

1

00:00:01,594 --> 00:00:19,494

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

2

00:00:19,494 --> 00:00:24,009

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

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00:00:24,009 --> 00:00:29,004

the only ones to the mysteries we will examine.

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00:00:37,994 --> 00:00:47,983

The sound can only be described as otherworldly, but the source is as commonplace as the ground we walk on, the air we breathe.

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00:00:48,981 --> 00:01:02,966

The sound comes from plants, through sensitive electronic devices which translate fluctuations of energy. Some call it a voice.

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00:01:02,966 --> 00:01:08,959

Whatever it is, it raises the astonishing possibility that plants can communicate.

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00:01:08,959 --> 00:01:22,944

If plants can communicate, what are they saying? To whom or what are they talking? And how can we communicate with them?

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00:01:22,944 --> 00:01:27,938

The sound is from the ground.

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00:01:32,933 --> 00:01:42,922

You'll see that plants can tell you different stories about themselves. As you feel them, that's right, they do talk. Learn how to talk to them.

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00:01:43,920 --> 00:01:52,910

Okay everybody, let's have some fun now. You take your hand and just put it above the plant and just do this slowly.

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00:01:52,910 --> 00:02:05,896

Do plants feel? Children often have an easier time grasping a new concept. They tend to be less skeptical, more accepting of phenomena outside the normal range of human experience.

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00:02:06,895 --> 00:02:14,886

It's an energy that the plant is sending back to you. As you have a heart in your heart.

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00:02:14,886 --> 00:02:19,880

Marcel Vogel believes that plants do have feelings, feelings that man can share.

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00:02:19,880 --> 00:02:36,862

Vogel is a research chemist in San Jose, California. He has devoted years to studying plant behavior with sophisticated machines and with what he calls his mind's inner eye.

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00:02:37,861 --> 00:02:47,849

The green thumbs among us have always known there was more to growing things than the right alchemy of soil, water and sunshine.

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00:02:47,849 --> 00:02:56,839

They seem to have some special communion with plants and ability to make them thrive. The so-called brown thumbs don't seem to be able to do that.

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00:02:56,839 --> 00:03:01,834

Yet they sometimes laugh when the green thumbs talk lovingly to their plants.

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00:03:01,834 --> 00:03:09,825

Now we have a startling new concept that these simple life forms have been listening and are listening still.

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00:03:12,822 --> 00:03:17,816

No room decor is considered complete these days unless it includes something green and living.

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00:03:18,815 --> 00:03:29,803

It may just be a fad or the urban dwellers minor rebellion at too much steel and concrete or the roots may be deeper touching something forgotten in many of us.

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00:03:30,802 --> 00:03:39,792

Whatever it is plants are big business and trained minds are beginning to pay attention to a mysterious new aspect of the green world around us.

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00:03:40,791 --> 00:03:45,785

The Denver Botanical Garden provides a unique environment for plants.

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00:03:45,785 --> 00:03:52,777

Music played a major role in an experiment with green life which startled the scientific community.

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00:03:52,777 --> 00:04:02,766

The experiment led to the astonishing conclusion that plants have perceptions not unlike human senses and that they respond dramatically to certain sounds.

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00:04:03,765 --> 00:04:15,752

Dorothy Retellick's passion is music. After raising her family she returned to college to complete her degree in that subject.

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00:04:15,752 --> 00:04:24,742

She also studied biology and a sympathetic teacher allowed her to combine her two interests in one project.

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00:04:25,741 --> 00:04:32,733

Mrs. Retellick had always felt an affinity for plants. They were as much a part of her world as music.

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00:04:32,733 --> 00:04:38,726

Mrs. Retellick theorized that in subtle ways plants might share her sensitivity to sound.

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00:04:38,726 --> 00:04:46,717

Harsh music had always bothered Mrs. Retellick. Could it be that plants also preferred one sound to another?

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00:04:54,709 --> 00:05:00,702

Music played a major role in the development of green life.

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00:05:04,698 --> 00:05:13,688

The experiment she devised to test her question has been duplicated many times almost always with the same remarkable results.

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00:05:14,686 --> 00:05:26,673

I always used 75 plants in every experiment. There were some vegetable plants, some flowering plants.

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00:05:26,673 --> 00:05:42,655

I used green beans, squash. For the filming I used our Colorado carnations, petunias, marigolds.

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00:05:42,655 --> 00:05:51,645

I used a great great many different kinds of plants so it is not just by chance that these things are happening.

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00:05:57,639 --> 00:06:03,632

Mrs. Retellick created two distinct environments for her test plants.

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00:06:03,632 --> 00:06:12,622

Water levels were kept the same in both. Temperature and lighting were identical.

