SOME EXTERNAL PARASITES OF POULTRY

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Introductory.

External parasites are frequently the cause of great loss to poultry raisers. Not only do these parasites injure the health of the fowls, but frequently they greatly annoy the poultryman himself, getting on his clothes and person and causing much irritation and even pain by their attacks.

These parasites injure poultry in several ways, which may be enumerated as follows:

1. By sucking their blood.
2. By burrowing into the skin and flesh, causing mechanical injury.
3. By sucking the liquid contents from the cells of the skin or flesh.
4. By giving off poisons or toxins while in or under the skin of the host.
5. By irritation, due to their moving about over the surface of the skin, or among the feathers.
6. By carrying contagious or infectious diseases.

Some of the external parasites of poultry are mites; the others are insects. Those that are mites have no distinct head; the body is either undivided, or divided in two parts; and four pairs of legs are present. Those that are insects have a distinct head; the body is divided into three parts; and only three pairs of legs are present. These insect parasites are very degenerate creatures, having lost their wings, and frequently their eyes, while often their feelers are reduced to mere stumps. They are, in fact, very small, flat, and unassuming creatures, and if it were not for their disgusting and troublesome habits they would be easily overlooked.

In the following pages several of the most important external parasites of poultry will be considered. They will be taken up separately.

THE CHICKEN MITE.

Dermanyssus gallinae Redi.

Other Common Names. The poultry tick, the chicken tick, the poultry mite, poultry louse.

Description. The adult mites are less than one-sixteenth of an inch in length, of a flattened pear shape, with four pairs of rather slender legs, the anterior pair being the longest. The body is clothed with a very few short hairs. The skin is thrown into fine parallel folds. There is a considerable difference between the two sexes, especially in regard to the mouth-parts. In the female the mandibles, or jaws, are long and needle-shaped. In the male they are long and sharp, but lance-shaped.
instead of needle-shaped. The young unnourished individuals are white or flesh colored. The more mature ones are a dark grey. When any of the individuals are filled with blood sucked from their host they are red.

**Nature of Injury.** These mites injure their hosts by sucking their blood. By means of their sharp jaws they pierce the skin and suck the blood from the underlying tissues. Chickens which are only slightly attacked do not show external appearances of injury. Sitting hens are worried a great deal by the attacks of these mites. Small chickens are sometimes greatly weakened by loss of blood and by a general irritation caused by the movements of these mites over the skin. In some instances death has resulted from the attacks of these mites.

**Life History and Habits.** These mites live and breed in the cracks, crevices, and filth of chicken houses. I have found old knot holes in boards filled one-half inch deep with thousands of these crawling creatures. During the night, rarely by day, the pests crawl upon the perched chickens and feed. They do not as a rule remain on their hosts during the day. After being filled with blood they can live for weeks without feeding. The eggs are laid in the cracks of the houses and other natural retreats of the mites. They soon hatch, a small six-legged larva emerging. This six-legged larva sheds its skin, giving rise to an
eight-legged nymph. The nymph is very similar to the adult except in size. The sexual adults appear a few days after the nymphal stage.

Control Measures. Many are the remedies which have been recommended for the control of this mite. Some of these are very efficient. Others are worthless. We have tried with little success fumigation by means of hydrocyanic acid gas and by burning sulphur. A tent was procured by the college poultry department of about 500 cu. ft. capacity. This tent was treated with carbolineum, and placed over one of the hen houses, in which were placed several pieces of boards containing hundreds of mites. Fumigation was made with hydrocyanic acid gas, using 2 oz. of potassium cyanide, 3 oz. of sulfuric acid, and 4 1/2 oz. of water. After this gas had acted over night the mites were examined. No injury to them was noticed. This experiment was repeated the second time with the same results.

Fumigation with burning sulfur was next tried. The results were no better than those obtained with hydrocyanic acid gas.

Among the various remedies suggested for this pest are the dust bath, burning of the trash and straw found in houses, spraying with kerosene, benzine, or gasoline, whitewashing the house, daubing the ends of the roosts with tar, etc.
If the house is badly infested we should recommend.  First, the cleaning out and burning of the accumulated straw and other trash.  Next, the spraying of the house inside, and out if need be, with kerosene.  After this, if the house has not been treated with whitewash or kreso have it so treated.  If inside of ten days the mites are not subdued a second, and, if, necessary, a third application should be made.  Instead of kerosene, gasoline may be used.  Emulsions, even when only slightly diluted, are not as effective as the pure oils.

If poultry houses have not become infested with this mite much can be done by avoiding the introduction of infested chickens, or of infested coops or crates.  It may also be added that the English sparrow carries this mite with it, hence sparrows should not be allowed to nest in poultry yards, especially in the chicken houses themselves.

THE FOWL TICK.

Argas persicus (Oken).

