

Dr. Salsbury's

POULTRY HEALTH NEWS

a magazine of sales and service helps for dealers

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Coccidiosis



42 per cent
of all poultry diseases



Congratulations!

The poultry industry joins Dr. J. E. Salsbury as he welcomes his son, John, into the organization of Dr. Salsbury's Laboratories after completing his degrees of Bachelor of Science and Doctor of Veterinary Medicine at the Iowa State College, Ames, Iowa, U.S.A., in June, 1940.

Hatcherymen, poultrymen, and manufacturers in allied lines in the poultry industry have seen John G. Salsbury at many Baby Chick Conventions as he grew up in his father's business. All who are familiar with his fine character and pleasant personality will be pleased to know that he is following in the footsteps of his father by specializing in the control of poultry diseases.

Six years of study, supplemented by world-wide travel to three meetings of the World's Poultry Congress, in Cleveland, Ohio; Leipzig, Germany; and London, England, have helped prepare him for his work. Additional travel throughout the major poultry producing regions of the United States has added to his picture of the needs of the poultry industry.

Dedicating his services to the elimination of losses due to poultry diseases, Dr. John Salsbury will join his father and associates at the Dr. Salsbury Laboratories to help solve the most urgent problem facing the industry today. All who are aware of the need of greater disease control to reduce the excessive mortality and to increase the profit of those engaged in the poultry industry will envision new heights of service from this new father and son association.

New men constantly are joining the scientific staff of the Dr. Salsbury's Laboratories, bringing the latest technique and talent from the finest schools of the country. This constant influx of the best talent and man power fortifies the position of leadership enjoyed by Dr. Salsbury's Laboratories as one of the largest and finest institutions of its kind.

In accordance with the policy of Dr. Salsbury's Laboratories, the findings of these veterinary scientists, chemists, and biologists are passed directly to the poultryman, and every effort is made to teach him to help himself in reducing the excessive losses he has suffered due to disease.

Scientific research workers from the best schools in the land are working together at the Dr. Salsbury's Laboratories to lift the horizon of the poultry industry, reduce the annual mortality, and increase the margin of profit in poultry raising. Dr. Salsbury's Nation-Wide Poultry Health Service will rise to new heights of endeavor as father and son join hands and minds in helping the poultry industry.

4
Out of
10

Had COCCIDIOSIS

...SHOWN BY DIAGNOSIS RECORDS

COCCIDIOSIS was the most common affliction of all the growing stock and adult fowl sent in to Dr. Salsbury's Laboratories for free examination in 1939. Four out of ten or 42.05% had it. In addition, 18.53% of the 3,355 chicks under six weeks of age also were afflicted with the disease, and 27% of 1,091 turkeys.

The economic importance of coccidiosis cannot be underestimated. If it is so widespread, we need not wonder that it escapes our most rigid sanitary precautions and appears in new houses, on clean ranges, and even in steel battery brooders.

The word coccidiosis is familiar to all poultry raisers, and few flocks have completely escaped the disease. However, a thorough understanding of the life history of the parasite responsible for the disease is necessary before we can recognize its presence and carry out an intelligent program of prevention, treatment, and control.

Cecal Coccidiosis Causes Bloody Droppings

The cause of coccidiosis is a small microscopic parasite of which there are seven different species. The species known as *Eimeria tenella* causes acute, bloody **CECAL COCCIDIOSIS** and develops entirely in the ceca or blind sacs and causes heavy losses in young chicks up to twelve weeks of age. It is the most common form found in birds up to that age but sometimes appears in older ones as well.

Birds suffering from a heavy infection of cecal coccidiosis will invariably show a bloody diarrhea in the early stages; sometimes this blood may pass unnoticed. On post-mortem examination the ceca will be filled with blood or, in advanced cases, will contain hard cheesy-looking cores which may be fastened firmly to the cecal wall. The first signs of blood appear on the fifth day after the chick has eaten the oocysts. Incidentally, it has been shown that 5,000 oocysts of *E. tenella* is a sufficient number to produce death from cecal coccidiosis in young chicks which have not had the disease.

The acute cecal, or bloody type of coccidiosis is not hard to recognize. Whenever blood appears in the droppings of chickens up to about 3 or 4 months of age, it is quite safe to diagnose the disease as coccidiosis, although there may be exceptions. The loss of blood is accompanied by droopiness, paleness, and loss of appetite, and whenever the coccidia infection is heavy, the death loss in the flock may run as high as 50% to 75%.

Chronic Coccidiosis May Linger

The second form of coccidiosis affects the intestines and may not be so apparent since it is a chronic type of disease. Ordinarily there is no sudden increase in the death rate of the flock to warn the owner of infection. On the contrary, the chickens slowly lose their thriftiness, their appetites, and become emaciated. The pullets come into production late or not at all, and the older birds frequently go out of production. Unlike the acute type of coccidiosis, the organisms causing the chronic type do not produce immunity very readily and the birds therefore become reinfected over and over again causing the disease to last for months unless something is done about it.

Six Species Infect Intestines

Six of the seven species of coccidia infecting chickens produce **INTESTINAL COCCIDIOSIS**. These are *Eimeria necatrix*, *E.*

maxima, *E. acervulina*, *E. mitis*, *E. praecox*, and *E. hagani*.

The first named species *Eimeria necatrix* produces hemorrhagic lesions in the upper one third of the small intestine, later migrating back to the ceca or blind-guts where it finishes its development. Although this coccidium is not as commonly found in chickens as several other species, it is said to cause the most severe type of chronic coccidiosis in older birds. Practically all the damage is done in the intestine, no extensive lesions being produced in the ceca.

Eimeria maxima inhabits the middle and last third of the small intestine. This species is quite prevalent, and when present, it produces red inflamed areas on the lining of the intestine. In severe cases, the intestinal contents may be blood tinged.

E. acervulina is probably the most common intestinal species. It affects the upper half of the small intestine producing whitish spots on the mucosa which, by careful examination, may be seen through the wall of the intestine before it is cut open. Thickening of the intestine followed by extensive sloughing of the intestinal lining usually results from infection by this species.

The amount of damage done by *E. mitis* and *E. praecox* is open to question. Both develop in the upper portion of the small intestine but neither produce lesions which can be seen without special preparation and the use of a microscope.

Eimeria hagani is another species of coccidia recently reported. This species is said to produce numerous hemorrhagic spots of pin-head size which can be seen clearly only from the outer surface of the duodenum. The infection also produces severe inflammation and the intestinal contents become watery.

Infective Oocysts Must Sporulate

The infective form of the coccidia is an egg-like structure known as the oocyst. Coccidia oocysts are passed out of the infected bird in the droppings. Oocysts which have just been passed, however, are not infective but must first undergo sporulation, a process which can be compared to the early development of a hen's egg. The oocyst is essentially like an egg, a fertilized cell. When it is brought under the proper conditions of moisture and temperature, the cell divides and redivides producing four structures known as *spores*.

Each of these spores divides producing two small cells known as **SPOROZOITES**. Thus eight infective sporozoites are formed in each oocyst. Sporulation requires from 24 to 48 hours under favorable conditions, although it may extend over a period of several days or weeks. After oocysts have sporulated they may remain alive and infective for several months, provided they are protected from the fatal drying effect of the hot sun.

Chickens can get coccidiosis only by eating living sporulated oocysts. They

are commonly picked up in the drinking water, feed, or soil contaminated with droppings of infected birds. Since coccidia oocysts have no means of locomotion, they must be spread from place to place by infected birds, by physical means such as water and wind, or mechanically by man and animals. All species of coccidia found in chickens develop in a similar way. As soon as the sporulated oocyst enters the digestive tract, the digestive juices and the hydrochloric acid secreted in the proventriculus attack the oocyst wall releasing the eight sporozoites which it contains. Each of these

(Continued on next page)

Prevalence of Coccidiosis

... as shown by the diagnostic records on 7,578 specimens examined at Dr. Salsbury's Laboratories in 1939.

	Per Cent Prevalence
Baby Chicks	18.53%
(1 day to 7 weeks of age)	
Growing and Adult Chickens	42.00%
(All birds over 7 weeks)	
Poults, Growing and Adult Turkeys	27.00%

NOTE: The baby chick percentage was based on 3,355 chicks examined. The growing and adult chicken percentage on 3,049 growing and adult chickens examined. The poult, growing and adult turkey percentage on 1,091 turkeys of all ages examined.

COCCIDIOSIS

Coccidiosis is Poultry Enemy No. 1. It presents a serious threat especially to growing birds. While outbreaks of coccidiosis often result in high mortality, probably the greatest loss shows up in cull birds that must be discarded at a time when they should be laying and making money.

sporozoites normally finds its way into an intestinal cell of the chicken and divides repeatedly, producing as many as 900 offspring.

