

ENTOMOLOGY

Beat Chiggers and Ticks

New pesticides give effective control over chiggers and ticks. Many would-be outdoorsmen stay front-porch men after encountering these pests.

By HORACE LOFTIN

► DAVY CROCKETT feared no b'ar or Injun alive, a fact that has been well re-established lately. But Davy had two enemies that surely caused that outdoorsman much mental and physical anguish.

Neither old Betsey nor the trusty Bowie knife could help him when they attacked. As a matter of fact, until the advent of modern chemical insecticides and repellents, nothing at all was much help against them except persistent scratching for chiggers and patient searching for ticks.

Many a would-be outdoorsman has remained a front-porch man after an initial encounter with chiggers and ticks. They are a subtle refinement over the ants that annoy you while you are picnicking. Chiggers and ticks do not start digging in until after you are back home.

With the current crop of chemical weapons against six- and eight-legged varmints, however, modern Davy Crocketts have an effective arsenal with which to retaliate. There are easily applied repellents for clothes and skin that discourage ticks and actually kill the minute chiggers. Chemical sprays can give reasonably long-term control over them on limited areas, such as infested lawns and golf courses.

Exquisite Itch

Of the two, chiggers, called red bugs down South, cause the most exquisite itching.

The chigger is a juvenile delinquent, its parents being respectable eaters of organic debris only. It is in the larval, or infant, stage that this mite is parasitic on living things.

The adult chigger mite lays her eggs in a humid, shady spot, generally early in the spring. The eggs hatch out into the larval chiggers, which latch on to a variety of hosts ranging from rattlesnakes to birds and man.

After about a three-day feeding, the chigger drops off, sheds its skin and enters the intermediate nymphal stage, in which it feeds harmlessly on decaying organic matter as adults do.

One more molt and it emerges an adult, ready to mate and make hundreds of new, hungry chiggers.

Although a sufferer from them will find it hard to believe, chiggers do not burrow into the skin nor do they suck blood. They attach themselves by their mouthparts to depressions in the skin, usually at the base

of a hair. Once settled down, they inject a fluid which breaks down the epidermal cells on which they feed. It is this fluid that causes the intense itching.

An investigator once took more than 4,000 chiggers from one woodchuck.

The best way to avoid chigger bites, of course, is to go where they are not. Chiggers make their homes mostly in low, damp places well shaded by vegetation. The margins of streams and lakes, shady woods, tall grass and berry patches are favorite hangouts.

They do, however, frequently make themselves pests in relatively dry spots like golf courses, parks and lawns.

For individual protection, "repellents," which actually kill the tiny chiggers, containing dimethyl phthalate, dimethyl carbate, indalone or ethyl hexanediol are nearly 100% effective when used properly. They also repel mosquitoes, gnats, black flies and other biting flies.

Smearing the repellent only on the socks above the shoe tops and on the bottoms of

trouser legs will keep you reasonably free from chiggers. If you apply the chemicals to all the openings of your clothes—neck band, shirt fly and cuffs, inside waist band, fly and cuffs of trousers, socks above the shoes and under the shoe tongue—you will just about shut out the chiggers completely.

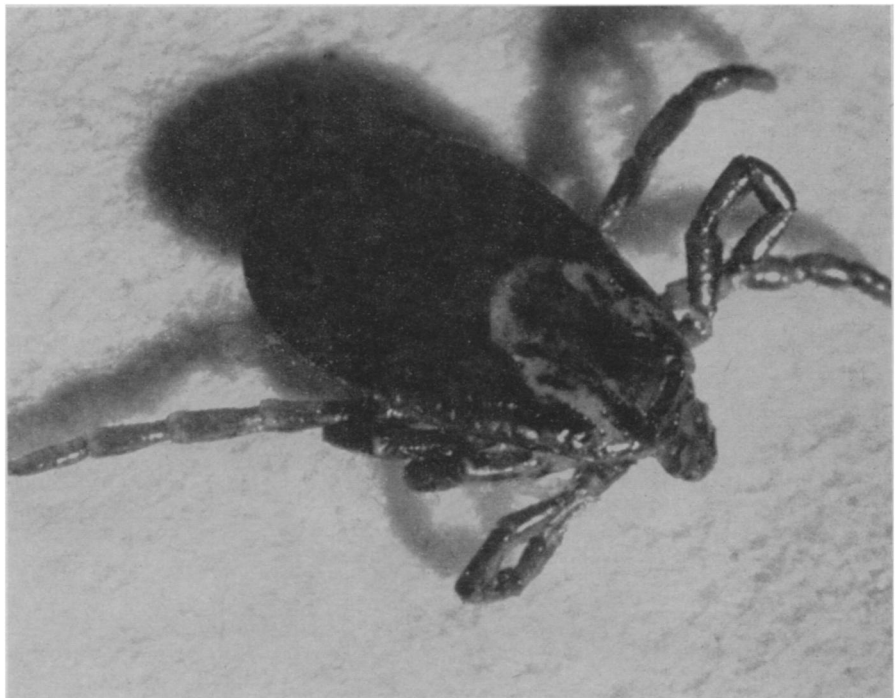
You can chigger-proof your field clothes by dousing them in a solution of the above repellents, or preferably benzyl benzoate, dissolved in cleaning fluid. It takes about two ounces of chemical to treat a jacket, trousers and socks of medium size. The repellent should be dissolved in about one and a half quarts of cleaning fluid.

