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00:00:00,000 --> 00:00:08,640

We've come to our last and our most distinguished speaker, a man who is certainly qualified

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00:00:08,640 --> 00:00:13,800

probably as no other person is to give us an accurate idea of what space visitors, if

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00:00:13,800 --> 00:00:17,120

and when, will look like.

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00:00:17,120 --> 00:00:22,120

What you've seen, after all, is the testimony of people.

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00:00:22,120 --> 00:00:27,840

We have no evidence that these creatures actually existed in anything else than the imaginations

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00:00:27,840 --> 00:00:30,400

of the people who reported them.

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00:00:30,400 --> 00:00:36,360

We have the tales of the people who have messages from big brotherly visitors.

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00:00:36,360 --> 00:00:45,600

We have no evidence, and for lack of evidence, we can simply try to apply our minds to what,

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00:00:45,600 --> 00:00:49,200

if and when I repeat, space visitors come, they will look like.

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00:00:49,200 --> 00:00:54,960

And we are very fortunate tonight to have the man, as I say, who can tell us, theoretically,

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00:00:54,960 --> 00:00:58,320

what space visitors will look like and probably anybody else.

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00:00:58,320 --> 00:01:00,720

You know I'm speaking of Mr. Willie Lay.

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00:01:00,720 --> 00:01:10,640

Mr. Lay has been interested in space travel for a good many years, despite his youthful

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00:01:10,640 --> 00:01:11,640

appearance.

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00:01:11,640 --> 00:01:17,440

In fact, his first book was entitled, Tripped Into Space, and that book was written, published

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00:01:17,440 --> 00:01:19,400

29 years ago.

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00:01:19,400 --> 00:01:23,640

That is the extent of Mr. Lay's history of interest in space travel.

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00:01:23,640 --> 00:01:28,600

He has written many other books since then, not only on space travel, but also on one

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00:01:28,600 --> 00:01:33,080

of his specialties, which is biology, zoology.

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00:01:33,080 --> 00:01:37,240

Some of those books, for instance, you probably know about, they have delightful titles, the

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00:01:37,240 --> 00:01:40,520

Lungfish, the Do-Do, and the Unicorn.

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00:01:40,520 --> 00:01:42,160

Salamander's and other Wonders.

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00:01:42,160 --> 00:01:48,080

Incidentally, both of those books have the subtitle, An Excursion into Romantic Zoology.

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00:01:48,080 --> 00:01:53,000

I would be inclined to make a private guess to myself that this is a term which might

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00:01:53,040 --> 00:01:59,280

describe Mr. Lay's conception of reports of space visits as of the present time, Romantic

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00:01:59,280 --> 00:02:00,280

Zoology.

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00:02:00,280 --> 00:02:01,280

I don't know.

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00:02:01,280 --> 00:02:07,840

Without any further word, then I'll turn the platform over to Mr. Lay and he will tell

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00:02:07,840 --> 00:02:13,560

you what will certainly be the most solid and worthwhile information of the evening.

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00:02:13,560 --> 00:02:20,760

Ladies and gentlemen, what I'm carrying here are not notes for a speech, but the invitation

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00:02:20,840 --> 00:02:24,840

which you have all seen giving me the timing.

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00:02:24,840 --> 00:02:26,640

That's not on your invitation.

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00:02:26,640 --> 00:02:32,640

And it says for me, 9.50 to 10.15, 25 minutes.

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00:02:33,400 --> 00:02:37,640

According to this, we are running five minutes late.

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00:02:37,640 --> 00:02:44,640

However, the CAA regulations state that the pilot does not have to report deviations from

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00:02:44,640 --> 00:02:48,880

the flight plan if they are less than 10 minutes.

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00:02:49,840 --> 00:02:56,000

So I think my justice will go ahead whether I will speak for 25 minutes or not is something

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00:02:56,000 --> 00:02:58,560

I simply do not know.

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00:02:58,560 --> 00:03:05,560

Now let me first state, so to speak, a statement of qualifications.

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00:03:05,560 --> 00:03:09,720

Secondly, a statement of attitude.

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00:03:09,720 --> 00:03:12,480

And then I go into the theme, power.

