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THE CHICKEN STICKTIGHT FLEA

BY C. E. SANBORN. ENTOMOLOGIST

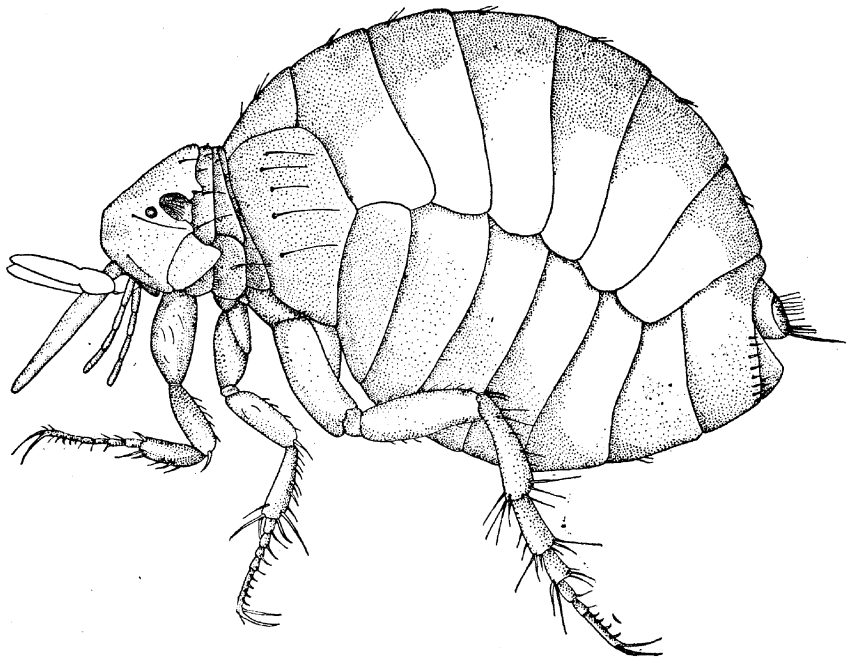

ILLUSTRATION OF FLEA (by Sanborn)

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THE CHICKEN STICKTIGHT FLEA

(*Sarcopsylla gallinacea Westw.*)

BY C. E. SANBORN
Entomologist

Poultry-raising in Oklahoma is of great economical importance from many different standpoints. As an insect control, domestic fowls are perhaps superior to any group of animals except the wild birds. Farm crops, fruit and truck crops are frequently partially or wholly destroyed by insects of southern or northern origin, which seem to merge with and overlap eastern and western depredating forms in this State. Unfortunately, however, the chickens are controlled by some of these bugs.

The chicken or sticktight flea, sometimes known as the hen flea, is one of the chicken-eating bugs. It seems to have originated in Ceylon; at any rate, the earliest record of it was made from specimens received from Ceylon by Professor Wetswood of England.

The first United States record (1886) was made from specimens found in Florida. At present the infestation is in all of the Southern States and has been reported present also in Kansas. It thrives best in an arid or semi-arid, mild climate.

Method of Dissemination.—This insect has no wings; but it can hop or jump a short distance. Its relatives, the cat and dog fleas, can outjump it, and are universally distributed. All fleas, however, do not jump from one country to another, but are generally carried by the agencies of man. After a sticktight flea attaches itself to a host, its habit somewhat resembles the tick's in so far as it is not easily detached. Infested chickens therefore, by being moved from one locality to another, may easily carry the fleas.

Mouth Part Peculiarities.—As the name implies, the flea sticks tight to its host. Practically all other fleas flea rapidly when seriously disturbed. This one anchors itself to its host with its beak and cannot quickly detach itself. The beak is about one-fourth the length of the body and composed of a pair of lancets which have numerous very small lateral, recurved barbs that can be slightly extended outward. When the barbs are not extended, the beak appears somewhat smooth. While they are extended, the recurved prongs or barbs give the beak a very rough appearance and cause it to serve well as an anchor in the tissues of the host.

The lancets previously mentioned are modified jaws, known as

mandibles. These approximate each other, i. e., lie against each other and form a canal which ensheaths the hypopharynx or tongue. The latter is luminated, i. e., tube-like, and really answers as an extended oesophagus through which the insect withdraws the blood of the host for digestion.

When one of the mandibles is thrust forward into the flesh the other is used as a guide and anchor, and remains attached in the flesh by means of its external barbs; and it in turn may then be thrust deeper into the tissues, while the other serves as an approximating guide and anchor.

So neatly is the anchorage made that no blood escapes from the wound except into the hollow tongue. The flea finally embeds the entire length of its beak in the tissues of the host, where it remains attached without the use of its feet.

Size and Appearance.—Like most all other fleas, this one is a light brownish or mahogany color. It is about the size of a moderate sized pinhead, but rather elongate and shaped more like a grain of buckwheat.

