

1

00:00:00,198 --> 00:00:17,818

This series presents information based in part on theory and conjecture.

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00:00:17,818 --> 00:00:22,343

The producer's purpose is to suggest some possible explanations, but not necessarily

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00:00:22,343 --> 00:00:26,227

the only ones to the mysteries we will examine.

4

00:00:27,228 --> 00:00:33,235

A deadly bee is spreading northward toward the United States.

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00:00:33,235 --> 00:00:40,243

A scientific test of their aggressiveness was attempted in Brazil by bee expert Dr. Norman Gary.

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00:00:40,243 --> 00:00:46,250

Five hundred bees have already come out. They're hitting my legs like crazy.

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00:00:46,250 --> 00:00:52,256

I think we're overdoing this one for sure. They're all over my ankles. I'm going to have to move out.

8

00:00:53,257 --> 00:00:56,261

One is stinging me through the top of the head.

9

00:00:59,264 --> 00:01:02,267

I wasn't prepared for the kind of action we're getting here.

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00:01:10,276 --> 00:01:12,279

One just got inside my veil.

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00:01:12,279 --> 00:01:26,294

One's inside, two inside my veil. One's stinging to here.

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00:01:26,294 --> 00:01:31,300

I'm sure I wasn't prepared for this one.

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00:01:31,300 --> 00:01:47,318

The majestic hills that surround Rio de Janeiro usually protect this beautiful city from the jungles beyond.

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00:01:51,322 --> 00:01:58,330

On September 16, 1965, however, a swarm of killer bees attacked in downtown Rio.

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00:01:58,330 --> 00:02:02,335

In their frenzy, they bombarded anything that moved.

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00:02:10,344 --> 00:02:12,346

Sixty people were badly stung.

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00:02:12,346 --> 00:02:19,354

A fierce new breed of honey bee now threatens the once happy partnership between man and bee.

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00:02:19,354 --> 00:02:24,359

It is a threat, however, that must be met with understanding, not fear.

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00:02:24,359 --> 00:02:28,364

Frightening as it seems, the killer bee deserves our respect.

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00:02:28,364 --> 00:02:35,372

It works harder, lives longer, breeds faster, and produces up to twice as much honey as other bees.

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00:02:37,374 --> 00:02:44,382

To comprehend the behavior of killer bees, we must look first at the European honey bee common in the United States.

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00:02:44,382 --> 00:02:48,386

Dr. Norman Gary is an expert in bee behavior.

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00:02:48,386 --> 00:02:55,394

To him, the complex and usually unseen world within a beehive is a familiar yet ever fascinating place.

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00:02:59,399 --> 00:03:04,404

Ordinary smoke pacifies the bees, allowing a close inspection of the hive.

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00:03:07,408 --> 00:03:11,412

Inside lies a highly organized insect society.

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00:03:11,412 --> 00:03:15,417

Bees in fact are among the most social of all living things.

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00:03:15,417 --> 00:03:22,424

The pure beeswax cones composed of thousands of geometric cells form an intricate housing unit.

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00:03:22,424 --> 00:03:29,432

Certain cells store pollen and honey. Others are used as brood chambers to raise new bees.

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00:03:32,436 --> 00:03:38,442

Most of the hive is made up of workers, each with a special job to perform.

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00:03:38,442 --> 00:03:43,448

Some workers do nothing but fan their wings at the hive's entrance.

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00:03:43,448 --> 00:03:50,456

They are the air conditioning unit, fanning tirelessly to ventilate the hive, maintaining an even temperature.

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00:03:53,459 --> 00:03:59,466

Other bees work at keeping the hive clean or in building and repairing the vital cones.

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00:03:59,466 --> 00:04:05,473

No bee is ever without a job. The work of maintaining the hive is continuous.

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00:04:05,473 --> 00:04:10,478

Mortician bees specialize in removing the bodies of dead bees.

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00:04:10,478 --> 00:04:15,484

One way or another, deceased workers are unceremoniously cast away.

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00:04:17,486 --> 00:04:22,492

At the center of every hive is a larger, dominant bee, the queen.

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00:04:25,495 --> 00:04:33,504

Constantly surrounded by a coterie of attendants that does nothing but feed and groomer, the queen is literally mother of the hive.

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00:04:33,504 --> 00:04:43,515

She exudes powerful odors or pheromones that give the workers a sense of communal security and ensure that no new queens will be bred.

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00:04:46,519 --> 00:04:53,526

Yet her most important role is as the hive's sole egg layer, up to 1,500 eggs each day.

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00:04:55,529 --> 00:04:58,532

For three weeks the new eggs develop and grow.

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00:05:03,538 --> 00:05:08,543

The bees emerge as fully formed adults.