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00:03:12,880 --> 00:03:19,880

Statement of qualifications is that I have read most of the books written on flying saucers.

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00:03:19,880 --> 00:03:26,880

If, in some cases, being annoyed by obvious nonsense, I may have skipped a few pages.

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00:03:26,880 --> 00:03:35,240

Statement of attitude is that I do not say people are liars because they have seen something

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00:03:35,240 --> 00:03:37,720

in the sky that cannot be explained.

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00:03:38,440 --> 00:03:50,440

But I believe this term is used here in the non-religious sense, that I think that UFOs

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00:03:50,440 --> 00:03:59,440

provided they exist at all exist only inside the atmosphere and are natural phenomena.

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00:03:59,440 --> 00:04:07,440

My reason for expressing this inside the atmosphere is something which is not as well known as

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00:04:07,520 --> 00:04:16,520

it could be, and that is that for quite some time intensive searches were made of space

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00:04:16,720 --> 00:04:20,080

in the vicinity of Earth.

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00:04:20,080 --> 00:04:27,080

One of the reasons for these intense searches were the forthcoming artificial satellites.

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00:04:27,480 --> 00:04:34,480

It was known to the people involved that artificial satellites would happen sooner or later.

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00:04:35,480 --> 00:04:44,480

It was believed at the time that artificial satellites would broadcast in the literal sense

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00:04:44,480 --> 00:04:48,480

their presence by means of transmitters.

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00:04:48,480 --> 00:04:54,480

But it was also thought correctly so that these transmitters would be battery-powered

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00:04:54,480 --> 00:04:56,480

and the batteries would go out.

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00:04:56,480 --> 00:05:02,480

And then all you had left was visual tracking with optical instruments, and tracking with

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00:05:02,480 --> 00:05:06,480

sharp ways by radar.

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00:05:06,480 --> 00:05:14,480

And in order to do that effectively you had to make very sure that there were no natural

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00:05:14,480 --> 00:05:20,480

bodies in space which you might misunderstand for artificial satellites.

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00:05:20,480 --> 00:05:31,480

And for this reason a very thorough search was instituted for the space between the Earth

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00:05:31,480 --> 00:05:39,480

and our natural moon, and in this search absolutely nothing turned up.

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00:05:39,480 --> 00:05:50,480

No natural satellites, no clandestine artificial satellites, and no spaceships coming from

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00:05:50,480 --> 00:05:52,480

elsewhere or going to elsewhere.

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00:05:52,480 --> 00:05:58,480

Of course it is always possible to make the hypothesis that wasn't advanced technology,

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00:05:58,480 --> 00:06:02,480

that these things are both invisible and undetectable by radar.

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00:06:02,480 --> 00:06:06,480

Personally or like one hypothesis at a time.

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00:06:06,480 --> 00:06:15,480

So having stated my personal convictions, I'll go to the theme for which I was really asked to speak.

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00:06:15,480 --> 00:06:19,480

I must say I brought this all by myself.

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00:06:19,480 --> 00:06:23,480

I was invited for lunch by the editors of this week.

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00:06:23,480 --> 00:06:30,480

And I should just have let them buy me a few cocktails and lunch, and I should have kept my mouth shut.

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00:06:30,480 --> 00:06:33,480

No, what did I do? I answered questions.

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00:06:33,480 --> 00:06:43,480

And the result of answering what I suspected to be well-meaning questions, I wrote an article.

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00:06:43,480 --> 00:06:48,480

But this article had a floor-wagga, which I did not write myself.

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00:06:49,480 --> 00:06:58,480

The left-of-the-way spoke here first essentially as a science fiction order.

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00:06:58,480 --> 00:07:07,480

And the past origin of this article I wrote was for science-fictional purposes.

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00:07:07,480 --> 00:07:16,480

I have been in the habit all my life to look at the history of everything that comes my way.

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00:07:16,480 --> 00:07:22,480

As a matter of fact, as I said recently somewhere else at Basal, if you have to know,

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00:07:22,480 --> 00:07:33,480

I'm a member of the history of science society, and of course, our pride and glory there always is to know earlier sources than the men who speak it.