The offspring of the sporozoites are known as **MEROZOITES**. The host cell in which each develops is destroyed, and the majority of these merozoites enter other nearby cells and multiply by dividing repeatedly. This process is repeated as many as three or four times in some species resulting in an enormous population of coccidia. Finally male and female forms are developed and fertilization takes place. A wall is then secreted about the fertilized female cell, forming the oocyst, and thus the complicated life cycle is completed.

Neglect Causes Intestinal Injury

Four to seven days are required from the time the oocysts are eaten until other oocysts are found in the droppings, depending upon the species present. By this time, in case of heavy infection, large masses of the delicate cells lining the digestive tract have been destroyed and the lining has sloughed off in great patches carrying with it the newly formed oocysts. This generalized sloughing not only decreases the absorptive surface of the intestines, but it also, in several species, ruptures the blood vessels so that bleeding takes place and the birds become anemic.

When once infected, a chicken may continue to discharge living oocysts for as many as three months and is therefore a source of infection to other chickens in the flock. If a chick should happen to pick up 5,000 oocysts (which is a relatively small number as compared to the number frequently found in a single dropping) that bird may later eliminate from one to two hundred million oocysts.

Post-Mortem Indications of Coccidiosis

1. Bloody ceca, otherwise indicated by discharge of blood in droppings.
2. Watery ceca, or cheesy core, with profuse discharge of watery droppings.

3. Bloody areas in duodenal loop or throughout small intestine.
4. White flakes, sometimes with specks of blood in center, visible in the unopened wall of the intestine from the outside.

The appearance of any of the above conditions will indicate the presence of coccidiosis, although the use of a microscope is necessary to see the organism. The most important point to keep in mind in watching for coccidiosis is that bloody droppings will not always be seen. Do not wait until you see blood to treat for coccidiosis for some forms of the disease do not cause a bloody discharge.

Medication Proves Beneficial

Although there is no specific cure in the treatment of coccidiosis, the beneficial effects obtained by the use of Phen-O-Sal in the drinking water or Rakos in the feed have resulted in an ever increasing use of those products under a wide variety of circumstances.

The benefits obtained through internal medication with those two products are not easily explained, because the action of drugs in general within the body is not always subject to explanation. Some of the benefits of Phen-O-Sal and Rakos may be attributed to the acidifying and astringent action of these products, which not only will create an environment that is unfavorable to the coccidia but also will reduce bleeding and aid in healing the injured cells.

There is a general stimulation and a marked increase in appetite when Rakos is fed, which promotes greater feed consumption at a time when extra nourishment is needed to maintain the necessary strength to help fight the disease. Due to its high acid content Rakos is best given when mixed with cracked grain and fed in board troughs with plenty of feeding space for all the chicks to eat at the same time.

What to Use and When

Since coccidiosis is so widespread it is reasonable to assume that a certain degree of infection exists at all times. Therefore, it is wise to adopt a preventive program, using two-day treatments of Rakos every ten days from the seventh to the twelfth week to help prevent severe outbreaks of the disease.

In treating attacks of the disease either Phen-O-Sal or Rakos ordinarily may be used as first-aid treatments. The two medicines are offered because all cases do not lend themselves to similar treatment and there must be an opportunity to change the medicines when needed.

The standard method of giving Rakos as indicated in the preventive treatment, is in cracked corn, and not in a mash in which there are minerals that might neutralize the acidifying properties of the medicine. Some users prefer to give Rakos in the drinking water using a porcelain fountain, and others who want to be sure of an adequate intake of the medicine use it in both feed and water at the same time.

The standard method of using Phen-O-Sal is to dissolve eight tablets in every gallon of drinking water or milk. In the event that both milk and water are given to the chicks at the same time, both should be medicated, or else those chicks which have a preference for either water or milk may miss the medication. In order to



How to Use PHEN-O-SAL

PER 100 BIRDS

IN THE WATER

PUT 8 PHEN-O-SAL TABLETS IN EVERY GALLON OF WATER



IN THE FEED

DOSAGE BY AGES OF BIRDS

2-6 WEEKS
25 tablets in 2 quarts feed.

6-12 WEEKS
30 tablets in 3 quarts feed.

12 WEEKS and OVER
35 tablets in 4 quarts feed.
PHEN-O-SAL may be crumbled and mixed with dry feed or dissolved in water and fed as a moist mash.

DISSOLVE PHEN-O-SAL IN THE WATER



Note: The dosage shown above for using Phen-O-Sal in the feed is recommended in treating severe outbreaks of coccidiosis. This dosage can be reduced with favorable results when used in a prevention program to 5 tablets in a quart of feed for birds of all ages.

...and What to do

By inducing your poultry raising customers to adopt preventive measures, the threat of losses due to coccidiosis will be reduced to a minimum. During the coccidiosis season recommend regular treatments with either Dr. Salsbury's Rakos or Phen-O-Sal and that sanitary conditions be given attention.

increase feed consumption and the intake of Phen-O-Sal some poultrymen use the medicated water or milk to moisten the growing mash.

What to Do for Persistent Cases

Ordinary attacks of coccidiosis respond to simple treatments using either Phen-O-Sal or Rakos, but the more severe or unusual intestinal forms of the disease that seem to persist call for a more extended treatment using a combination of the two products in accordance with the following program:

First—A five-day treatment of Rakos in cracked corn as outlined on the label.

Second—A five-day treatment of Phen-O-Sal to help heal the injured intestines.

Third—A ten-day treatment of Avi-Tab, using $\frac{1}{4}$ pound in every hundred pounds of total feed consumed.

Each product is to be used separately and consecutively in the order mentioned.

A well organized and well planned program of attack such as this should relieve the flock of serious infections, particularly if the litter in which the coccidia oocysts are discharged is removed at least every other day before they can sporulate or reach the infective stage.

An auxiliary treatment of Avi-Tab is beneficial, for its general effect is to build up the appetite and increase feed consumption after an ordeal of coccidiosis. Should roundworms be present, Avi-Ton could be used instead.

Disinfectants Part of Sanitation

We should not overlook the importance of the use of good disinfectants in a program of cleanliness. Clean the houses thoroughly and regularly, spraying the floor and litter with one part Mite-O-Cide diluted in ten parts of light fuel oil. Mite-O-Cide contains phenol compounds which have a harmful effect on the coccidia, and the oily constituents form a film about the oocysts which prevents oxygen from reaching them thus tending to prevent sporulation. Since Mite-O-Cide does not evaporate it remains in the litter, spreading a destructive film over each oocyst with which it comes in contact. This lasts for a long time. The importance of good sanitation and the use of Mite-O-Cide is emphasized by the fact that a single oocyst can infect a chicken and later spread to the rest of the flock. Oocysts passed off from a mild infection may result in a severe outbreak when picked up by other birds.

Complete Sanitation Difficult

Since oocysts of some species are not infective until twenty-four hours after they are passed and forty-eight hours in the more severe types, it is evident that a thorough clean up every day or at least every other day, will reduce if not entirely prevent the spread of the disease. The attendant should be particularly careful to clean his shoes before entering the poultry house. He also should

protect the feed and water supply from contamination by infected birds. Installation of wire netting about the roosts in such a way as to prevent access of chickens to the droppings is a desirable practice.

Feeders should be emptied and cleaned thoroughly at frequent intervals. Waterers should be emptied daily, cleaned and rinsed thoroughly, and whenever possible they should be scalded with boiling water. It has been determined that coccidia oocysts are killed when exposed to boiling water (212°F.) for only five seconds, while a temperature of 176°F. kills in ten seconds. There are countless other ways in which the poultryman can practice sanitation to reduce his loss from coccidiosis.

Other Methods of Control

Skim milk, skim milk powder, lactose, and other milk products once were believed to have a direct effect against coccidia organisms but later experimentation has shown this to be wrong. Birds affected with coccidiosis tend to eat less feed, and therefore need a highly nutritious, easily digested feed. It is for this reason only that milk and its products are of value. A good growing mash will contain sufficient milk for the needs of your flock at all times.

The feeding of sulphur in the ration at various levels has been the subject of considerable research in the control of coccidiosis. "The correct estimation of this material," says Professor E. R. Becker of the Iowa State College at Ames, in a recent bulletin, "probably is that it has merit in coccidiosis control, but ill effects that otherwise have accompanied its feeding to date do not warrant its recommendation in practice.