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00:05:15,551 --> 00:05:20,557

Each new bee chews through the capping of its brood chamber, ready to go to work.

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00:05:21,558 --> 00:05:24,561

A bee is now ready to go to work.

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00:05:25,562 --> 00:05:31,569

Each new bee chews through the capping of its brood chamber, ready to go to work.

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00:05:32,570 --> 00:05:35,574

A bee's life will last but six weeks.

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00:05:36,575 --> 00:05:44,584

Yet before it joins the active hive, a young bee cleans its own brood chamber to make room for the next generation of young.

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00:05:45,585 --> 00:06:00,602

Soon the new worker bees begin the task of finding sweet nectar and pollen, on which the entire hive depends for survival.

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00:06:01,603 --> 00:06:10,613

On returning to the hive, workers perform an intricate dance, which communicates to other bees the exact location of a new found food source.

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00:06:14,617 --> 00:06:20,624

It is not long before a group of workers has found the spot and begun the delicate work of collecting food.

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00:06:23,627 --> 00:06:32,637

In a way not yet fully understood, bees can actually remember the exact location and time of day at which a certain flower produces nectar.

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00:06:33,639 --> 00:06:40,646

On returning to the hive, no worker gains easy admittance.

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00:06:41,647 --> 00:06:48,655

It must first pass the scrutiny of a guard bee, a specialized worker who is constantly on the alert for unwanted visitors.

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00:06:52,660 --> 00:06:59,668

Once inside, nectar is given to another worker. Later it will be transformed to honey and stored.

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00:07:00,669 --> 00:07:05,674

About once a year, the population of a hive begins to exceed its limits.

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00:07:06,676 --> 00:07:09,679

The workers make preparations to produce a new queen.

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00:07:10,680 --> 00:07:17,688

Meanwhile, at least half the colony gathers around the reigning queen. It is a phenomenon known as swarming.

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00:07:18,689 --> 00:07:24,696

Suddenly, the swarm leaves the hive. They fly away and find a new place to live.

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00:07:30,702 --> 00:07:42,716

The bees common in the United States are derived from the Italian honey bee, which was deliberately introduced here.

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00:07:49,724 --> 00:07:55,730

In Africa, there are also honey bees. In most ways, they are like the bees in North America.

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00:07:56,732 --> 00:08:03,739

Yet in some respects, they are very different. Thousands of years of evolution in a harsh environment has made them a nervous, nomadic race.

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00:08:04,741 --> 00:08:12,749

They breed much faster and swarm more often than other bees. They also work longer, carry more nectar, and produce more honey.

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00:08:13,751 --> 00:08:27,766

Their unpredictable habitat, where sudden brush fires are common and predators in search of sweet honey are numerous, has given these bees a temperamental disposition.

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00:08:28,767 --> 00:08:38,779

They live on constant alert, a sudden movement, a dark color. Even the smell of carbon dioxide from the breath of a predator can send them into a stinging frenzy.

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00:08:39,780 --> 00:08:45,786

Their alarm odors will draw every nearby colony to join the attack in a common defense of the hives.

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00:08:48,790 --> 00:08:58,801

In 1956 at the University of São Paulo, this man, Dr. Woowick Kerr, imported 26 hives of pure African bees to Brazil.

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00:08:59,802 --> 00:09:17,822

His purpose was to try to breed the perfect honey bee, a kind of super bee which combined the hard-working, high honey-producing aspects of the African bee with the docile characteristics of the European bee.

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00:09:18,823 --> 00:09:31,838

The African bees were prevented from escaping by queen excluders, metal grills that allow workers to pass through but keep the larger queen inside the hive.

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00:09:34,841 --> 00:09:39,847

Bee experts from around the world frequently come to the University of São Paulo.

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00:09:40,848 --> 00:09:57,867

In 1957, a visiting beekeeper mistakenly removed the queen excluders from all of the African hives. The accident occurred at a time when the hives were ready to swarm.

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00:09:58,868 --> 00:10:07,878

With nothing to stop them, the African queens and their colonies easily escaped into the wild.

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00:10:12,884 --> 00:10:17,890

Hundreds of thousands of pure, aggressive African bees swarmed into the countryside.

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00:10:20,893 --> 00:10:24,897

They quickly established wild colonies and continued to breed.

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00:10:25,899 --> 00:10:33,908

Though no one suspected it at the time, the accidental escape of the African bees was the prelude to disaster.

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00:10:43,919 --> 00:10:50,927

The dangerous African bees had been released into an ideal environment. Highly aggressive, they met little competition.

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00:10:51,928 --> 00:10:57,934

Often they marauded native hives, killing the bees, robbing honey and taking over their homes.

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00:11:00,938 --> 00:11:09,948

They multiplied at an astonishing rate and established colonies nearly everywhere, in trees, under tile roofs, in the ground, in abandoned cars.