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00:06:15,619 --> 00:06:24,609

Only one element was different. Semi-classical music was played into one. Hard rock into the other.

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00:06:25,608 --> 00:06:33,599

In the chamber with soft music the plants leaned toward the speaker, seeming to draw strength from the melodious sounds.

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00:06:33,599 --> 00:06:51,579

Music played in the chamber with rock music. The plants shrank away and eventually died.

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00:06:51,579 --> 00:06:59,570

The time-lapse photography represents the reactions of the plants over several days. The results are unmistakable.

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00:07:03,566 --> 00:07:11,557

Test conditions could only mean that it was the quality of the music, not the volume, that determined the reaction of the plants.

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00:07:11,557 --> 00:07:15,552

The plants, it seems to me, are trying to tell us something.

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00:07:15,552 --> 00:07:23,543

If plants hear, how do they hear? Certainly there's nothing in the plant world like the human ear and mind, but perhaps there's something else.

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00:07:23,543 --> 00:07:27,539

A way of hearing that doesn't involve receiving and interpreting sound waves.

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00:07:27,539 --> 00:07:35,530

What we call a sound wave is merely one form of energy, but scientists know that energy takes many forms.

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00:07:37,528 --> 00:07:44,520

Kendall Johnson is a specialist in Curly and Photography, a technique for making the invisible visible.

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00:07:44,520 --> 00:07:53,510

Curly and Photography is the popular name for maybe what is better known as electrical photography.

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00:07:54,509 --> 00:08:04,498

Think about putting a leaf on a piece of film, lay the film on the dresser, the table in your house, and sneak up on the little leaf and spark it.

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00:08:04,498 --> 00:08:13,488

And when you develop the film in the normal way, what results is an image on a film that looks very much like the leaf.

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00:08:24,476 --> 00:08:33,466

Through the work of Kendall Johnson and others, a new world has been opened for exploration.

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00:08:33,466 --> 00:08:42,456

Perhaps the aura captured photographically is the force others say they have felt with their hands, recognized in their mind's eye.

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00:08:53,444 --> 00:09:13,421

One fantastic experience we had was simply photographing the discharge that takes place in the atmosphere, in the air.

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00:09:13,421 --> 00:09:21,413

Air is very necessary for these images. If there's no air, if there's no atmosphere, there's no image.

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00:09:22,411 --> 00:09:29,404

We simply exposed the film to this discharge, and the result was a patterning that was incredible.

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00:09:29,404 --> 00:09:44,387

It looked very much like a scene on the desert in the winter, a zen garden, the way trees grow, and the impact of that image still is very vivid in my mind.

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00:09:44,387 --> 00:09:57,373

And I wonder, is this saying something about the way patterns of energy perhaps pre-define the way physically things develop?

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00:09:57,373 --> 00:10:14,354

Curly and photography not only creates these beautiful designs of energy, but it becomes very interesting when people interact with objects when these images are made.

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00:10:15,353 --> 00:10:21,346

One example of that would be what we call the green thumb series of experiments.

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00:10:21,346 --> 00:10:33,333

We would pluck a leaf from a plant and make a picture, and then we'd scratch it, and then we'd make another image on film.

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00:10:33,333 --> 00:10:39,326

And what would usually happen is that over a period of time the leaf would gradually fade.

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00:10:39,326 --> 00:10:53,310

But what we do then is using the same type of leaf, ask someone who had the reputation of having a green thumb, somebody that can grow anything.

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00:10:53,310 --> 00:11:09,293

We ask them to hold their hand above the mutilated leaf, and with many of these people, rather than the leaf becoming dimmer, it actually became more brilliant.

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00:11:09,293 --> 00:11:16,285

The profound implication is that the energy depicted by Curly and photography works both ways.

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00:11:16,285 --> 00:11:22,278

The finger of someone noted for skill and sensitivity with plants has a bright aura.

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00:11:22,278 --> 00:11:28,272

The finger of a person who's had little success with plants represents a marked contrast.

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00:11:28,272 --> 00:11:38,261

Maybe having a green thumb or a brown thumb means more than anyone realized that a touch can convey as much information as volumes of words.

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00:11:39,259 --> 00:12:00,236

If somewhere in between this very personal world, one that I feel, one that I live in, and the other world that we, the ordinary world that we live in every day, that's me and the world's out there, there's this whole new other possibility.

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00:12:00,236 --> 00:12:03,233

And that's very exciting.

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00:12:03,233 --> 00:12:11,224

Can plants also speak? If so, can we learn to decipher this other voice?

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00:12:16,218 --> 00:12:23,211

For the lover of things that grow, the ultimate would be to learn that plants have a language that can be learned.

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00:12:24,210 --> 00:12:32,201

It would satisfy the needs of those who touch and complete that miraculous chemistry between man and plant.