"Experimentation has shown that with continued use of sulphur a type of rickets may develop which does not correct itself with the addition of cod-liver oil to the ration. Furthermore, an irritation of the cloaca was noted, and the chicks showed a retarded growth."

The work which Dr. Becker refers to was carried on at the Wisconsin Experiment Station and the latest report of these workers, published in the May issue of the Poultry Science, indicates that the use of sulphur for the control of coccidiosis is still in the experimental stage and no definite recommendations for its use can be made as yet.



How to Use RAKOS PER 100 BIRDS

IN THE FEED

MIX ONE CUP OF RAKOS IN . . .



FEED ON CLEAN BOARDS OR IN V SHAPED WOODEN TROUGHS



"UP" Goes the Sales Curve . . .

with Phen-O-Sal, Rakos and Avi-Tab displayed on this attractive floor stand display!



THE MODERN drug store and dime store offer a valuable lesson in store merchandising. They have demonstrated how much faster and easier merchandise sells when arranged in attractive groupings on open counters or on specially built floor displays. If you were to visit some of the most progressive

stores, you would notice how the merchandise is arranged to make it easy for customers to circulate among the various counters and merchandise displays. This system of sales floor arrangement is a far cry from the older methods of merchandising and it certainly has demonstrated its greater effectiveness.

Successful Display Fundamentals

Floor displays must meet the following requirements if they are to perform with the maximum amount of efficiency: 1. First they must attract attention; 2. They must arouse interest; 3. They must show by the printed word, picture, or combination of both how the merchandise can fill a particular need. Those are the fundamental requirements, and there are many other supplementary features that can be built into a display to add to the effectiveness of these fundamental requirements.

Some of these supplementary features that have proved successful are: large mass groupings of packages of merchandise; the use of pleasing colors that add to the attractiveness of the display; timeliness of the merchandise featured adds to the response obtained; the position on the sales floor has a very definite bearing on its selling power; and, just of late, the use of mechanical animation in attracting attention is coming into more and more popularity.

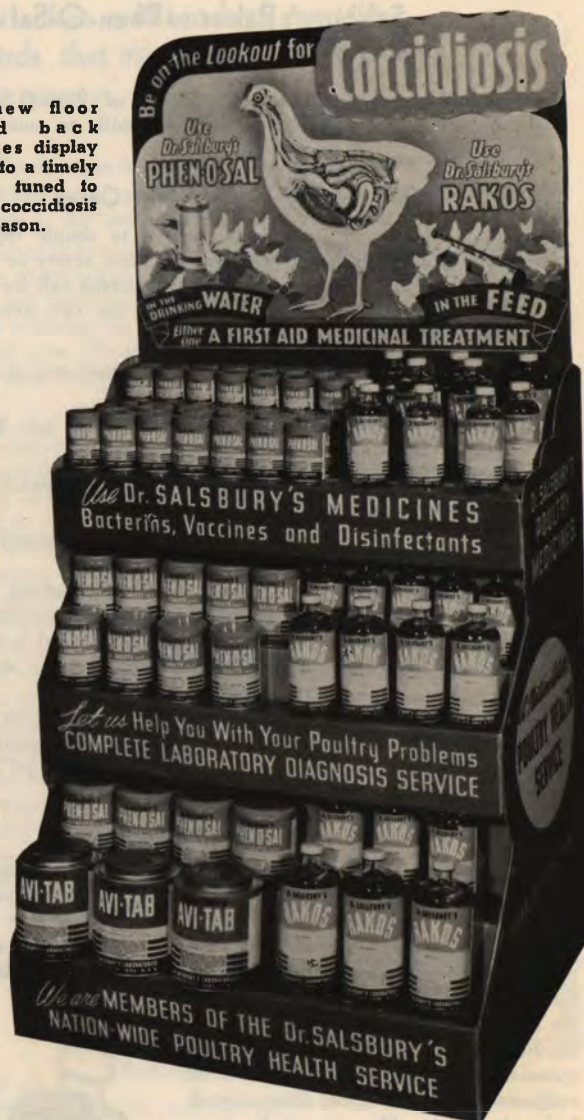
Salsbury Floor Display Measures Up

The floor stand at the right embodies those afore-mentioned fundamentals and utilizes nearly all those previously mentioned supplementary features to increase its efficiency. First, its attention-attracting power is increased by the use of the flasher light, pleasing colors, and a large mass display of packages. Second, its interest-getting qualities are increased by the diagrammatical drawing of the growing pullet. Third, the descriptive copy on the floor stand back and the flasher light dramatically illustrate how the products on the stand fill a particular need for coccidiosis medication. A point worth mentioning here is that because of the special way in which the display itself is built the large mass effect is accomplished with only a comparatively small amount of merchandise. This makes it possible to stock a complete assortment and move it many times on a small amount of capital invested.

During the late spring and early summer months coccidiosis is quite prevalent, and the selling message carried by this new back for the floor stand tells your customers what to do. With the display pictured above containing Phen-O-Sal, Rakos, and Avi-Tab plus the new back for the floor stand you have an attractive merchandise display turned into a "No. 1" salesman. "Be on the lookout for coccidiosis," warns the copy on the floor stand back. Then the appeal changes into a conciliatory vein advising, "Use Dr. Salsbury's Phen-O-Sal in the drinking water," or "Use Dr. Salsbury's Rakos in the feed," "Either one a first aid medicinal treatment." Next the flasher light flashes on the diagrammatical drawing of the growing pullet showing where coccidiosis causes damage, thus tying up the products with the disease condition and putting the finishing touches on a powerful selling message.

The utility of this floor stand display is increased considerably

The new floor stand back changes display rack into a timely display tuned to the coccidiosis season.



by the rolling caster base that makes it easy to move it from place to place to fit into your sales floor arrangement. In order for this display to function with greatest efficiency it must be kept filled with timely merchandise (Rakos, Phen-O-Sal, and Avi-Tab to fit into the coccidiosis season), and it must be given a position on your sales floor where it will come in contact with customer traffic.

The following assortment of Phen-O-Sal, Rakos, and Avi-Tab fills the floor stand display rack nicely and contains about the right number of the various sizes of packages to give a balanced selection of merchandise:

PHEN-O-SAL:

15 pkgs. 50 tablet size; 27 pkgs. 125 tablet size.
10 pkgs. 300 tablet size; 4 pkgs. 500 tablet size.

AVI-TAB:

3 pkgs. 3 lb. size.

RAKOS:

9 bottles 1/2 pint size; 12 bottles 1 pint size;
3 bottles 1 quart size.

"Blackout" the Worm Menace !

..... with Rota-Caps and Avi-Ton

Dr. Salsbury's Rota-Caps is an individual worm treatment for the removal of roundworms, capillaria worms, and the tapeworms, heads and all, as listed on the label. Dr. Salsbury's Avi-Ton is a flock worm treatment PLUS, for the removal of roundworms and cecal worms.

POULTRYMEN spend a lot of money buying chicks of high egg producing stock, but quite often something happens which prevents the pullets that are grown from these chicks from producing in accordance with their inherited ability. It is one thing to have a lot of eggs bred into a pullet, but it is quite another to get the eggs out of her and into the egg basket.

A laying hen is like a machine. Her production depends upon her design, or genetic make-up, upon the feed which she is expected to turn into eggs, and upon the efficiency of her egg producing machinery. Buying a good chick is only the beginning; her heritage must be protected so that she will have a chance to produce in accordance with her breeding.

One of the most damaging influences on future egg production in growing pullets is early infestation with worms. Worms were Poultry Enemy No. 2 on the list of poultry diseases found in the 6,404 growing and adult fowls sent to Dr. Salsbury's Laboratories for free examination in 1939.

One out of every three, or 32.70%, had roundworms, of which 4.92% were capillaria worms. One out of three, or 32.70%, had cecal worms, and one out of nearly every four, or 23.42%, had tapeworms. Many specimens were infested with more than one type of worms, and quite often there was evidence that the infestation had been of considerable duration and had caused permanent injury to the digestive tract.

It must be remembered that the intestine is an organ of digestion and assimilation, and anything which causes injury to the working cells of that organ reduces the efficiency of the hen as an egg producing machine. The amount of food the worms steal from the hen or growing pullet is not as important as the loss of feed that passes through undigested and unassimilated because of the inability of the intestines to pick it up.



Treatment for worms should not be delayed until the pullets look like this, for then they are already in poor condition and it will take some time for them to recover. You cannot place too much emphasis on regular worm treatments in your recommendations to your poultry raising customers. If worms rob your customers of their poultry profits, they will have less money to spend with you for other things. So it will be to your advantage to point out the benefits of a regular worm control program at every opportunity to help your customers raise a more profitable flock.