This, the real fowl tick, is quite different from the chicken mite, which is sometimes incorrectly called the fowl tick or chicken tick.  This creature, as the name signifies, is a real tick belonging to the same group of mites as the dog tick, the cattle tick, etc.  It was first recorded in this country about half a century ago, and is now found in many of our southwestern states, including California.

In the sections of the country where this tick is found no pest of poultry is of greater importance.  It attacks turkeys, geese, ducks, and...
pigeons, as well as chickens. Besides causing a great loss to poultry by its blood-sucking habits, this pest is also the carrier of a disease known as spirochaetosis.

Happily, this pest has not yet been introduced into Oregon, but as it thrives well in a hot or mild climate where the rainfall is not too great, it may become a pest of prime importance in certain sections of this state if once introduced. The introduction of this pest into the state or into the flock of any poultry raiser should be guarded against by inspecting thoroughly any fowls or crates received from the south-western states. If fowls are found to be infested they should be isolated for some days in crates, so as to give the young ticks time to drop off. Now the crates should be burned. The adult ticks, if any are present, can be picked off by hand. Crates coming from infested sections and found to carry ticks should be burned.

Fig. 4. Itch Mite causing scaly-leg. View from above. (From a paper by the writer.)

ITCH MITE CAUSING SCALY LEG.

Cnemidocoptes mutans (Robin).

This mite causes the disease known as scabies, or scaly-leg, of chickens. It belongs to the same family of degenerate mites as does the itch mite of the horse, sheep, dog, cat, and man.

Description. To the naked eye this mite looks like a minute, white, round piece of putty not much larger than the head of a pin. Under the microscope it is seen to possess four pairs of small, stumpy, rudimentary legs, the last two pairs of which can not be observed
from above. The mouth-parts are very rudimentary and consist of a pair of jaws and a pair of short feelers. At the posterior margin of the body there is situated a pair of long bristles.

**Nature of Injury.** This mite attacks the various exposed parts of the fowl, such as the combs, legs, etc. Upon the combs the injury shows as small white specks and folds covered with scales. The injury to the legs begins in the form of small blisters between the scales. These blisters enlarge, and after a while rupture, causing the serum to dry. Thus a dried chaffy scale is produced. As the mites multiply, and their attacks continue, multitudes of blisters are produced, which later, when they break, cause a piling up of the scales. Besides this injury the burrowing of the mites causes a swelling of the tissues, followed by the drying of the serum and a sloughing off of the dead and injured parts. Legs that have been subject to the attack of these mites for some time present a very shabby repulsive sight.

**Life History and Habits.** The female itch mite produces living young. These young mites at first have only three pairs of legs. After the first shedding of the skin they obtain the fourth pair and are called nymphs. It probably takes about two weeks for the completion of the life cycle under ordinary conditions. These mites can live for several days when imbedded in cast scales or underlying tissues that have been sloughed from the legs of chickens.

**Control Measures.** The affected parts should be soaked first with hot soap suds, and much of the scabby material removed. This can best be done by using a small coarse brush. After as much of the scaly material has been removed as is possible, the affected parts may be treated with any one of the following:

- First, any good ointment containing sulfur.
- Second, a strong kerosene emulsion. The emulsion may be made by dissolving a fourth pound of soap in a half gallon of boiling water; to this solution add a gallon of pure kerosene. This mixture can be emulsified by driving it through a spray pump or by using an egg beater. The concentrated emulsion is diluted before using by adding 8 or 9 parts of water to one part of the concentrated solution.
- Third, commercial lime-sulfur may be used. It should be diluted at the rate of one part of the solution to 9 or 10 parts of water.

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**THE COMMON HEN LOUSE**

*Menopon pallidum* Nitzsch.

**Other Common Names.** The small hen louse, the pale-colored chicken louse.

**Description.** This species is of a pale straw color, in contrast to most other species of biting lice which are brown or almost black. It is a rather small species, being about one-twentieth of an inch in length. The body is oval in shape; with a small thorax and a large abdomen. The legs are rather small.
Nature of Injury. The common hen house affects its host not directly by biting its skin nor by sucking its blood, but by irritating it by movements over the skin and among the feathers. Upon adult fowls this louse is not a serious pest, but when it becomes abundant on small chickens it causes considerable damage. It attacks especially the head region.

Life History and Habits. The eggs of the louse are laid among the feathers of the chickens. Inside of a few days they hatch. The young, as soon as they have emerged, are very similar to the adults except in size. After casting the skin several times they reach the adult stage, probably inside of a month or so. The young as well as the adults feed chiefly on the barbules of the feathers, although they also will eat cast cells of the skin and the secretions of the same. These lice seldom leave their hosts.

Control Measures. Since these pests are seldom found about the nests, coops, etc., but instead on the chickens themselves, the treatment of the hosts must be resorted to.

