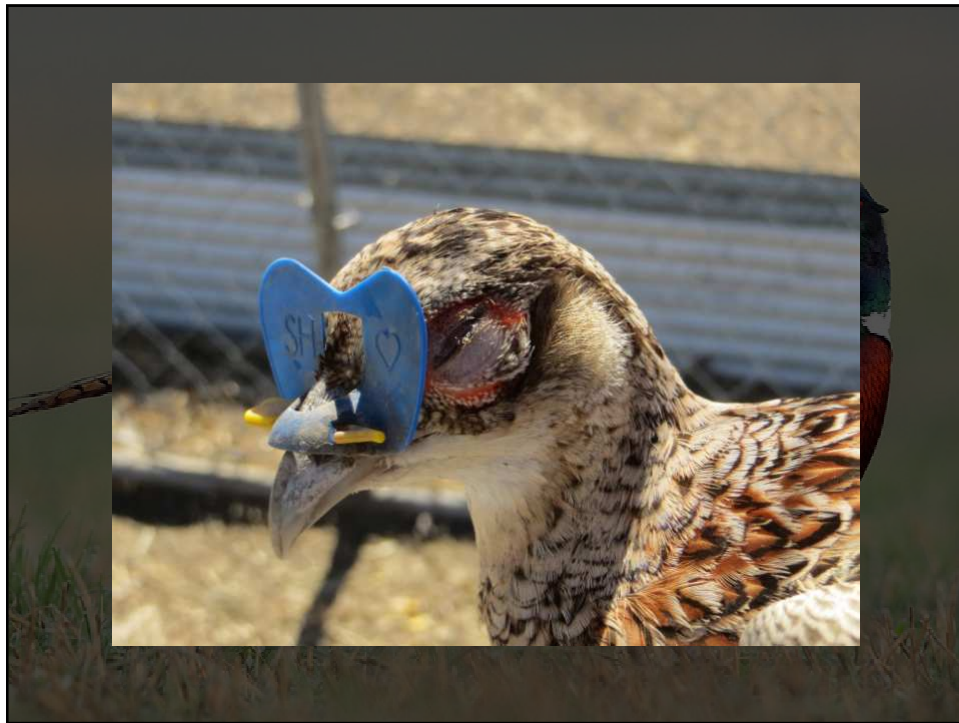
Mycoplasma gallisepticum Infection in Poultry (Chronic respiratory disease, Infectious sinusitis)

THE
MERCK
VETERINARY
MANUAL

M. gallisepticum is commonly involved in the polymicrobial "chronic respiratory disease" of chickens; in turkeys, it frequently results in swollen infraorbital sinuses and is called "infectious sinusitis."

M. gallisepticum is transmitted vertically within some eggs (transovarian) from infected breeders to progeny, and horizontally via infectious aerosols and through contamination of feed, water, and the environment, and by human activity on fomites (shoes, equipment, etc). Infection may be latent in some birds for days to months, but when birds are stressed horizontal transmission may occur rapidly via aerosols and the respiratory route, after which infection and clinical disease spread through the flock.