Worms have been known to infest poultry at a very early age, and it is logical to assume that early infestations are most harmful because they retard normal development and growth. A pullet that is stunted never will become a good egg producer because her capacity to turn feed into eggs will be limited to the extent of the injury caused by the worms.

This injury may become permanent because the worms burrow into the cells which line the walls of the intestine. The injured cell is replaced by scar tissue which does not have the digestive and absorbing power of the original cell, and it is easy to see that if this injury continued, the efficiency of the digestive system would be considerably impaired.

The loss due to worms is seldom apparent at the moment; it always makes itself apparent later, either in the reduced production of the pullet or the unmarketability of the fowl, whereupon it must be discarded as a cull. Poultrymen often find that the loss from culls is greater than that due to any mortality suffered from an outbreak of a disease.

An inflammation of the intestinal tract was found in 86% of the fowl that were examined last year, 59% were anemic, and 52% were so badly emaciated that they would have been unmarketable. While these conditions were not considered as diseases, they were classed as secondary effects of some disease condition, and in most cases they were due to worms.

Worms will cause an inflammation of the intestine through the toxins they secrete and through the irritation and injury they inflict. They sap the blood of the hemoglobin necessary to carry the digested food about the body. Finally the fowl becomes so thin that it is rejected by the buyer, and it must be discarded as a cull.

Outward appearance will not always indicate the presence of worms. Pullets that appear rough in feather, pale in face and shank, seem listless and lose appetite and weight can be reasonably suspected to harbor worms. However, worms have been known to leave a bird which they have starved to a state where it is no longer a satisfactory host. That is why post-mortem examinations of such birds may be misleading. Trial treatments with worm medicines on specimens that are confined where you can examine the droppings will give a more accurate picture.

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One glance at the picture below will tell you that a bird whose intestines look like that will never be a profitable bird as long as nothing is done to remove the worms. If treatment is delayed too long, there is a good chance that the bird will never completely recover or that in its weakened condition other disease germs may gain a foothold causing death. Regular use of Rota-Caps and Avi-Ton will do away with this worm menace.



Vaccination, the Sure, Safe Way

... to Protect Against Fowl Pox and Laryngotracheitis

THERE are two general types of Dr. Salsbury's Fowl Pox Vaccine, being classified as production methods. One type is known as "Chick Embryo Origin" and the other is known as "Chicken Origin." With the Chick Embryo method of production the live virus of fowl pox grown on the chick embryo and with the Chicken Origin the virus is grown on the combs of young healthy cockerels. Dr. Salsbury's Laryngotracheitis Vaccine is made by the Chick Embryo method only, a more efficient and economical method of producing this vaccine.

For vaccination against fowl pox Dr. Salsbury's Laboratories also produce both Pigeon Pox Vaccine (Chick Embryo Origin) and Pigeon Pox Vaccine (Pigeon Origin). Pigeon Pox Vaccine of either type is recommended to be used only on laying flocks or in cases where only temporary immunity is needed.

Dr. Salsbury's Vaccines Are Check Tested

All these above mentioned vaccines are submitted to four tests to assure the user of a vaccine that is potent and free from contamination. Both types of Fowl Pox Vaccine and Pigeon Pox Vaccine are injected into the nasal passages of a healthy bird to check its freedom from coryza and other respiratory disease germs; into the skin on the bird's side under the wing to determine its freedom from pus producing organisms; into the throat to check its freedom from laryngotracheitis; and finally the leg of the bird is inoculated to check the vaccine's potency.

A nearly identical test is conducted with Dr. Salsbury's Laryngotracheitis Vaccine to check its freedom from contamination and its potency. Fowl Laryngotracheitis Vaccine also is packed in vacuum sealed vials as an added precaution to assure the user of a vaccine that is pure and potent.

When to Vaccinate

Birds of any age are susceptible to both fowl pox and laryngotracheitis. Baby chicks only one day old have been vaccinated for fowl pox, and immunity to fowl pox or laryngotracheitis may be developed in adult birds by vaccination. However, it has been found that it is much more satisfactory to vaccinate for fowl pox at from ten to twelve weeks of age. The vaccination of baby chicks for fowl pox often results in severe mortality and they should not be vaccinated for laryngotracheitis. If immunity against both fowl pox and laryngotracheitis is desired the laryngotracheitis vaccination should precede the fowl pox vaccination at least two weeks. When fowl pox or laryngotracheitis has caused losses in a community it is wise to play safe and vaccinate. Laryngotracheitis causes heavy mortality, and once it gains a foothold it is difficult to stop. Fowl pox, while not quite so spectacular as laryngotracheitis, will hold back growing birds and knock egg production in a laying flock down to nearly zero.

After the actual inoculation of the eggs the opening through which the virus was placed on the chick embryo is sealed with transparent seals. This is done to keep out any contaminating germs that otherwise may enter during the next incubation period. The opportunity of producing the vaccine under more sterile conditions is one of the chief advantages in the production of "egg origin vaccine." Pyrex vacuum drying jars and rapid freezing apparatus is seen in the background.

Laryngotracheitis vaccination takes place in the vent. The vaccine is applied with a brush. The immunity produced by this vaccination in the vent spreads throughout the mucous membranes of the bird's body producing permanent immunity to laryngotracheitis. After five days the bird will show a "take" (redness and swelling of the vent) as is shown in the inset.

This shows the feather follicle method of fowl pox vaccination. Five or six feathers are pulled from the large part of the bird's leg, and the vaccine is brushed into the wounds left where the feathers have been removed. The inset shows a good take which develops in about five to ten days. Permanent immunity will have been developed when these scabs fall off—usually in about thirty days.



Harvesting the fowl pox or laryngotracheitis virus as the case may be is pictured above. After incubation following inoculation the eggs are carefully broken open and all contents are removed and destroyed with the exception of the delicate membrane upon which the virus has been growing. This membrane is saved, dried, and later ground into a fine powder with an air tight grinder in much the same way gold quartz is pulverized into dust.



Fowl Laryngotracheitis Vaccine is shipped in vacuum sealed vials. The above picture shows this operation. Throughout the entire production of Dr. Salsbury's Vaccine extraordinary care is taken to protect it from contaminating germs. Now that the finished product is being prepared for shipping it is packed in vacuum sealed glass vials to maintain this purity and potency along its route to the ultimate user.



A package of Fowl Laryngotracheitis Vaccine contains a bottle of diluent, a brush for application, an instruction sheet, the vial of live virus, and a small file for opening the vial. The picture at the right shows the user of the vaccine opening the vacuum sealed glass vial with the small file preparatory to mixing the virus with the diluent and vaccinating his flock.



Off to a Good Start...

*with an extra 1/3 lb. gain per
Poult at 9 Weeks on Avi-Tab*



Mr. A. Jasperson (right) shown weighing two coops of his Avi-Tab fed turkey poults. He and his partner, Mr. E. Ball, were well pleased with the gains these poults had made.

GETTING off to a good start is half the race, and a turkey poult that is off to a good start in growth is well on the road to profitable maturity. The value of Avi-Tab in getting turkey poults off to a good start has again been effectively demonstrated in a flock of over 4,000 poults owned by Mr. A. Jasperson and Mr. E. Ball of the Walnut Grove Turkey Farm of Charles City, Iowa.

Dividing their flock into two lots, one group of 2,026 poults was fed Avi-Tab in their mash continuously at the rate of 1/4 pound per 100, while 2,071 poults, comprising the other half of the flock, received no Avi-Tab.

Weighings of treated and control pens showed the Avi-Tab poults were consistent gainers over those that did not receive Avi-Tab, but the true value of Avi-Tab was revealed when the entire 4,097 poults were weighed as they were transferred to the range at the end of the nine weeks.

At the end of nine weeks the poults which received Avi-Tab in their mash weighed 7,712.75 pounds, or an average of 3.80 pounds per poult, whereas those which did not receive Avi-Tab weighed 7,221 pounds, or an average of 3.48 pounds each. This was an increased weight gain of .32 of a pound, or nearly 1/3 of a pound per poult.

Both groups were above the 3.06 average weight for poults of that age as reported by Professor L. E. Kline of the University of Nevada, nationally known authority on turkey culture, but the Avi-Tab fed poults were .74 of a pound or 24% above this average.

Taking 2,026 poults from each flock in order to have an equal number for comparison, and multiplying by the .32 of a pound difference in weight, we find an extra weight of 648.32 pounds in favor of the Avi-Tab flock. If turkeys were

worth 20 cents a pound on the market, this extra weight would be worth \$129.66.