Long-Lasting Protection

After the clothes are saturated with the solution, the cleaning fluid evaporates, leaving them impregnated with the repellent. If you avoid wetting your field clothes after such treatment, chiggers will be repelled for several days.

For control of chiggers in open areas such as lawns, toxaphene and chlordane, two pounds to the acre applied as an emulsion spray, will give good results for one to two months.

While some species of ticks are occasional spreaders of Rocky Mountain spotted fever



UNWANTED GUEST—Ticks, such as this American dog tick, and their tiny cousins, the chiggers, can make life miserable for outdoorsmen. Ticks feed on blood, while chiggers break down epidermal cells to suck. Easily used chemicals are now available for protection from them.

and tularemia (rabbit fever), it is their nasty bite and nuisance value that makes them generally abhorred. Humans are lucky; we can pull off our tick guests. Wild animals are not so fortunate, and a severe tick infestation can cause anemia leading to death.

One dying hare was discovered with a hemoglobin reading of only 20%; there were 152 gorged ticks feeding on it. Domestic rabbits may be practically bled dry with as few as 60 to 75 female ticks feeding on them for about 12 days.

Control Ticks

In general, none of the repellents and insecticides now considered safe for public use will give the same high degree of control over ticks as they do for their smaller cousins, the chiggers. However, several of them offer considerable protection against the common species.

Application of repellents to the skin is of little use against ticks. Best use of repellents, such as dimethyl phthalate, ethyl hexanediol and indalone, is as clothing impregnants. Placing repellents around the openings of clothes helps a lot. Most satisfactory, though, is saturating field clothes with repellent. This method gives about 75% protection from ticks.

For area control of ticks, the chlorinated hydrocarbon insecticides such as DDT, chlordane, toxaphene and dieldrin are effective. Application in emulsion form of one to two pounds per acre will give good control within a few days and will prevent reinfestation for about a month.

May Enter House

While ticks seldom infest human habitations, they may be brought into the house on clothing or by pets. If large numbers are found in a house, they are probably brown dog ticks.

This tick can pass its entire life cycle indoors if dogs are kept in the house, but it rarely attacks humans. Commercial formulations containing DDT, chlordane or lindane, or combinations of them, afford control of house-infesting ticks.

Long before these modern insecticides and repellents were dreamed up, old Mother Nature had started her own chemical control on a limited basis. It is fairly well established that some animals and persons have a natural "aroma" that repels ticks.

One scientist has reported the case of a Missourian who actually killed some unattached ticks that were kept close to his skin for about 20 minutes.

Await Victims

While it is the larval form of the chigger mite that attacks man, the adult common tick causes the most trouble.

When the adult is ready to feed, it climbs up on grass or other vegetation, clinging to its perch with the third legs and waving the others about, ready to grasp any hapless passerby.

Once the tick finds a mammalian host, it settles down for a blood meal of several days' length. When the appetite for food is slaked, it prowls about over the host looking for a member of the opposite sex. Mating occurs on the host animal.

Feed on Blood

The male continues to feed for an indefinite time. After mating, however, the female gorges more blood for a short while, then drops to the ground to lay her eggs—about 4,000 to 6,500 at the rate of 800 a day for a common American species.