These are much more gregarious in habit than other common fleas, i. e., they feed close together. In case of a badly infested animal, such as a chicken, they anchor their beaks so close together that the infested portions of flesh become so thickly studded with their bodies that it is thusly hidden. The wattles, eyelids and base of the comb become conspicuously patched-over in severe cases of infestation.

The segments or divisions of the flea's body are armed with sharp, stiff, backward-slanting hairs which apparently serve, as do also the caudal or back edges of the body sclerites or divisions, in aiding the flea to remain on its host when not anchored, but retained by the hair, fur or feathers, against which these projections bind, except in a forward motion of the insect.

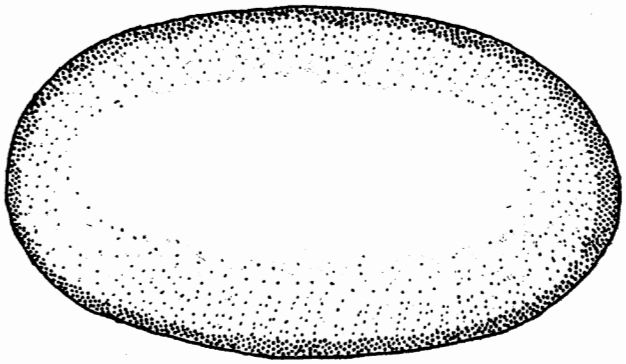
The outer covering of the flea is very smooth and tough. If an individual is firmly appressed between a person's thumb and a finger it will move forward with nearly every contortion of its body until it can escape from the confinement.

A surplus of moisture placed in contact with the flea's body can be used to materially retard its progress. This is one reason why some flea-infested dogs secrete an excessive amount of saliva when ridding themselves by mouth action. Chickens, however, cannot moisten the fleas in this manner, and consequently are unable to relieve themselves. In scratching and nipping at the fleas, however, they frequently dismember parts of the flea legs, especially the hind pair. This does not seem to affect the fleas in any way because they do not use their feet much after they have become permanently located.

Egg-Laying.—The nature of their habits is such that they are

kept warm and engorged with an endless supply of nourishing blood which causes them to reproduce rapidly. They appear to lay eggs daily which drop promiscuously to the ground, except in cases where the skin of the host becomes encrusted over the fleas, thus permitting the eggs to hatch on the host, in which case it is the hatching larvae that escape. In either case, those dropping in the dry litter of hen houses or sheds have better advantages for development than those dropping in moist, clean placse.

The Flea Eggs.—They look very much like a pigeon's egg in color and shape, but are small enough to drop through the eye of an ordinary sized cambric needle, consequently they are not easily found. Under normal conditions they hatch within three or four days.

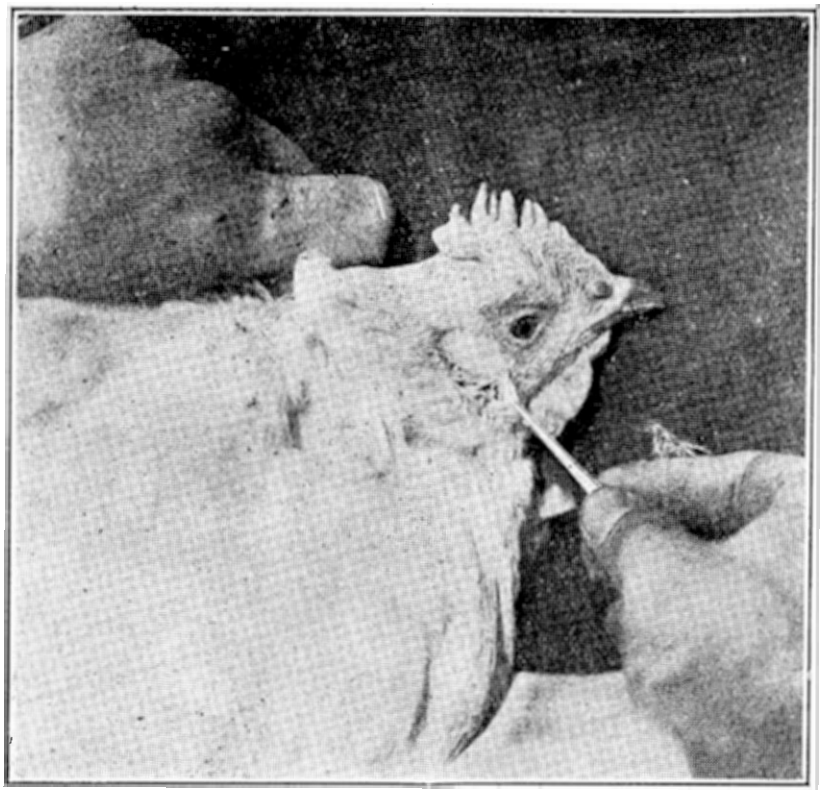


EGG OF FLEA, ENLARGED (Sanborn)

The Flea in the Larval Stage.—The eggs hatch into a footless, maggot-like worm, known as larvae. They do not feed on the fowls or ather animals infested by the adults. They develop in the soil, under the roots, or in other infested litter. A rather dry soil is favorable to natural development. A large amount of air moisture is required; wet soil retards and sometimes prevents development. Direct sunlight also checks their activities. The larval stage generally continues for about thirty days.