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00:11:10,949 --> 00:11:17,957

Once gentle hives suddenly turned dangerous, the sensitive, easily disturbed killer bees were taking over.

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00:11:18,958 --> 00:11:22,962

Cows and other farm animals were attacked. Thousands had been killed.

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00:11:23,964 --> 00:11:27,968

Vibrations from tractors and other equipment caused savage attacks on many farmers.

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00:11:28,969 --> 00:11:34,976

At the church of Santa Barbara in Niteroi, a wild swarm swooped inside during mass, stinging the congregation.

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00:11:35,977 --> 00:11:42,985

In 1973, firemen used flamethrowers to destroy a wild swarm which had attacked over 300 people in a funeral service.

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00:11:43,986 --> 00:11:45,988

A handful of dirt thrown at them triggered the attack.

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00:11:46,989 --> 00:11:52,996

On several occasions, the commotion of a soccer game has caused bees to launch mass stinging attacks on players and spectators.

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00:11:54,998 --> 00:12:05,010

In 1974, in Recife, Brazil, José Ferreiro was hospitalized after being horribly stung by a swarm of killer bees. Several days later, he died.

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00:12:07,012 --> 00:12:11,016

In Rio, a wild swarm entered a movie theater, badly stinging the audience.

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00:12:12,017 --> 00:12:20,026

In Curitiba, an autopsy found 80 bees in this farmer's stomach. Three fishermen barely survived another attack.

87

00:12:23,030 --> 00:12:31,039

Since 1957, thousands of people have been attacked and badly stung by killer bees. At least 300 people have died.

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00:12:32,040 --> 00:12:44,053

Today, at the University of São Paulo, where the bees were set free, scientists are using genetics to try to solve the problem that genetics created.

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00:12:45,054 --> 00:12:54,064

Using various types of bees, bold and intriguing experiments are being attempted. All are focused on taking the killer instinct out of the killer bee.

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00:12:56,067 --> 00:12:58,069

One technique is artificial insemination.

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00:13:02,073 --> 00:13:14,087

Drones, the stingless bees that fertilize the queen, have been collected from special hives. These drones represent an extremely gentle European variety.

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00:13:15,088 --> 00:13:22,096

One by one, they are carefully removed. Each drone is gently compressed to reveal part of its reproductive system.

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00:13:23,097 --> 00:13:31,106

With a special micro syringe, drone semen is delicately drawn away.

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00:13:37,113 --> 00:13:43,119

Meanwhile, an anesthetized killer queen bee is prepared for artificial insemination.

95

00:13:46,123 --> 00:13:50,127

The syringe containing semen from the drone is inched into position.

96

00:13:52,129 --> 00:13:59,137

Slowly, the captive queen is inseminated. Her genetic character is thus deliberately altered by science.

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00:14:00,138 --> 00:14:10,150

The queen is then introduced into a hive. If the experiment is successful, the queen's eggs will bear a gentler bee. The hive will become less aggressive.

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00:14:11,151 --> 00:14:20,161

Yet, such experiments have had little impact. 90% of all killer bees live and breed in the wild, completely uncontrolled.

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00:14:23,164 --> 00:14:30,172

Another attempt to solve the killer bee problem has been to produce mutant bees by exposure to high radiation.

100

00:14:32,174 --> 00:14:39,182

A mutant bee, which is physically unable to sting, has been produced recently. It may offer some hope for the future.

101

00:14:40,183 --> 00:14:48,192

In the movie *Savage Bees*, Dr. Norman Gerry re-enacted an actual killer bee attack.

102

00:14:59,205 --> 00:15:05,211

The death of a single bee releases a chemical odor that drives a nearby swarm into a killing frenzy.

103

00:15:09,216 --> 00:15:15,223

The bee is then released into the wild and is then released into the wild.

104

00:15:16,224 --> 00:15:22,230

The bee is then released into the wild and is then released into the wild.

105

00:15:24,233 --> 00:15:30,239

The bee is then released into the wild and is then released into the wild.

106

00:15:31,240 --> 00:15:37,247

The bee is then released into the wild and is then released into the wild.

107

00:15:39,249 --> 00:15:44,255

The bee is then released into the wild and is then released into the wild.

108

00:15:50,262 --> 00:15:58,271

Since the escape of this bee near Sampalo in 1957, the bees have rapidly migrated throughout most of South America.

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00:15:59,272 --> 00:16:03,276

They're presently going through the Guyanas and they've just been reported in Venezuela.

110

00:16:03,276 --> 00:16:10,284

Should they continue their northward migration at 200 miles a year, they could reach the U.S. by 1990.

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00:16:16,291 --> 00:16:23,299

Killer bees could reach the United States much sooner, simply by stowing away on a ship bound for our shores.