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00:07:33,480 --> 00:07:43,480

And so all my life I've been in the habit of looking for earlier sources.

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00:07:43,480 --> 00:07:54,480

So I, when I began reading American science fiction, I tried to find Ullian science fiction.

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00:07:54,480 --> 00:07:59,480

And I left with you a very quick rundown because this is pertinent to the story.

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00:07:59,480 --> 00:08:05,480

Science fiction does go back to 160 AD. That's the first science fiction story known.

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00:08:05,480 --> 00:08:10,480

The next one came 1600 years later.

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00:08:10,480 --> 00:08:21,480

In both cases, nobody visits us, but people from Earth, by technically absolutely inadequate means, go to the moon.

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00:08:21,480 --> 00:08:27,480

Because I can't even believe the others for having used technically inadequate means.

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00:08:27,480 --> 00:08:30,480

Characters hadn't been invented at the moment.

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00:08:31,480 --> 00:08:44,480

The first story which I have been able to find in which people from Earth's work come to Earth is a German novel that was written in 1893.

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00:08:44,480 --> 00:08:55,480

So some 20 years ago, I was sitting with Sprague de Camp, another well-known science fiction author in his apartment here in New York.

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00:08:55,480 --> 00:09:02,480

He was mentioning this novel to him. He didn't know it because it had never been translated into English.

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00:09:02,480 --> 00:09:07,480

And he said, well, how do these visitors look?

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00:09:07,480 --> 00:09:14,480

Well, I said in this particular case, they are so human that they even can crossbreed.

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00:09:14,480 --> 00:09:23,480

And then we started thinking of then-reasoned science fiction stories and how the extraterrestrials had looked.

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00:09:23,480 --> 00:09:28,480

And the extraterrestrials had been all kinds of impossible mixtures.

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00:09:28,480 --> 00:09:34,480

You know, 70 peats with 20 pair wings, aerodynamically completely impossible.

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00:09:34,480 --> 00:09:41,480

Something like lobster's wolf, a few appenditures, not precisely propellers.

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00:09:41,480 --> 00:09:43,480

No, the altars didn't go that far.

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00:09:43,480 --> 00:09:48,480

But also something that neurologically made no sense.

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00:09:48,480 --> 00:09:54,480

And so the two of us, Sprague and de Camp and I, then sat down and said,

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00:09:54,480 --> 00:10:02,480

now what would an extraterrestrial actually look like from the scientific point of view?

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00:10:02,480 --> 00:10:09,480

Let's assume that there are some. What would they look like?

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00:10:09,480 --> 00:10:18,480

We quickly discovered that we could not pin down extraterrestrial life as a whole.

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00:10:18,480 --> 00:10:32,480

You do have these enormous differences on earth between the centipede and the jellyfish, the bird

and a movie star.

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00:10:32,480 --> 00:10:41,480

But what we could pin down, or thought we could pin down, was the question of how would intelligent life look.

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00:10:41,480 --> 00:10:45,480

Now, a few things were quite obvious in the first place.

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00:10:45,480 --> 00:10:53,480

Intelligent life shows its intelligence by building things, by making things, and it grows more intelligent in the process.

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00:10:53,480 --> 00:10:56,480

And finally it comes across methods.

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00:10:56,480 --> 00:11:05,480

Therefore, if it has to use methods in the end, it cannot be an underwater civilization.

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00:11:05,480 --> 00:11:15,480

You might theoretically have an underwater civilization of the cultural and technological

equivalent of the Neanderthal men.

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00:11:15,480 --> 00:11:21,480

But you cannot even go to the Kromonion because he already needed methods.

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00:11:21,480 --> 00:11:26,480

Methods must be smelted and that cannot be done underwater.

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00:11:26,480 --> 00:11:31,480

I don't want to bore you with every detail which we reasoned out.

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00:11:31,480 --> 00:11:35,480

It took us two days of debate.

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00:11:35,480 --> 00:11:46,480

I'd just like to say something or to repeat something that Lester Del Rey said about the books of the contactees, what they called.