The amount of Avi-Tab consumed by the 2,026 poults in nine weeks was 55.57 pounds, and at the retail price of 100 pound lots this cost \$94.47. Subtracting the cost of the Avi-Tab from the additional value of 2,026 poults to which it was fed, Mr. Jasperson and Mr. Ball had a net profit of \$35.19 or 37% on the Avi-Tab investment.

Since the profitable production of turkeys, like that of other meat producing animals, such as beef cattle or hogs, depends on increased feed consumption, the increased weight gains of these turkeys also were supported by a greater feed consumption.

At the end of the nine-week period the 2,026 Avi-Tab fed poults had consumed 22,228 pounds of feed and the 2,071 poults in the control group consumed 21,243 pounds. Charging this feed consumption to the total number of birds at the end of the nine-week period we have an average feed consumption of 10.97 pounds in the Avi-Tab flock as against 10.26 pounds in the control group.

The average feed consumption of the Avi-Tab poults was .71, or nearly 3/4 of a pound greater than that of the poults in the control group. This represents a 7% increase in feed consumption, and while such an increase may give the impression that it is going to cost more to raise these poults, that is not true.

It actually will cost less to raise these poults to maturity for it will not take as long to do so. This early uninterrupted development will build a better bone structure, which forms the foundation or framework upon which the poults can build a more heavily meaty body.

Mr. Jasperson and Mr. Ball reported no appreciable difference in mortality in either pen and the loss of less than 2% that was experienced in each group up to nine weeks of age is considered a remarkable achievement with turkeys where large numbers are brooded in one flock. The excellent management under which the poults were maintained is proven by the additional gains in weight. It seemed that the Avi-Tab fed poults displayed better condition and feathering, and a greater uniformity in body weight was noted among the individuals comprising the group.

The value of Avi-Tab in starting turkeys is apparent when we look back upon the diagnosis records of the 1,091 turkeys which were sent to Dr. Salsbury's Laboratories for examination in 1939. Nearly all of these turkeys had a severe intestinal inflammation,

which shows that poults need medication. Among the 195 poults that have been examined thus far in 1940, it was found that 113 or 58% were afflicted with the same type of intestinal inflammation.

A substantial percentage of the poults that are coming in this year are afflicted with various forms of gizzard erosion and gizzard ulcers, and 23% were definitely diagnosed as having mycosis. Avi-Tab is particularly recommended for treating infections of mycosis, as reported by prominent turkey growers the country over in actual flock tests on turkeys and poults of all ages.

Results of Ball & Jasperson Avi-Tab Test

	2,026 Poults on Avi-Tab at 9 Weeks of Age	2,071 Poults Not on Avi-Tab at 9 Weeks of Age
Total weight	7,712.75 lbs.	7,221 lbs.
Average per poult	3.80 lbs.	3.48 lbs.
<i>(Avi-Tab birds weighed .32 pounds more per poult)</i>		
Total feed consumption	22,228 lbs.	21,243 lbs.
Average per poult	10.97 lbs.	10.26 lbs.
<i>(Avi-Tab birds ate .71 pounds more per poult)</i>		

A Good vs. A Poor

.... WINDOW DISPLAY

WHEN Mr. Al Dolin, a Dr. Salsbury dealer at Grafton, Ohio, attended one of Dr. Salsbury's dealer meetings last winter, he came with the intention of learning how to sell Dr. Salsbury's poultry medicines. He not only listened carefully to all that was said, but he kept his eyes open to see what he could see.

Among the things which he particularly noticed were the attractive, educational posters used to decorate the room and before leaving, he asked if he might have these posters to decorate a display of Dr. Salsbury's products in the window of his store.

Since Mr. Dolin had conceived such a good use for the material, he was asked to send us a photograph of the window that he planned to create, so we might publish it in the Dr. Salsbury's POULTRY HEALTH NEWS where other Dr. Salsbury dealers could see it.

Mr. Dolin kept his word. He sent us two pictures, one of a window that was built while he attended the meeting, and another of the same window after its transformation. However, this window was built last winter when Phen-O-Sal was being featured to "Start Your Baby Chicks Right," and in order to present a theme that would be in season when this issue of the News leaves the press, we applied the principles employed by Mr. Dolin in a window featuring the "Control of Coccidiosis."

Improved Window Increased Sales

"I feel that the improvement in my second window was directly responsible for a substantial increase in sales," says Mr. Dolin. "It attracted attention to the central theme, which at the time I built my window happened to be Phen-O-Sal. It suggested a use for the product, and this in turn suggested a need. All this created a desire to purchase the merchandise which was displayed in the window, and the casual passer-by came into the store and became an actual purchaser.

"In my first window, which was set up while I attended Dr. Salsbury's dealer meeting, I felt that the crepe paper used to form the background was too thin. You could see through it to the rear of the store, and that detracted attention from the merchandise in the window. The lines of crepe ran to a point at the top of the window, instead of directing attention to the merchandise.

"I placed the merchandise on convenient pedestals made of cartons in which I had received shipments of Dr. Salsbury's products. These pedestals were neatly covered with crepe paper, and raised the merchandise to eye level where it would be noticed first. The background was solid, and the entire display attracted favorable attention."

Attractive Window Easily Built

We present the experience of Salsbury Dealer Dolin for what it is worth to other Salsbury dealers and hope that the window which we set up in the advertising department of Dr. Salsbury's Laboratories to photograph will give you an idea that you can carry out in your own stores.

It requires only seven folds of crepe paper. Six folds of light green were used for the background and half of the vertical strips on the sides. One fold of dark green paper also was used for the vertical strips on the sides, alternating with the strips of lighter green. If crepe paper is to be used for the floor, an additional roll of dark green will be needed.

This window is three feet deep and six feet in length, and if space will not permit such a large display, the two end pedestals and the merchandise on them can be eliminated. However, the cans of Avi-Tab should be retained and moved in toward the center, for they complete the story of coccidiosis control.

The entire theme of this window is built around coccidiosis control. Attention is directed to coccidiosis by the central poster and the supplementary banners. The products used in fighting

(Continued on page 14)



POOR WINDOW

Lack of background in this window fails to confine attention to the merchandise in the window, thus detracting from its selling power. The window as a whole presents a very confusing picture. The attention of the passer-by is not directed to any one thought but instead his eye meets a hodgepodge of objects, and as a result very little impression is made.

GOOD WINDOW

Contrast this window display with the poor one. It is easy to see why this window has more selling punch. It has a centralized theme, the background shuts out the confusing view of other articles in the back of the store. The merchandise itself is neatly and effectively arranged.

Phen-O-Sal and Rakos are raised to eye level by pedestals, thereby gaining more attention. The posters and educational literature suggests the need for the merchandise by presenting its uses, thus completing the sales story. Use this picture as a guide in building a similar seasonable display in your show window.



no
"TOXIC AFTER-SHOCK"
with . . .

Dr. Salsbury's

Rota-Caps

When it comes to removing the worms Dr. Salsbury's Rota-Caps are in a class by themselves. Rota-Caps have become the preferred worm treatment of thousands of poultrymen because of their efficiency and because young stock and layers can be wormed without setback in growth or loss in egg production. It is not at all uncommon to receive reports of increased egg production after worming with Rota-Caps.

The many advantages found in Dr. Salsbury's Rota-Caps have made them the leader. You'll make more money if you feature Dr. Salsbury's Rota-Caps, there's a demand for them, they're easier to sell, and the satisfaction they bring means repeat business for you. You should recommend pullet size Rota-Caps to your customers now to protect their young birds against the ravages of worms they may be harboring. Pullet size Rota-Caps are in demand now—how is your stock?

THEY GET THE
WORMS

THEY DON'T KNOCK
EGG PRODUCTION

THEY DON'T SET
BACK BROWING
BIRDS

They Contain Rotamine!

Up until the time Rotamine was discovered, tapeworms were removed by desegmentation, but now with the sensational new drug compound discovery called "Rotamine" Dr. Salsbury's Rota-Caps remove them, heads and all, as listed on the label of the Rota-Cap package. Rotamine is exclusive with Dr. Salsbury's Rota-Caps, no other worm treatment has it! It pays to feature Dr. Salsbury's Rota-Caps exclusively.

Dr. SALSBUURY'S
ROTA-CAPS

PROVED EFFECTIVE on Millions of BIRDS

Tie-Up Ads

... The Connecting Link

HAVE you ever stopped to count the number of firms represented in your favorite daily or weekly newspaper? Have you ever stopped to think of the thousands and thousands of other newspapers, both large and small, that are being published each day or week as the case may be? Have you ever stopped to think that advertising is the principal source of income making the publication of these newspapers possible? The greatest testimonial for newspaper advertising is found in those thousands of newspapers, because who could conceive of advertisements appearing again and again and again in those papers without bringing results for the businessman whose business they advertise. Newspaper advertising in effect brings your show windows right into the very homes of those people you hope to make your customers.