Apply directly to the chicks themselves either kerosene, or a mixture of plaster paris and carbolic acid, or slaked lime and sulfur. The following mixture is also a good one: Crude carbolic acid, \( \frac{1}{2} \) pint; gasoline, \( 1 \frac{1}{2} \) pints; plaster paris, 5 pounds.

If the infestation is bad it may be necessary to spray the nests and buildings with kerosene or gasoline.
THE LARGE HEN LOUSE.

Menopon biseriatum Piaget.

There is commonly present in the United States another hen louse somewhat similar to the common hen louse, except in size. This species is called the Large Hen Louse. It is about one-twelfth of an inch long, and is the largest louse found on chickens.

Usually this pest is not as bad as the common hen louse, but in Colorado, according to Kaupp, it is a worse pest than the latter. The two species are very similar in habits, and the methods for their control are the same.

Fig. 6. The Louse of Ducks. View from above.
(After Osborn; Bull. No. 5, Division of Entomology, U. S. Dept. Agri.)

THE LOUSE OF DUCKS

Trinoton ludium Nitzsch.

This is a very common species, and occurs on a great many species of ducks. It is not found on birds other than ducks.

Description. A large species. Adults about one-eighth of an inch long. Body long, slender, well clothed with many prominent hairs. Cheeks prominent. Prothorax slender; longer than broad. Legs prominent, stout. Each segment of abdomen with a dark transverse area, giving the whole a banded appearance.
Nature of Injury. Irritation to hosts due to the activities of the lice in moving about, and not to their feeding habits.

Life History and Habits. The eggs are laid on the feathers, and here the growing individuals pass their life. Although these lice are air breathing, their respiration is in no manner interfered with when the host goes into the water, for under the oily surface of the feathers they find an abundant supply of air.

Control Measures. General infestation of the flock should be guarded against by inspecting new additions, or by isolating and treating affected individuals. A sulfur ointment, or a dust mixture of slaked lime and sulfur; or of plaster paris, gasoline, and crude carbolic acid should be used.

Fig. 7. The Duck-infesting Lipeurus, as seen from above. (Original.)

THE DUCK-INFESTING LIPEURUS

Lipeurus squalidus Nitzsch.

Many of our wild ducks as well as the domesticated ones are infested with a very long, slender, biting louse. This louse is about one-sixth of an inch in length, has a few simple hairs along the sides of the abdomen, a small prothorax, and large legs. Its general color is light yellowish, while a heavy dark band is present at each side of the body.

The nature of injury, life history, habits, etc., of this species are about the same as for the one just described.
LOUSE OF THE GOOSE.
Trinoton lituratum Nitzsch.

Upon the goose we have a common and rather odd looking louse, which is distinguished from the other species of its genus by its shortness and white color. The head is very broad, the thorax large, while the legs are almost enormous. Few hairs are found on the body, but they are quite long. Most of them are situated at the sides of the abdomen.

THE TURKEY LOUSE.
Goniodes stylifer Nitzsch.

Commonly found wherever turkeys are raised is the rather small, flat, oval, hairy turkey louse. This species is about one-tenth of an inch in length, and has a very characteristic shape. The head is somewhat semi-circular with each lateral angle produced backward in the form of a sharp point from which a spine-like bristle arises. The thorax is also angular. The abdomen is broad and oval. From the lateral margin of nearly every abdominal segment there extend four long, straight, almost equal bristles.
THE HEN FLEA.

Sarcopsylla gallinacea Westw.

Other Common Names. The chicken flea, the jigger-flea.

Description. This flea, like all other fleas, has a laterally compressed body, hard integument, and large legs. It differs considerably from most fleas in shape, however, being very short and having the femora of the hind legs poorly developed. It is about one-sixteenth of an inch long, and of a pale brown color.

Nature of Injury. There is much conflicting opinion in regard to the nature of injury caused by the hen flea. Some authors claim that the females will bury themselves in the flesh of their hosts and cause small tumors. Others claim that the injury of this species is not essentially different from that of most other fleas, i.e., it consists of incisions in the skin through which the blood has been sucked. Doubtless much of this conflict is the result of a confusion of this flea with the sand flea and itch mites. This species seldom appears in the northern states, but is quite common in the south.

Life History and Habits. Little is known of the life history and habits of this insect. Probably its life history is similar to that of other members of the order Siphonaptera. If so, the eggs should be found in the dust or rubbish about the chicken houses and coops. The larvae should hatch after a few days incubation. Here they should live in the refuse material and dust. Later they pupate, and then transform into adults.

Control Measures. Clean out the straw and rubbish from the houses and coops, and burn it. Keep the fowls in a damper place, or pour or spray water about their premises. Spray kerosene, or some other oil on houses and crates.
THE BIRD FLEA.