The Pupa or Changing Stage from Larva to Adult.—This stage is passed in the same material as that in which the larvae develop. When mature the larvae spin silken cocoons in which to transform to pupae. The cocoons are covered with small particles of soil and are difficult to distinguish from small bits of earth. This stage, under favorable conditions, lasts about five days. In cold weather, such as winter, it continues until spring. After pupating, the form ceases to feed on the trash or litter, and it hops and crawls in order to locate on an animal.

Adult Fleas.—This species of flea differs from other species in food habits. When the adults, especially the females, attach themselves to the host with their beaks, they remain in this location practically throughout the remainder of their lives. They do not crawl about over the body of the host, as is the case with many other spe-



INFESTED CHICKEN HEAD (Photo by H. R. Painter)

cies. Oftentimes they collect so thickly on the exposed portion of the head that an infested fowl can be distinguished at quite a distance on account of the dark flea-patched areas.

A severe infestation causes a scaly appearance of the infested skin of the host, due to a sort of upheaval of the tissue. The fleas sometimes become almost completely embedded in pockets of this formation. They prefer to locate on areas free from feathers; for instance, around the eyes, on the wattles and comb. In heavy infestations, however, they will locate on feather-covered areas, especially on the upper portion of the head and near the vent. On dogs and cats they generally infest the ears.

Hosts, or Animals Infected by the Stick-Tight Flea.—This insect is most injurious to poultry. It is known, however, to attack man, wild birds (owls, for instance), dogs, cats, horses, and a few other similar wild animals. Young chickens suffer the most severe injury when they are subjected to infestation. Older fowls, which possess a more hardy constitution and tougher skin, are better able to resist an attack.

Description (technical) **Egg.**—The egg is elliptical and of a white, glossy appearance, about .25 mm. wide by .4 mm. in length.

Larvae.—The larvae is white and footless. It has antennae or feelers on the head and a pair of appendages extending posteriorly from the last segment of the body. The head is about .14 mm. and the body is .2 to .3 mm. in width, and averages about 3.25 mm. long.

Pupa.—The pupa is similar to the adult in form, but is whitish in color. It is about .26 mm. wide and 1 mm. long. This stage is passed in a silken cocoon which is generally more or less covered with trash and soil particles. On account of this fact, it is likely to be mistaken for a small pebble or bit of earth.

Adults.—The adult is light-brown to dark-brown in color. The head has two angles in form instead of one acute angle, as is the case with the jigger flea. The eyes are very small, and located a little dorso cephaled on the lateral sides of the head, and are black in color. The beak or proboscis is about .45 mm. long. The antennae are attached dorso-caudad; the eyes in an irregular circular depression in which they lie flush when not in apparent use. They are composed of four segments. This flea differs from most other species in that the hind pair of legs are not especially developed (see Frontispiece). Males have been observed to fertilize the females after the latter have become attached to the host.

Control.—A 5% to 10% mixture of kreso in vaseline or lard applied to the infested areas on ainmals will destroy the pests. Owing to the fact that some of the fleas may be protected by being partially imbedded in the flesh of the host, they cannot be reached with the mixture if it is carelessly applied.

Another mixture, composed of carbolic acid 1 part and vaseline 5 parts, is also effective in destroying the adults. This preparation is applied in the same manner as the kreso-vaseline mixture, but one should prevent any excess of the mixture coming in contact with the flesh of the host, since it may cause inflamation.

Submerging the heads of chickens in gasoline kills the fleas, but it affects the chickens somewhat unnecessarily.

Direct sunshine on the immature stages, checks flea development. The larvae cannot develop in moist places. If the chicken houses or sheds are not modern and not kept sanitary, the development of the larvae can be prevented by broadcasting a little salt in them. This will finally become moist and retain moisture, but on account of its poisonous effect on poultry while dry, it should be sprinkled with water immediately after application so as to be more effective, and at the same time rendered in such a stage as to prevent chickens from eating it.

Four parts of zenolium in 100 parts of water, sprayed in the poultry houses and yards, is quite effective. One part kerosene and 2 parts of lard applied to infested parts of animals is also a good treatment.

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