Consistency a Primary Requisite

Let's take a look at the way successful advertisers use newspaper advertising. One of the first and the outstanding characteristics that is sure to be noticed is the consistency with which a successful advertiser's advertisements appear in the newspaper or papers covering his trading area. It is agreed among advertising experts that consistency is essential to results. If a merchant's advertising budget will not stand the use of large advertisements, it is far better to use smaller ads and use them at more frequent intervals than to spend nearly all the advertising budget on just a few ads. A large ad makes a loud noise while it lasts but it soon dies down. The small ad used consistently is continually plugging away with that water-on-rock action which moves mountains.

Function of Tie-Up Ads

The 1940 dealer tie-up advertising material furnished to Dr. Salsbury dealers consists of both suggested classified and display advertisements. These tie-up ads are presented in advertising folios with the advertisements themselves presented in a suggested advertising campaign form. These suggested campaigns, both classified and display, meet this afore-mentioned requirement of "consistency." In preparing the suggested campaign the timeliness of the advertised article is taken into account.

The word "tie-up" is significant of the function of these advertisements. Dr. Salsbury's Laboratories is spending thousands of dollars this year on national advertising that will make some 8,200,000 selling contacts through farm papers and national poultry publications. Every one of these advertisements directs the attention of the reader to the local dealer by specifically saying, "See Your Local Dr. Salsbury Dealer." Who is the local Dr. Salsbury dealer? That is just where these tie-up advertisements come in. They are the connecting link between your store and the national advertisements.

It probably will be surprising to learn that a consistent advertising campaign using these suggested ads can be run for \$2 to \$5 a month, depending upon the local advertising rate and whether classified or display advertising is being used. Ask your Dr. Salsbury representative about this plan or write direct to Dr. Salsbury's Laboratories, Charles City, Iowa.

Editorial Support

In connection with these 1940 dealer tie-up advertisements Dr. Salsbury's Laboratories furnishes regular weekly poultry health news articles as additional support to the dealer's tie-up advertising campaign. These articles are sent out once each month for publication the following month. It is the purpose of these articles to supply the local newspapers with material that will be both interesting and informative to the poultryman. These articles carry the latest scientific facts and other helpful information on subjects relating to the health of the poultry flock. They are sent direct to the newspapers that are carrying dealer tie-up advertising campaigns, and are furnished to those newspapers exclusively.

5-Day School

... Offers opportunity to improve Poultry Health Service

A SERIES of five-day poultry disease schools will be held in centrally located cities during 1940 to give Dr. Salsbury's dealers a further opportunity to become fully acquainted with the latest developments in the control of poultry diseases.

The time and place of these meetings are arranged for your convenience below so that you may choose to attend a school nearest you at a time when you may be relieved from the pressure of your duties in your business.

In these days of specialization, the sale of poultry supplies depends more and more upon the service a dealer is able to offer his customers. Dr. Salsbury dealers who have attended these schools have found themselves better able to meet the problems of disease control in their communities and are thus able to render the kind of service that attracts and holds customers.

The amount of feed, equipment, and chicks that are sold depends entirely upon the extent to which poultrymen prosper and the greatest limiting factor in profitable poultry production today is the loss due to poultry diseases. Poultry authorities claim that the \$150,000,000 disease loss suffered annually by poultrymen in the United States is increasing every year. You, as a Salsbury dealer, have an opportunity to help reduce this loss in your own community by helping your poultry raising customers diagnose the ailments which are present in their flock and by recommending effective measures of treatment and control.

This modern and practical course in poultry disease control will be under the personal supervision of the technical and educational staff of Dr. Salsbury's Laboratories. At these schools identification of the various common diseases by symptoms and post mortem lesions will be taught and the important subject of treatment for each disease will be discussed. Dr. Salsbury dealers who attend this school will obtain a more thorough working knowledge of poultry disease control and you will find as have hundreds of others, that the five days spent in study at these schools will be well spent.

The poultry disease problem is constantly growing and as a result of extensive research the measures of control are becoming increasingly effective. Once you attend a Dr. Salsbury School of Poultry Diseases, you automatically become a member of its Alumni Association and as a member of that organization, you will always receive the latest information developed by Dr. Salsbury's scientific staff on the control of diseases.

Each year the Alumni Association elects officers and at present its President is Professor A. A. Hensarling of Tarleton Agricultural College, Stephenville, Texas, and its Vice-President is Dr. E. E. Boyd of Stafford, Kansas.

Those wishing to attend any one of those schools listed below are urged to write to Dr. Salsbury's School of Poultry Diseases, Charles City, Iowa.

School Schedules for 1940

June 17-21—Indianapolis, Ind.	Sept. 23-27—Amarillo, Texas
June 24-28—Grand Rapids, Mich.	Sept. 30-Oct. 4—Waco, Texas
July 29-Aug. 2—St. Louis, Mo.	Oct. 7-11—Waco, Texas
Aug. 5-9—Salina, Kansas	Oct. 14-18—New Orleans, La.
Aug. 12-16—Colorado	Oct. 21-25—Birmingham, Ala.
Aug. 19-23—Columbus, Nebr.	Oct. 28-Nov. 1—Knoxville, Tenn.
Aug. 26-30—Alexandria, Minn.	Nov. 4-9—Somerville, N. J.
Sept. 2-6—Charles City, Iowa	Nov. 11-15—New England
Sept. 9-13—Atlantic, Iowa	Nov. 18-22—Western New York
Sept. 16-20—Oklahoma	Dec. 2-6—Columbus, Ohio

FLOWERS CONDUCTS CHICK SEXING SCHOOL

Mr. C. T. Flowers of the Flowers Hatchery, Kinston, North Carolina, is conducting chick sexing schools for those who wish to determine the sex of chicks at hatching time.

- Fowl Pox
- Fowl Laryngotracheitis

VACCINATE

Your customers depend on you for help and advice on their poultry raising problems. You are familiar with the protection from loss that vaccination may give. So be certain to recommend to any of your customers who have had trouble with fowl pox or laryngotracheitis that they vaccinate their growing birds with Dr. Salsbury's vaccine for permanent immunity against these diseases. Dr. Salsbury's Fowl Pox Vaccine and Fowl Laryngotracheitis Vaccine are triple tested for purity and safety and checked for potency.

Fowl Pox Vaccine

Dr. Salsbury's Fowl Pox Vaccine is produced in a separate laboratory unit, and each production serial is submitted to the triple purity and safety test plus the test for potency. This vaccine is packed in a vacuum sealed vial to protect further its purity and potency. You can have your choice of chicken origin or chick embryo origin.

Pigeon Pox Vaccine

For emergency vaccination of laying flocks or where permanent immunity is not necessary, recommend Dr. Salsbury's Pigeon Pox Vaccine. In this vaccine you have your choice of pigeon origin or chick embryo origin. The same care in producing and the same testing is done on this vaccine as on the Fowl Pox Vaccine to assure purity and potency.

Laryngotracheitis Vaccine

Dr. Salsbury's Laryngotracheitis Vaccine is egg propagated and produced in a separate laboratory unit under strict sanitary conditions for greater assurance of freedom from contamination. In addition to these precautions each production serial number is triple tested for purity and checked for potency.

Dr. Salsbury's Laryngotracheitis Vaccine is packed in a vacuum sealed vial and comes complete with file for opening vial, brush for applying and diluent.



Two Things to Remember!

● AVI-TON . . .

for roundworm removal

"Economical, easy-to-give, and efficient worm removal" . . . that's a perfect description of the results received with Dr. Salsbury's Avi-Ton. It's a standby for thousands of poultrymen and an outstanding builder of good will for Dr. Salsbury dealers throughout the United States. Roundworms are stealing your dollars by stealing your customers' dollars but you'll both make EXTRA PROFITS if you'll recommend Dr. Salsbury's Avi-Ton to your customers. Remember! Avi-Ton is also a real friend of the turkey raisers . . . it removes cecal worms and thus helps to reduce the danger of a blackhead scourge.

2 AVI-TAB . . .

a flock conditioner

Avi-Tab in the minds of those poultrymen who have used it means faster growth, red combs, and greater egg production, and for those dealers who have merchandised it, it means additional profits. Many dealers have found ready-mixed Avi-Tab fortified mash a merchandising idea that has clicked . . . you'll find that it will click for you too.