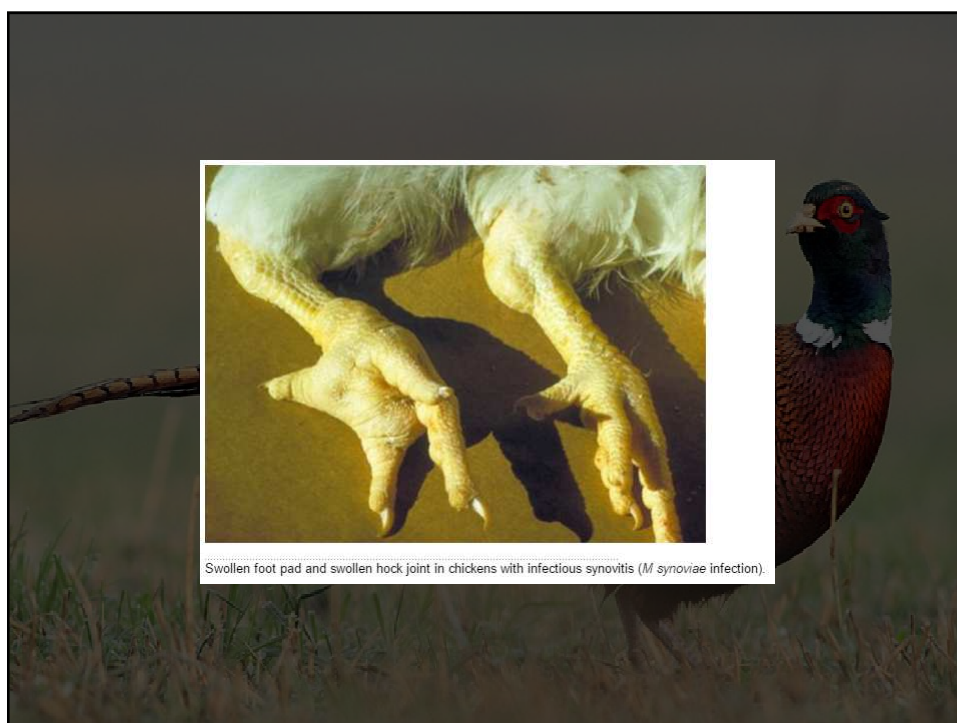
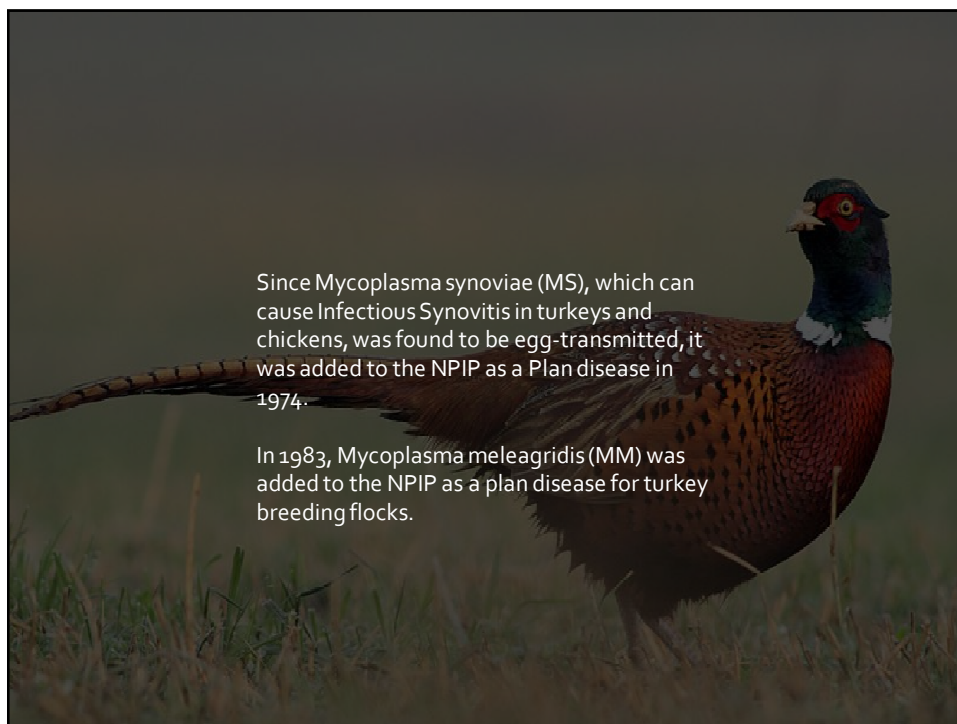