There are two stages in the tick's life cycle before adulthood. In both of these stages the young tick feeds from mammalian blood. Luckily for humans, these "seed ticks" show a marked preference for such small hosts as meadow mice and rabbits, and we are left to worry mainly over the adults.

How long can a tick sit around and wait for a meal to come to him? Some figures on tick longevity are startling. In one experiment on the American dog tick, unfed adults were kept alive for 1,032 days. Another tick, *Ornithodoros turcata*, found in a limited area of the West, was kept for nine years without a blood meal and then for an additional three and a half years after feeding.

Ticks and chiggers have inspired a lot of words from nature lovers, mostly unprintable. One poet, surely following a sleepless night after a day in the fields, left the following message:

*There is a little chigger
And he isn't any bigger
Than the point of a very small pin;
But the bump that he raises
Itches like blazes
And that's where the rub comes in.*

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VITAL STATISTICS

Death Rates Fall In Western Europe

► NEW LOW death rates have been established in Western Europe during the postwar period, statisticians of the Metropolitan Life Insurance Company reported in New York.

Western Europe's general health, gauged by mortality and disease rates as well as by life expectation, is better than ever before, they found, despite the relatively short period since the widespread lack of food, clothing, shelter and medical services during World War II.

The death rate in France, for example, fell from 13.5 per 1,000 in 1946 to 11.9 in 1954, compared with 15 per 1,000 in the immediate prewar period. In Italy the death rate was reduced from 12.1 to 9.0 per 1,000 between 1946 and 1954, compared with an average of about 14 per 1,000 in 1937-1939.

New low death rates were found for Austria, Belgium, Denmark, western Germany, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, England and Wales, and Finland. Many of these countries also reported new records for expectation of life.

The postwar health record of Western Europe may partially reflect the weeding out of impaired lives during the war. But it has resulted mainly from such activities as the restoration, soon after the war, of medical, hospital and public health services, and subsequent expansion and improvement of these services.

"Further decreases in mortality may be expected in Western Europe as the general standard of living continues to rise," the statisticians said.

Science News Letter, July 16, 1955

How to Be Incredibly Cool This Summer

Arthur Carson's *How to Keep Cool* describes practically every fast, low cost, scientifically right way known so you can cool off fast, and stay cool all summer long. With this book to guide you, there's simply no excuse any longer for sleepless nights or nerve-wracked days when you just can't bear the heat any longer. Whole sections of this 50,000 word book tell you how to get the benefits of air conditioning without all the cost. Now, for perhaps the first time in your life, you learn the scientific ways to cool a single room or an entire house with low cost electric fans. (From now on, forget your old belief that fans are good only to chill you and give you a bad cold and a stiff neck.) There's full information on the many easy, inexpensive, practical things you can do inside and outside your home to bring sea breeze comfort without drafts. How a \$15 job in your insulation-less attic can change your bedroom from an oven to

Don't spend one cent on an air-conditioner until you know how large a unit you really need! Too small a unit won't give you the comfort you wish. Too large a unit means spending unnecessary money. *How to Keep Cool* tells you exactly the size unit you need for your own home or office—or whether you need one at all.

an airy, comfortable place on the hottest nights. Why Venetian blinds offer little practical protection from the heat and what is much, much cooler. You learn how to get the last bit of use out of attic fans, dehumidifiers, the new low cost evaporative coolers (much less expensive than air conditioners and better if you live in the right part of the U. S. for their use), the different kinds of air conditioners, and how to make a low cost installation do the job of a more expensive one.

For your personal comfort, you get the answers to the questions you've been asking for years. Which is better—a cold shower or a warm bath? (You think you know that one? Better read what the scientists have to say. The right answer will be a blessing when you come in out of a hot street this summer.) When the thermometer is climbing, is it really dangerous to drink ice water? Is hot coffee or hot soup wiser? Look at the Arab with all his heavy clothing and ask, "Is it true that the fewer, lighter-weight clothes you wear, the cooler you are?"

This summer, be cool on the hottest days. *How to Keep Cool* costs only \$1—how small a sum that is on a day when you'd give anything to get cool! So order it now.

Print name & address, tear out ad, and mail with \$1 to HARIAN PUBLICATIONS, 5 CROWN BLVD., GREENLAWN (LONG ISLAND), N. Y.