Avi-Tab is a product of many uses . . . its many uses and the results it brings are sure to please your customers, and the way your customers come back for more is sure to please you. Recommend it for chicks, poults, and adult and growing chickens and turkeys as a general conditioner and as a medicinal treatment for mycosis.

A Good vs. a Poor Window Display

(Continued from page 11)

coccidiosis are displayed prominently in various sized containers, and literature giving directions for its use is displayed in the window also. There is a sufficient quantity of the material in the window to give a mass effect, yet there is no confusion.

Window Displays Good Advertising

Merchants in all lines of business consider their display windows as one of their more valuable advertising aids. However, you can do more than display the merchandise sold in your store in your windows; you can indicate the personality of your store, suggest uses for the merchandise you sell, and indicate the service which is the very foundation for the existence of your business.

Display windows should not be used merely for storage space. A display of merchandise that does not suggest its use to the casual passer-by might just as well be stored in any other part of the building where it would not be seen at all. Unless a display is educational in that it suggests a use, it will not be fulfilling its function.

Simple Theme Most Effective

Simplicity is the most important quality in window displays, and quality rather than quantity will bring the best results. Feature one idea or service at a time, and change your theme frequently. Use one item or theme as an attention-arrester and use the rest of the material to center attention on it.

Always change your windows before they wear out their welcome with the passers-by and always keep them neat and clean. Poultrymen who pass your place of business on their shopping trips will develop a habit of looking your way to see what you have in your windows that is new and which might prove helpful to him. Develop this habit; never let them lose interest in your windows.

Remember a merchant does more than buy and sell merchandise at a profit; he tries to show his customers how to make more money using his merchandise — how to raise more chicks, how to get more eggs and how to avoid losses due to disease.

Blackout the Worm Menace

(Continued from page 7)

If you wait until a number of birds show the characteristic bedraggled appearance of having had severe worm infestations you will be too late anyway, for the damage will be done. Treat early and often. Treat early to avoid permanent injury and retarded growth, and treat often to avoid reinfestation from infested premises. One infested bird may discharge thousands of worm eggs and reinfest the entire flock.

The best way to treat fowl for worms is to treat them individually, with Rota-Caps of correct size and contents. Use the correct size, according to age, and the correct contents, according to the species of worms present. Dr. Salsbury's Rota-Caps are available in pullet size and adult size, and they will remove the worms listed on the label of each container. What is most important, in the case of tapeworms, is that they will remove the heads, and not merely desegment the worms and leave the heads to grow out again.

Sometimes the flock treatment with Dr. Salsbury's Avi-Ton is more convenient and in the case of roundworm and cecal worm infestation only, it is adequate to remove these species. Many poultrymen find it necessary to give treatments of Avi-Ton every month while the pullets are on range, particularly if the range is contaminated with worms, as it would be if poultry had been present for a number of years.

Avi-Ton is really a worm treatment PLUS. Besides containing ingredients for the removal of roundworms and cecal worms, it also contains ingredients well known for their beneficial effect on digestion and the digestive organs.

As a safe and satisfactory program to insure uninterrupted growth and to prevent worm injury to the intestines such as might occur in prolonged infestations, the following program has been adopted successfully:

1. At 8 weeks of age, give a 5 day treatment of Avi-Ton, six pounds per 100 pounds of growing mash.
2. At 12 weeks of age give a pullet-size Rota-Cap.
3. At 16 weeks of age give another Rota-Cap treatment or give an Avi-Ton treatment.
4. At 20 weeks of age, or at the time the pullets are transferred to the laying house, give an adult-size Rota-Cap.

DR. SALSBUARY'S NATIONALLY KNOWN POULTRY PREPARATIONS

A Complete Line of Medicines, Bacterins, Vaccines, Disinfectants and Louse Removers for Chickens, Turkeys and Game Fowl



PHEN-O-SAL Drinking water medicine for fowls of all ages. Used as a first aid treatment for diarrhea in chicks, coccidiosis, cholera, typhoid, irritation from worms, etc. In buying, figure one tablet per chick, for older birds 2 tablets per bird, for a 5-day treatment.

Packed in the following sizes and sold everywhere at these prices: 25 tablets, \$.25, 50 tablets, \$.50, 125 tablets, \$1.00, 300 tablets, \$2.00, 500 tablets, \$3.00, 1000 tablets, \$5.50.



RAKOS Astringent liquid flock treatment. Useful as an aid in the treatment of coccidiosis and blackhead. A blend of three types of acids with astringent and appetizing properties. Very popular for birds of growing age. Best given on grain feed, also used in water.

For growing birds figure $\frac{1}{4}$ pint Rakos per 100 birds, for adults figure 1 pint per 100 as an average 5 day treatment.

$\frac{1}{2}$ pint, \$.75, 1 pint, \$1.25, 1 quart, \$2.00, $\frac{1}{2}$ gallon, \$3.50, 1 gallon, \$6.00.



CAM-PHO-SAL A concentrated antiseptic liquid to be diluted with water. Used as a non-inflammable spray, an antiseptic wash for the mouth, nostrils, throat and eyes of poultry, as internal medication in the feed.

As an expectorant it helps to loosen cankers. Used as preventive and curative treatment.

One ounce makes more than 1 pint of spray.

2 ounces, \$.45, 4 ounces, \$.75, 8 ounces, \$1.10, 16 ounces, \$1.85. Larger sizes at proportionate prices.



AVI-TON A flock treatment in powder form, containing 10 drugs for two distinct purposes: (1) to stimulate appetite, used 1 or 2% in the mash, (2) to remove roundworms (Ascarids) when used 6%. Excellent for baby chicks, poults, growing stock, and for laying stock. AVI-TON is 100% medicine.

For starting baby chicks figure 1 lb. per 100 birds, for growing stock as a tonic, 4 lbs. per 100 birds over a 30 day period. For worm removal, 2 to 3 lbs. per 100 birds for a 5 day treatment.

Packages and prices: 10 oz., \$.25, 3 lb., \$1.10, 6 lb., \$2.00, 15 lbs., \$4.75, large sizes available.



AVI-TAB Flock treatment for various run-down conditions such as mycosis, microscopic worm infestation and debilitating conditions. Not a specific for worm removal but a general conditioner. A definite inhibitor of common mold (*M. albicans*) growth as tested on culture media.

Size and prices figured for adult flock for 10 day treatment. 40 bird size, \$.65, 83 bird size, \$1.20, 166 bird size, \$2.25, 500 bird size, \$6.00.



ROTA-CAPS Coated tablets highly effective in the removal of the tapeworms *R. tetragona*, *R. echinobothrida* in chickens and the common tapeworm in turkeys, roundworms (ascarids), and capillaria worms. Contains a new combination of drugs called ROTAMINE, discovered at Dr. Salsbury Laboratories, and exclusive in ROTA CAPS. Packages and prices: Pullet size for birds 10 to 16 weeks, $\frac{1}{2}$ to 2 $\frac{1}{2}$ lbs., 50 caps, \$.50, 100, \$.90, 300, \$2.50, 1000, \$6.00.

Adult size for birds over 16 weeks and over 2 $\frac{1}{2}$ pounds, 50 caps, \$.75, 100, \$1.35, 200, \$2.50, 500, \$5.00, 1000, \$9.00.



BACTERINS AND VACCINES

Vaccination is the most certain way to protect poultry against many of the common diseases, because the action is the most specific of any known treatment. They are not difficult to use. Insist on Dr. Salsbury's brand.

CHOLERA-TYPHOID BACTERIN. For the vaccination of chickens, turkeys, ducks, geese and other fowls against both fowl cholera and typhoid. A preventive and curative treatment.

MIXED BACTERIN (Fowl). For vaccination against the bacterial forms of roup and colds. Preventive and curative.

MIXED BACTERIN (For Turkeys). A special bacterin for vaccination of turkeys against cholera, typhoid and many forms of colds.

PRICES OF ALL BACTERINS. Average dose 1 c.c.; turkeys 2 c.c., 60 c.c., \$.85; 120 c.c., \$1.60; 250 c.c., \$3.00; 500 c.c., \$5.75; 1000 c.c., \$10.00.

SYRINGE: 10 c.c. Lifetime Syringe, \$2.75; Special Poultry Syringe \$2.25.

FOWL POX VACCINE. For preventive vaccination against fowl pox. Chicken strain for growing period, pigeon strain for laying birds. Egg propagated available. Prices: 100 doses, \$.75; 500 doses, \$3.25; 1000 doses, \$6.00.

LARYNGOTRACHEITIS VACCINE. For the prevention of infectious laryngotracheitis. Egg propagated for greater purity and security. Prices: 100 doses, \$2.00; 500 doses, \$8.50; 1000 doses, \$16.50.

