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For further reading:
D. W. Baker: Cattle Mange and the Other Diseases Known Commonly as Barn Itch, 36 pages, Ithaca, N. Y., Cornell University, 1946.

Verminous Dermatitis
JOHN T. LUCKER

THE ONLY truly parasitic worm known to cause a specific dermatitis, or skin disease, of cattle in the United States is a small filarial roundworm, Stephanofilaria stilesi.

The adult worms live and move about in the outermost, or epithelial, layer of the skin. Their progeny, known as larvae or microfilariae, are found mostly in the upper part of the underlying dermal skin layer.

The life cycle of the parasite has not been worked out, but an insect intermediate host probably is required for its completion. Transmission by one or more of the many kinds of sucking insects that attack cattle is strongly suggested by the life cycles determined for related filarial roundworms. Such dipteran insects as flies, "midges," and mosquitoes head the list of suspects.

The causative parasite has been found only in lesions in the skin of cattle. Presumably the intermediate host inoculates the skin with the infectious larvae of the parasite. The irritation produced as they develop into adults apparently starts the lesions. An alternative possibility is that the transmitter is attracted to already existing sores or breaks in the skin and inoculates infective larvae into them. At any rate, the presence of the adults and their microfilariae causes tissue destruction.

Stephanofiliarisis, also known as stephanofilarial dermatitis and stephanofilarial dermatosis, the skin disease caused by this parasite, was first recognized in western cattle in 1934. It has been found in 11 of the Eastern, Southern, and Midwestern
Verminous Dermatitis


It seems to be more common in beef cattle than in dairy cattle. When it becomes established in a herd, up to 90 percent of the animals may be affected. Stephanofilaria has been observed mainly in mature cattle but younger cattle sometimes are affected. Lesions suspected to be of stephanofilarial origin have been found on calves about 6 months old.

The lesions vary in size and appearance. The smallest ones are about one-fourth to one-half inch in diameter. They appear marked with spots of dried blood and serum and are not hairless. The slightly larger lesions, about an inch or so in diameter, are hairless. Some are moist and exude fresh serum and blood. Scabs or crusts formed by these exudates cover others. Some apparently heal without spreading after scabs are formed. A patch of smooth, thickened, hairless skin denotes that healing has occurred. Actively spreading lesions, about 2 to 3 inches in diameter, have numerous small bloodspots on their margins and wrinkled, thickened, hairless centers. Some of the larger, and apparently older, lesions appear grayish and are covered by a heavy, dry crust, with cracks and crevices. A deep-red crust with bloody, moist cracks covers others.

Economically the most obvious loss from this disease is by lessening the value of hides for leather. The lesions are located mainly along the median line of the abdomen where the main cut is made in skinning the hide from slaughtered cattle. They are most often near the navel, but may be anywhere from the brisket to the pubic region. Often there is only one lesion a few inches in diameter, or a row of smaller ones. The diseased areas can be trimmed off with little labor and small loss per hide in these cases. Occasionally, however, there may be isolated lesions on the flanks, or a median strip a foot wide and up to 4 feet long may be diseased. When an untrimmed affected hide is manufactured into leather, the diseased areas produce noticeable disfiguration of the grain and the leather is inferior in strength and quality.

General health apparently is not noticeably affected by this disease. The sores probably cause discomfort. They attract flies, which annoy the animal. It has been stated that involvement of the teats may predispose to mastitis. Owners of show cattle become concerned over any blemish that may affect ability to win prizes, and show animals with disfiguring stephanofilarial lesions have been given useless and expensive courses of treatment on the mistaken assumption that mange or ringworm was the cause of the trouble. To avoid such useless expenditures, a positive diagnosis should be obtained wherever possible.

A presumptive diagnosis of stephanofilarial dermatitis often can be made from the location of the lesions because other skin diseases are not confined to or centered about the ventral midline. The gross appearance of the lesions is also somewhat diagnostic.

Positive diagnosis, however, requires recovery and identification of the larval or adult worms from the skin. Skin scrapings should be taken from active lesions that are moist or covered with recently formed scabs or crusts. Scabs and crusts must be lifted off before scraping. The scraping must be deep enough to draw blood. Classification of the lesion as stephanofilarial is fully justified only if microscopic examination of the scrapings reveals larvae or pieces of the adult worms. A special method must be used to recover the adults intact. Rather often neither worms nor larvae are found in seem-
ingly typical small, bloody lesions and larger, older, dried ones. Only a tentative diagnosis is possible in such cases, unless other infested lesions are found on the same animal. Even if sections of worm-free lesions show microscopic tissue and cellular changes like the ones observed when this parasite is present, the diagnosis remains inconclusive because similar changes may be caused by other classes of parasitic organisms.

No specific drug treatment for this condition is known. Tartar emetic and antrypol (suramin) have been successfully used in India for the treatment of a related disease (hump sore, caused by Stephanofilaria assamensis).

Normally free-living, or saprophytic roundworms of the genus Rhabditis, occasionally infest bovine skin lesions, according to reports from California and other States. These worms are omnipresent in soil and moist, decaying, organic materials, including feces. They get on the skin of cattle by contact with such materials. They evidently become established only in already diseased skin areas. They apparently can cause extension of the sores and have been found associated with extensive dermatitis.

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Cattle Grubs

IRWIN H. ROBERTS AND ARTHUR W. LINDQUIST

Nearly all cattlemen know the conspicuous swellings that appear in the backs of cattle in winter. The swellings contain grubs, which are the maggot stage of heelflies.

Of all the insect pests that prey on livestock, heelflies are among the hardest to control. They and the cattle grubs (which are known also as warbles and wolves) may be to blame for losses to producers, feeders, dairymen, packers, and tanners. The losses may nearly equal those caused by all other insect pests of cattle combined.

Two species of heelflies, or warbleflies, parasitize cattle in North America. The common heelfly, Hypoderma lineatum, and its larva, the common grub, exist in all parts of the United States and Canada. The northern species, Hypoderma bovis, is found in Canada and the northern half of the United States.

Heelflies are true flies of the order Diptera. They are closely related to other flies commonly encountered on farms, but look like small bumblebees—hairy, black, and striped with yellow. The common heelfly is nearly three times larger than the housefly.

The northern heelfly is much larger and stouter.

From the eggs that the flies lay on cattle emerge tiny, white larvae. The flies, their eggs, and the young maggots are seldom seen by casual observers. The young maggots penetrate the skin of the host animals, move through the