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00:11:46,480 --> 00:11:57,480

Namely that eight years after this article was written and published, was written by Spray-Dekan, but we discussed it together.

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00:11:57,480 --> 00:12:07,480

Eight years after it was written and published, I found out that a Dutch scientist had done the same thing 200 years before us.

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00:12:07,480 --> 00:12:13,480

His name is well known in the history of science.

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00:12:13,480 --> 00:12:17,480

I'm going to pronounce it the way he did.

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00:12:17,480 --> 00:12:22,480

I wish to point out that I do not have a respiratory infection.

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00:12:22,480 --> 00:12:25,480

Some Dutch names just sound that way.

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00:12:26,480 --> 00:12:29,480

His name is Christian Huygens.

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00:12:29,480 --> 00:12:42,480

Christian Huygens in about 1700 pointed out that the inhabitants of other planets must have eyes to see with.

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00:12:42,480 --> 00:12:45,480

We can pin this down a little more.

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00:12:45,480 --> 00:13:01,480

Last night I was driven home by an Air Force Colonel who expressed his surprise that our eyes utilized only such a small part of all the possible ways.

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00:13:01,480 --> 00:13:04,480

Well, the reason why our eyes do is a very simple one.

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00:13:04,480 --> 00:13:12,480

Our eyes utilize that part of the spectrum to which our atmosphere is transparent.

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00:13:12,480 --> 00:13:15,480

Our eyes cannot see X-rays.

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00:13:15,480 --> 00:13:20,480

I'm simplifying this, of course, in the course of long evolution that has come about that.

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00:13:20,480 --> 00:13:30,480

But our eyes do not see X-rays because X-rays, which started 200 miles away, wouldn't get to them.

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00:13:30,480 --> 00:13:37,480

So our eyes work on those rays to which our atmosphere happens to be transparent.

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00:13:37,480 --> 00:13:39,480

That's what we can add to heavens.

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00:13:39,480 --> 00:13:55,480

Heavens have said furthermore that the intelligent beings must have organs like hands or other of the function of hands to manipulate things.

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00:13:55,480 --> 00:14:02,480

We can add to that that that leaves out tentacle-like organ like the elephant's tongue,

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00:14:02,480 --> 00:14:09,480

which is very strong in pulling but is not for lack of internal brazing strong in pushing.

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00:14:09,480 --> 00:14:15,480

Obviously an intelligent being must be able to move around.

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00:14:15,480 --> 00:14:18,480

Therefore it has to have legs of some kind.

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00:14:18,480 --> 00:14:28,480

One of the things that old Housens 200 years ago did not mention but which surprised both Strictly Camp and me,

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00:14:28,480 --> 00:14:39,480

when we thought about it and discussed it, is to think that of all creatures with an internal skeleton on Earth,

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00:14:39,480 --> 00:14:44,480

you never had more than four legs.

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00:14:44,480 --> 00:14:47,480

It just doesn't exist.

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00:14:47,480 --> 00:14:57,480

What we do not know, what we cannot tell, is whether this is a sheer accident of terrestrial evolution

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00:14:57,480 --> 00:15:04,480

or whether there is a natural law that we simply do not happen to know.

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00:15:04,480 --> 00:15:15,480

At any event, if I want to pull this together, we came to the result that an intelligent being of another planet

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00:15:15,480 --> 00:15:25,480

cannot be much smaller than a human being because then there would be not enough body cells to support the brain cells

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00:15:25,480 --> 00:15:31,480

and there must be so and so many brain cells because we have postulated that it is intelligent.

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00:15:31,480 --> 00:15:40,480

Now can it be much larger than something Earth comes in which is known as the square tube law and which makes it very clumsy?

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00:15:40,480 --> 00:15:47,480

In short, we ended up with a creature, which as I phrased it later,

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00:15:47,480 --> 00:15:58,480

somebody who needs glasses but doesn't wear any, in dusk seen from a distance would not at once be able to tell from a human.

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00:15:58,480 --> 00:16:04,480

This of course does not mean minor accidents of evolution.

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00:16:04,480 --> 00:16:11,480

A minor accident of evolution is whether my ears are large and floppy or whether there aren't any external ears.