PASTEURILLA AVICIDA BACTERIN for vaccination against fowl cholera.

GALLINARUM-TYPHIMURIUM BACTERIN for vaccination against typhoid and paratyphoid.



DISINFECTANTS AND PARASITICIDES

Sanitation is the chief weapon in preventing and combating poultry diseases. Cleanliness, the use of disinfectants, and the destruction of lice and mites are three primarily important means of keeping birds healthy.

NIC-SAL. A roost paint for killing lice on the birds. May also be used for individual application and for destruction of mites. $\frac{1}{2}$ pt., \$.75; 1 pt., \$1.25; 1 qt., \$2.00; 1 gal., \$6.00.

DIP-SAL. A general purpose farm disinfectant, for the brooder house, poultry house, hog lots, and wherever a high quality disinfectant is needed. 1 qt., \$.50; 1 gal., \$1.60; 5 gal., \$7.25.

MITE-O-CIDE. Economical litter spray for killing coccidia. A specific for the control of mites. 1 qt., \$1.00; $\frac{1}{2}$ gal., \$1.50; 1 gal., \$2.50.

FUMI-TABS. Incubator and brooder fumigant and treatment. Medicinal fumes are released upon the application of heat. 50 tablets, \$.50; 100, \$.85; 500, \$3.00; 1000, \$5.00.

LIQUID FUMIGANT. A liquid that generates antiseptic fumes, when heated or sprayed. For fumigating brooder houses and other rooms. $\frac{1}{2}$ pt., \$.75; 1 pt., \$1.25; 1 qt., \$1.95; 1 gal., \$6.40.

HATCHERY SPRAY. A high quality spray and disinfectant. Pleasant odor. 1 qt., \$2.75; $\frac{1}{2}$ gal., \$4.50; 1 gal., \$8.60; 5 gal., \$38.00.

STOP-PICK. To check picking. Tube, 25 cents; 6 oz. jar, 50 cents.

PAINT-O-SAL. For painting windows to prevent cannibalism. 4 oz. jar, \$.50; $\frac{1}{2}$ pint, \$.90; 1 pint, \$1.50; 1 quart, \$2.50.

LOUSE POWDER. An effective powder for dusting or dipping. Can, 25 cents.

ANTIGEN. Write for special literature, certificates and contracts. The whole-blood or rapid test for B.W.D.

B.W.D. TEST CABINET. Water heated, \$5.00. For rapid Antigen test.

TUBERCULIN. 40 tests, \$.75; 200 tests, \$2.00. For T.B. testing. Wattle method.

FUMI-RATOR. For generating antiseptic fumes. 150 W. 110 Volt, \$2.50.

RAT DEATH. 4 oz. can, \$.50. A Red Squill preparation that kills rats and mice only.

HOG WORM OIL. Pint, \$1.00; Quart, \$1.80; $\frac{1}{2}$ Gallon, \$3.25; Gallon, \$6.00. To remove roundworms in hogs, sheep and poultry. Two-ounce syringe for administering oil, \$1.50.

Dr. Salsbury's Laboratories, Home Office, Charles City, Iowa

MEDICINES for LIVESTOCK

Brucella Abortus Vaccine

(Formerly called Bovine Abortion Vaccine)

For the vaccination of calves four to eight months old against abortion infection. Vaccination at this age is recommended so that immunity can be developed before the heifer has reached the breeding age. Dr. Salsbury's Brucella Abortus Vaccine is made from the famous No. 19 strain of organisms supplied by the Federal Bureau of Animal Industry.

Sizes and prices: 10 doses, \$1.70; 15 doses, \$3.50; 25 doses, \$6.50.

Blackleg Bacterin

For the vaccination of cattle, sheep, and hogs to stimulate immunity against blackleg. Blackleg causes the greatest losses in young stock and usually appears on range in late spring and summer. Young stock should be vaccinated before they are turned out to pasture. One vaccination is sufficient as lifetime immunity is produced. The recommended dosage is 5 c.c. Dr. Salsbury's Blackleg Bacterin contains both the killed blackleg organisms and the soluble by-products of germ growth commonly called "autogenous bacteria."

Sizes and prices: 12 doses (60 c.c.), \$1.85; 50 doses (250 c.c.), \$3.00.

With the 50 dose size using the recommended 5 c.c. dose, vaccination costs only 6c per animal.

Mixed Bacterin (Porcine)

(FORMULA 1)

For the vaccination of swine to help stimulate resistance against bacterial respiratory infections (pneumonia). Respiratory troubles are more prevalent during the cold damp days of late fall, winter, and early spring. The hogs and especially the young pigs should be vaccinated prior to the season when respiratory troubles threaten. Dr. Salsbury's Mixed Bacterin (Porcine) (Formula 1) contains, in addition to other organisms commonly found in respiratory disturbances in swine, the famous "diphtheroid" organisms found in pulmonary edema.

Sizes and prices: 12 doses (60 c.c.), \$1.85; 50 doses (250 c.c.), \$3.00.

Mixed Bacterin (Porcine)

(FORMULA 2)

For the vaccination of swine and especially young pigs to help increase resistance to bacterial intestinal infections commonly called pig scours. Pigs should be vaccinated as soon after birth as possible particularly where pig scours and other intestinal disturbances previously have been giving trouble.

Sizes and prices: 12 doses (60 c.c.), \$1.85; 50 doses (250 c.c.), \$3.00.

Hemorrhagic-Septicemia Bacterin

Dr. Salsbury's Hemorrhagic Septicemia Bacterin is a whole culture broth bacterin made from the famous Buffalo Strain of organisms that have been producing such fine results. This bacterin is used to vaccinate cattle, sheep, swine, and horses. Hemorrhagic septicemia is commonly called "corn stalk disease," "shipping fever," or acute septicemia. Typical lesion of hemorrhagic septicemia is hemorrhage of the heart and other internal organs with complications of pneumonia.

Sizes and prices: 12 doses (60 c.c.) \$1.85; 50 doses (250 c.c.), \$3.00.

Mixed Bacterin (Bovine)

(FORMULA 1)

For the vaccination of cattle to help stimulate resistance against bacterial respiratory infections. To protect cattle against these troubles, sometimes referred to as "shipping fever," they should be vaccinated about two weeks before they are to be shipped or placed in a stockyard. Dr. Salsbury's Mixed Bacterin (Bovine) (Formula 1) contains, in addition to other organisms commonly found in respiratory disturbances in cattle, the much-talked-of diphtheroid organisms acclaimed as an important cause of pulmonary edema. The technical name for this organism is *Corynebacterium pseudodiphthericum*.

Sizes and prices: 12 doses (60 c.c.), \$1.85; 50 doses (250 c.c.), \$3.00.

Mixed Bacterin (Bovine)

(FORMULA 3)

For the vaccination of cattle and particularly calves to help increase resistance to bacterial intestinal infections commonly called calf scours. Calves should be vaccinated soon after birth especially when calf scours and other intestinal disturbances previously have been giving trouble. Dose 5 to 5 c.c. depending upon size.

Sizes and prices: 12 doses (60 c.c.), \$1.85; 50 doses (250 c.c.), \$3.00.

Autogenous Bacterin

This bacterin is made from cultures obtained from specimens sent in from affected herds of swine, cattle, horses, or other animals for the vaccination of that herd to help increase immunity against the specific organisms causing the trouble. This bacterin is popular for the treatment of garget. Send milk sample from affected quarter.

Sizes and prices: 12 doses (60 c.c.), \$2.50; 24 doses (2-60 c.c.), \$4.00; 48 doses (240 c.c.), \$7.00; 96 doses, \$12.00.

Also

Hog Worm Oil

For the removal of roundworms in hogs. It may be administered individually by the drench method or as a herd treatment by preparing a worming slop. For pigs weighing 24 to 80 pounds use the drench method giving 1 ounce (2 tablespoonfuls). For pigs over 80 pounds give 2 ounces.

Sizes and prices: Pint, \$1.00; Quart, \$1.80; Half Gallon, \$3.25; Gallon, \$6.00.

Cunix

A liquid anthelmintic for roundworms and stomach worms in sheep. The most satisfactory way to worm sheep is by the drench method. One pint of Cunix added to enough water to make a gallon will make a worming mixture containing the right proportion of Cunix. The average dose is 2 ounces of this mixture for adult sheep and one ounce for lambs. One pint of Cunix is sufficient for treating 32 adult sheep or 64 lambs.

Sizes and prices: Pints only, \$1.25.

DR. SALSBUURY'S LABORATORIES
CHARLES CITY, IOWA

A Nation-Wide Poultry Health Service