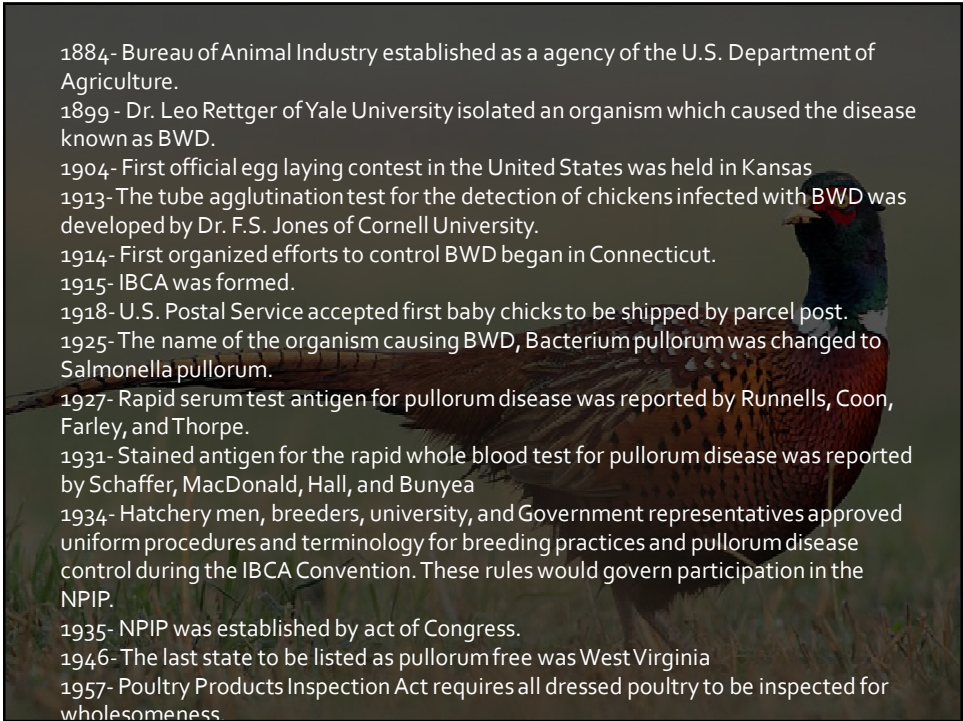


Male broiler breeder chicken infected with *M. gallisepticum* has conjunctivitis, periorbital swelling, and dried nasal exudate.



Meat turkey infected with *M. gallisepticum* has clear-mucoïd and dried nasal exudate and a swollen infraorbital sinus.





1884- Bureau of Animal Industry established as a agency of the U.S. Department of Agriculture.
1899 - Dr. Leo Rettger of Yale University isolated an organism which caused the disease known as BWD.
1904- First official egg laying contest in the United States was held in Kansas
1913- The tube agglutination test for the detection of chickens infected with BWD was developed by Dr. F.S. Jones of Cornell University.
1914- First organized efforts to control BWD began in Connecticut.
1915- IBCA was formed.
1918- U.S. Postal Service accepted first baby chicks to be shipped by parcel post.
1925- The name of the organism causing BWD, Bacterium pullorum was changed to Salmonella pullorum.
1927- Rapid serum test antigen for pullorum disease was reported by Runnells, Coon, Farley, and Thorpe.
1931- Stained antigen for the rapid whole blood test for pullorum disease was reported by Schaffer, MacDonald, Hall, and Bunyea
1934- Hatchery men, breeders, university, and Government representatives approved uniform procedures and terminology for breeding practices and pullorum disease control during the IBCA Convention. These rules would govern participation in the NPIP.
1935- NPIP was established by act of Congress.
1946- The last state to be listed as pullorum free was West Virginia
1957- Poultry Products Inspection Act requires all dressed poultry to be inspected for wholesomeness



Be a Good Neighbor

Stop propagating known flocks with
Mycoplasma.

Test, Isolate, Eradicate

Serological monitoring of blood
serum or PCR, swabs from trachea or
choanal (palatine) cleft

Test, Isolate, Eradicate

Isolate the infected breeder flock
Consider using antibiotic to reduce
replication.

Isolate the chicks on growing farms
that are terminal.

Test, Isolate, Eradicate

Isolate dirty breeder flocks and terminate them.

As a grower:

- Ask your chick supplier if they are mycoplasma free. If they are not sure, consider using antibiotic for early prevention.
- Plan to empty your farm yearly or move all carry over birds to offsite locations and depopulate it later.
- Terminal location - a ranch that will be 100% depopulated each year.

As a breeder/ hatchery:

- Advertise your flock as mycoplasma free
- Only sell suspect chicks to terminal locations
- Keep breeder flocks in separate location that could be depopulated for 30 days if necessary.
- A few hundred yards can keep MG from moving from bird to bird
- Do not allow pen to pen or bird to bird contact
- Do not sell suspect chicks to breeder locations
- Do not buy adult birds and put them on a location with your breeder flock

Bio- Security





AIVLOSIN[®]

Use an antibiotic

The use of antibiotics are to stop the replication of the MG.