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00:12:44,187 --> 00:12:51,180

Aristotle and Plutarch thought that trees had perceptions, that they were capable of passion and reason.

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00:12:51,180 --> 00:12:55,175

Modern thinkers believe they may not have been far off.

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00:13:00,170 --> 00:13:05,164

Cleve Baxter has spent more than 25 years researching the behavior of plants.

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00:13:05,164 --> 00:13:12,156

Right now we're going to use a pair of electrodes that are regularly used on people but now are mounted between this C-clamp.

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00:13:12,156 --> 00:13:18,150

Baxter is a polygraph expert and has conducted lie detector tests for the Army and the CIA.

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00:13:18,150 --> 00:13:22,145

The polygraph is essential to his work with plants.

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00:13:24,143 --> 00:13:30,136

This is a conventional piece of polygraph equipment of which we're using only one third, the galvanic skin response section.

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00:13:30,136 --> 00:13:40,125

Now I'm going to activate the chart drive on the equipment and turn up the sensitivity and balance in the plant between these electrodes.

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00:13:40,125 --> 00:13:44,121

Now tracing we're getting now represents the plant.

81

00:13:51,113 --> 00:14:02,101

Right now I'm going to take a scalpel and try to get underneath the skin level of my hand, see if the pain first of cutting causes any change in the plant.

82

00:14:03,100 --> 00:14:06,096

It is an experiment Baxter has performed many times.

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00:14:06,096 --> 00:14:12,090

By inflicting pain on himself he hopes to register some reaction in the plant.

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00:14:12,090 --> 00:14:16,085

It is proof Baxter feels of perception on an elemental level.

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00:14:16,085 --> 00:14:21,080

All living things he believes react to the pain of another.

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00:14:24,076 --> 00:14:27,073

For whatever reason the experiment fails.

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00:14:27,073 --> 00:14:30,070

Perhaps Baxter has performed it too often.

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00:14:30,070 --> 00:14:33,067

His reaction may not have been genuine.

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00:14:34,065 --> 00:14:39,060

Baxter now tries the experiment with the insurge of staff member Kay Hoffman.

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00:14:43,055 --> 00:14:47,051

I'm going to balance this in and turn it to automatic surgery in this case.

91

00:14:47,051 --> 00:14:49,049

And let it quiet down a bit.

92

00:14:50,048 --> 00:14:58,039

He calibrates the machine, this time in hope of achieving a response from the plant to the cutting of Kay's hand with a scalpel.

93

00:14:59,038 --> 00:15:03,033

You got a hand just there? Right here?

94

00:15:03,033 --> 00:15:08,028

Alright, now what I'm going to do is just to cut a little bit here.

95

00:15:08,028 --> 00:15:15,020

When you feel this, the thing that was going fairly calm is now going pretty well.

96

00:15:15,020 --> 00:15:19,016

I think the plant has tuned into your apprehension pretty nicely.

97

00:15:19,016 --> 00:15:21,013

Now let's see if it's tuned into this.

98

00:15:29,004 --> 00:15:32,001

Now I'm going to put some iodine in there.

99

00:15:35,997 --> 00:15:38,993

This time the results were positive.

100

00:15:38,993 --> 00:15:41,990

The plant has reacted in some way.

101

00:15:41,990 --> 00:15:47,983

Baxter can only conclude that it is a reaction to the pain felt by another living thing.

102

00:15:48,982 --> 00:15:51,979

Alright now, let me take a look at this with you.

103

00:15:52,978 --> 00:15:58,971

This is sort of interesting because through here we were doing nothing that related to this.

104

00:15:58,971 --> 00:16:03,966

And then we decided to ask you if you would sit down and let us cut your hand.

105

00:16:03,966 --> 00:16:08,960

And right here is where you had the invitation to sit down and your apprehension of doing so.

106

00:16:08,960 --> 00:16:10,958

And here's where I'm starting the cutting.

107

00:16:10,958 --> 00:16:15,952

And actually your apprehension is worse than my putting the iodine in which apparently didn't hurt too much.

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00:16:15,952 --> 00:16:17,950

In fact the thing quieted down.

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00:16:17,950 --> 00:16:23,943

Well that was happening, but the idea of being cut and the cutting itself causes to go into this vibratory thing.

110

00:16:23,943 --> 00:16:28,938

So all the way through here you can see the changes that you may be able to match to your own mental set.

111

00:16:30,936 --> 00:16:36,929

Cleve Baxter is concerned not only with plants but with primary perception in all simple life forms.

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00:16:36,929 --> 00:16:39,926

Bacteria is the simplest plant life.

113

00:16:39,926 --> 00:16:47,917

And Baxter believes the bacteria in yogurt also yields evidence of what scientists call primary perception.