Pulex avium Tasch.

In some parts of the country, especially in the western states, the common flea found in poultry houses is the bird flea, Pulex avium Tasch., and not the hen flea, Sarcopsylla gallinacea Westw. This flea is found not only on domestic fowls, but also on many other kinds of birds.

Other Common Names. The chicken flea, the pigeon flea.

Description. This flea very closely resembles the cat and dog flea. It is of a dark brown color. It has no comb of spines on the head as does the cat and dog flea and many of the other fleas, but has a comb of about two dozen spines on the pronotum. The legs are large. The abdomen is about two-thirds as high as long, and is sparsely clothed with hairs.

Nature of Injury. This flea does not imbed itself in the skin of its host, neither does it remain stationary on the same, as the hen flea is reported doing; in fact many observers, including the writer himself, have been unable to observe any injury to fowls living in houses infested with this pest. However, the common symptoms of flea or lice injury have been reported for this species. To the people who have to visit the infested poultry house these pests are a great annoyance. Their attacks are followed by intense itching, and around the points of injury the flesh becomes reddened and inflamed, even in some instances resembling the effect produced by the sting of a bee. If for no other reason than for the comfort of the poultry raisers themselves, this pest should be subdued.

Life History and Habits. The life history is probably similar to that of most fleas. This flea differs in its habits somewhat from most other fleas in that it jumps very feebly. It can live for several weeks after being deprived of food.

Control Measures. The first step in the control of this pest is to
clean the infested quarters of all loose trash and rubbish. If straw has been supplied for the nests it should be removed. This refuse should be burned. It probably would be better to add some oil to the heap before it is lighted so as to cause it to burn up as completely as possible.

Now the houses, crates, and coops should be sprayed with kerosene, gasoline, or distillate. Use a bucket or knapsack sprayer and a coarse nozzle. The walls of the houses should be drenched so that as much of the oil as possible will penetrate the cracks. After the treatment is made, close the door of the house so as to confine the evaporated gas as long as possible.

Here at the college I tried a commercial emulsion sold under the name of "Yel-Ros" against this flea. The "Yel-Ros" was used at the strength of 1 to 4; i. e., one part of the commercial product was diluted with four parts of water. It was now emulsified by being driven through a sprayer. This strong emulsion, which was white as milk and frothy, was applied by means of a knapsack sprayer to the inside and the outside of the chicken house. The following results were obtained:

<table>
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<th>No. of Individuals counted</th>
<th>Dead</th>
<th>Alive</th>
<th>Percent dead</th>
<th>Percent killed</th>
</tr>
</thead>
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<tr>
<td>Sprayed</td>
<td>191</td>
<td>170</td>
<td>21</td>
<td>89.0</td>
<td>80.7</td>
</tr>
<tr>
<td>Check</td>
<td>217</td>
<td>18</td>
<td>199</td>
<td>8.3</td>
<td></td>
</tr>
</tbody>
</table>

"Yel-Ros" even at the strength used is hardly as effective as one of the oils mentioned.

In all cases a second application should be made some weeks after the first in order to kill the adults that have emerged from the immature stages which are little affected with the spray.
GENERAL CONTROL MEASURES.

Since these external parasites are of such importance to the successful raising of poultry, it would be well if those starting into the business should maintain a sort of quarantine for their flock. The writer has visited some flocks that have been entirely free from parasites. Of course the larger the flock the harder it will be to guard against infestation.

If poultry raising is being followed as a vocation, and the premises are already infested with several kinds of parasites, special methods like fumigation may be used. Fumigation is not a very effective remedy for most of the external parasites, but on account of its need for sanitary reasons it should be employed. A tent large enough to cover the largest house, that is if colony houses are used, should be procured. It may be treated with linseed oil or carbolineum. The tent can be easily slipped over the house, no poles being necessary, and its loose sides covered with dirt where they touch the ground. After one house is fumigated, the tent may be used for the next, and so on.

If only a few chickens or other kinds of poultry are raised, it is not necessary to invest in any special spraying outfit, an ordinary knapsack or bucket sprayer used for garden insects being sufficient. If one of these is not at hand then it should be obtained.

Some of the materials used against parasites will cost approximately as follows:

- Commercial lime-sulfur .......... $0.30 to $0.50 per gal.
- Lime, in 5 to 25 pound lots .......... $0.04 per lb.
- Sulfur, flowers or sublimed, small lots .......... $0.04 per lb.
- Crude carbolic acid, 1 to 5 lb. lots .......... $0.20 to $0.25 per lb.
- Kerosene, small amounts .......... $0.15 per gal.
- Distillate, small amounts .......... $0.10 per gal.
- Potassium cyanide, large lots .......... About $0.25 per lb.
- Sulfuric acid .......... About $0.125 per lb.