112

00:16:24,300 --> 00:16:30,307

In 1972, at Richmond Harbor near San Francisco, a swarm of bees was found aboard a freighter.

113

00:16:30,307 --> 00:16:37,314

Before they spread, they were destroyed. The world's top experts identified them as killer bees.

114

00:16:38,316 --> 00:16:40,318

It turned out later they were mistaken.

115

00:16:42,320 --> 00:16:48,327

The problem is that killer bees and the honey bees common in the United States are nearly identical.

116

00:16:52,331 --> 00:16:59,339

As a result of the Richmond Harbor incident, a sophisticated technique to identify killer bees was invented.

117

00:17:00,340 --> 00:17:05,346

Wings and other body parts of suspect bees are carefully dissected.

118

00:17:14,356 --> 00:17:20,363

The parts are then projected. 25 specific features are precisely measured and recorded.

119

00:17:21,364 --> 00:17:27,370

The information is fed into a computer for analysis and an answer. It is the only way known to distinguish a normal bee from a killer.

120

00:17:36,381 --> 00:17:40,385

When the killer arrives here, there may be an additional impact.

121

00:17:41,386 --> 00:17:46,392

Every year, honey bees are used to pollinate billions of dollars worth of agricultural crops.

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00:17:46,392 --> 00:17:50,396

The aggressive, hard to handle killer bee could make this impossible.

123

00:17:51,397 --> 00:17:56,403

The killer bee now predominates in most of South America, and it's spreading fast, quickly liquidating the few docile colonies that remain.

124

00:17:58,405 --> 00:18:05,413

This year, Dr. Gary visited the University of San Paulo. One of his objectives was to attempt again a test of the killer bee's aggressiveness.

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00:18:17,427 --> 00:18:22,432

Viewed through an electron microscope, a bee's stinger is clearly a formidable weapon.

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00:18:23,433 --> 00:18:32,443

It is not a single needle, but a three-pronged drill. The main shaft pierces the victim, while two jagged arms alternately stab downward, pumping venom.

127

00:18:33,444 --> 00:18:37,449

The venom is contained in a large sack above the sharp sting apparatus.

128

00:18:38,450 --> 00:18:44,457

Once inserted, the stinger will keep working until all the venom is pumped in.

129

00:18:51,465 --> 00:18:57,471

Wearing a special protective suit, Dr. Gary began the test. All that was required to arouse the bees was to dangle a black leather patch at the hive entrance.

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00:18:58,472 --> 00:19:05,480

Killer bees react violently to black. The second patch on Dr. Gary's chest may be a little bit more dangerous than the other.

131

00:19:07,483 --> 00:19:09,485

Dr. Gary measures the intensity of the attack.

132

00:19:37,516 --> 00:19:44,524

Now there must be three or four hundred stings in my leather patch. I can actually feel them halting my leather gloves.

133

00:19:45,525 --> 00:19:50,531

They are coming out with such, such activity. It's amazing. I actually feel the bees hitting me.

134

00:19:51,532 --> 00:19:54,535

I made it about the same number of bees around the big camera.

135

00:19:56,538 --> 00:20:00,542

There's only one sting at this point that concerns me, and that's the one in my arm.

136

00:20:00,542 --> 00:20:12,555

I would estimate that the cameras themselves have at least 100, maybe 200 bees on there. First they can't sting the camera.

137

00:20:13,557 --> 00:20:21,566

Even as Dr. Gary left the hive area, the bees persisted in their attack. Killer bees will pursue a victim great distances, stinging all the way.

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00:20:22,567 --> 00:20:27,572

Killer bees don't calm down easily. They remember their anger for as long as 24 hours.

139

00:20:31,577 --> 00:20:42,589

Long after the experiment was over, 500 yards away from the hives, even smoke would not stop numerous bees from continuing their attack.

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00:20:48,596 --> 00:20:55,604

Killer bees are unlike any honeybee that we have known. Unless stopped, they will live up to their name.

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00:20:56,605 --> 00:21:01,610

Steadily, millions of killer bees are swarming northward toward the United States.

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00:21:02,611 --> 00:21:05,615

Scientists have suggested various ways to stem the bees' advance.

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00:21:06,616 --> 00:21:14,625

Everything from introducing armies of docile drones that might dilute their aggressiveness to building a giant bee net at the Panama Canal.

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00:21:15,626 --> 00:21:17,628

So far, nothing has been done.

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00:21:18,629 --> 00:21:24,636

When the killer bees will arrive and exactly how they will behave when they get here, we don't know.

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00:21:25,637 --> 00:21:30,643

For now, there seems to be little we can do, but watch and wait.

147

00:21:55,671 --> 00:22:00,677

The American's Heroes and Villains at 8, here on the History Channel, where the past comes alive.