114

00:16:47,917 --> 00:17:06,896

Alright now I'm going to take some yogurt into this syringe, wipe the excess yogurt off and fill the test tube with the yogurt which contains two kinds of bacteria used in dairy products.

115

00:17:10,891 --> 00:17:19,881

And I'm going to take the two silver wires that are being held and clamped into place by this little device.

116

00:17:19,881 --> 00:17:31,868

Put the two silver wires down into the yogurt and place them in a steady position with this little

clamp.

117

00:17:31,868 --> 00:17:39,859

Baxter sees no difference between wiring the finger of a person to his lie detector machine and wiring a beaker of yogurt.

118

00:17:39,859 --> 00:17:42,856

The yogurt is alive too.

119

00:17:44,854 --> 00:17:48,849

But does the simple life form at work in the yogurt have feelings?

120

00:17:48,849 --> 00:17:58,838

And these leads go to the biological preamplifier up here and from there into the final amplification that drives the pen motors.

121

00:17:59,837 --> 00:18:04,831

How wide is the gulf between man and plant if there is a gulf at all?

122

00:18:06,829 --> 00:18:10,825

Now we're getting tracing from the bacteria in the yogurt.

123

00:18:14,820 --> 00:18:23,810

Now we're going to see what will happen when I take a capsule of antibiotic material and sprinkle it into the yogurt and stir it in.

124

00:18:24,809 --> 00:18:28,805

And as I stir it up, we'll see if it has an effect.

125

00:18:29,804 --> 00:18:33,799

Baxter has killed the bacteria growing in the yogurt.

126

00:18:36,796 --> 00:18:39,793

I would say that's not enough.

127

00:18:39,793 --> 00:18:43,788

There is no reaction from the other sample.

128

00:18:43,788 --> 00:18:48,783

It begins again with a fresh beaker and a different experiment.

129

00:18:49,782 --> 00:18:58,772

Now I'm going to take some milk and on the count of five pour the milk into the yogurt that I have in this beaker.

130

00:18:58,772 --> 00:19:05,764

Stir it up and usually it takes maybe 15 to 20 seconds for the bacteria to find the nutrient to see what happens.

131

00:19:19,748 --> 00:19:26,740

You have about a 15 to 20 second delay and then this is the kind of activity you get here.

132

00:19:32,734 --> 00:19:43,722

Well what I suspect is going on is that this yogurt is being fed the nutrient and the other yogurt is trying to find its own nutrient.

133

00:19:44,721 --> 00:19:46,718

It's not making out.

134

00:19:46,718 --> 00:19:51,713

It's not being fed anything and yet somehow it is aware that the other yogurt is being fed.

135

00:19:53,711 --> 00:20:00,703

To cleave Baxter, the inescapable conclusion is that even the simplest living things have feelings.

136

00:20:03,699 --> 00:20:10,692

If you've ever awakened in the night with a knowledge that something has happened to someone you love and found out you were right,

137

00:20:10,692 --> 00:20:13,688

you might have wondered who or what was the messenger.

138

00:20:13,688 --> 00:20:21,679

One intriguing idea presented by this trip through a world of other voices is the possibility that plants carried the message.

139

00:20:21,679 --> 00:20:25,675

Apparently plants feel and hear and speak to each other.

140

00:20:25,675 --> 00:20:27,673

Can they talk to us?

141

00:20:27,673 --> 00:20:31,668

It's clear we have a lot more to learn by deciphering these other voices.

142

00:20:31,668 --> 00:20:38,661

By listening with the patience, this green world has apparently lavished on us for so long.

143

00:20:41,657 --> 00:20:49,648

As the races of man speak in different languages, so do the varieties of plants manifest their voices in different ways.

144

00:20:49,648 --> 00:20:53,644

They seem to be able to hear and understand us.

145

00:20:53,644 --> 00:21:09,626

Music

146

00:21:09,626 --> 00:21:14,621

For the time being, however, we must listen to them through our machines.

147

00:21:14,621 --> 00:21:28,605

Music

148

00:21:28,605 --> 00:21:32,601

One day, those machines may be unnecessary.

149

00:21:32,601 --> 00:21:37,595

Music

150

00:21:37,595 --> 00:21:45,586

Coming up next, FBI The Untold Stories investigates the brutal death of United Mine Workers' presidential candidate,

151

00:21:45,586 --> 00:21:48,583

Jacques Jowlonski, his wife and young daughter.

152

00:21:48,583 --> 00:21:56,574

Then histories, crimes and trials tracks the crimes, capture and punishment of killer David Berkowitz,

153

00:21:56,574 --> 00:21:59,571

aka the Son of Sound.

154

00:21:59,571 --> 00:22:07,562

Music