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00:16:11,480 --> 00:16:17,480

A minor accident of evolution is whether I have hair all over or none at all.

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00:16:17,480 --> 00:16:21,480

Even smaller accidents of course is a different skin colouring.

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00:16:21,480 --> 00:16:27,480

A very small accident would be the procession or absence of the tail.

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00:16:27,480 --> 00:16:33,480

So as soon as somebody tells me, we have contact with people looking just like us,

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00:16:33,480 --> 00:16:39,480

I already have all the biological reasons in the world for not believing it.

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00:16:39,480 --> 00:16:44,480

How large the differences might be is something we can't tell,

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00:16:44,480 --> 00:16:54,480

but the living body has to fulfill certain functions and there must be a general resemblance.

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00:16:54,480 --> 00:16:58,480

In conclusion, I'd like to say one more thing.

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00:16:58,480 --> 00:17:07,480

In all this reasoning, one main assumption has been made without being mentioned.

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00:17:07,480 --> 00:17:20,480

Namely that the chemical constitution of the non-terrestrial life is similar or more precisely the same,

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00:17:20,480 --> 00:17:24,480

very much the same as ours.

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00:17:24,480 --> 00:17:28,480

Are we justified in making such an assumption?

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00:17:28,480 --> 00:17:33,480

In some cases, ignorance is a justification.

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00:17:33,480 --> 00:17:37,480

We are talking here somewhat from ignorance.

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00:17:37,480 --> 00:17:43,480

Our bodies are built on the carbon atom.

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00:17:43,480 --> 00:17:48,480

The carbon atom has three characteristics which are quite unique.

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00:17:48,480 --> 00:17:57,480

One is it combines readily with almost anything other than the entrepreneur and so on being obvious exceptions.

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00:17:57,480 --> 00:18:04,480

However, it does not favor anything unduly, any other atom for combination.

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00:18:04,480 --> 00:18:12,480

And the third characteristic is that carbon likes to look into itself and form enormous chains,

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00:18:12,480 --> 00:18:19,480

thereby producing molecules of the science and complexity necessary for what we call life.

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00:18:19,480 --> 00:18:32,480

It has been said, oh, in about 1900, that there might be a life form in which the silicon atom replaces the carbon atom.

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00:18:32,480 --> 00:18:37,480

This, of course, would lead to very interesting creatures,

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00:18:37,480 --> 00:18:42,480

but in the first place, silicon is not as versatile.

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00:18:42,480 --> 00:18:51,480

In the second place, silicon favors oxygen in a very pronounced manner.

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00:18:51,480 --> 00:18:59,480

In other words, if you have any silicon hydrogen compound, a single molecule of excellent oxidin coming,

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00:18:59,480 --> 00:19:03,480

wafting along, will break this up.

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00:19:03,480 --> 00:19:12,480

So you do not get the complexity of the compounds to fulfill the life processes.

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00:19:12,480 --> 00:19:20,480

In other words, we are pretty sure now that although silicon is quite similar to carbon,

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00:19:20,480 --> 00:19:24,480

it is not similar enough to be a substitute.

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00:19:24,480 --> 00:19:33,480

And if silicon life exists anywhere in the universe, it would be on a planet where there is no free oxygen around,

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00:19:33,480 --> 00:19:44,480

and it probably would be about as intelligent and as mobile as average, not too pipe-first.

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00:19:44,480 --> 00:19:51,480

I make, being brought mind that although I was cautioned in the beginning not to be,

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00:19:51,480 --> 00:20:00,480

being brought mind that I make one possible exception, so far I have spoken about life at temperatures which we would find

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00:20:00,480 --> 00:20:06,480

either comfortable or at least bare level, not killing.

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00:20:06,480 --> 00:20:18,480

It has been suggested that at very low temperatures, those temperatures which on Earth happen when somebody makes liquid oxygen,

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00:20:18,480 --> 00:20:23,480

that there is another life chemistry possible.

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00:20:23,480 --> 00:20:29,480

Well, we do not know enough chemistry to say that it is possible.

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00:20:29,480 --> 00:20:39,480

Since we do not know enough chemistry, we also cannot say it is impossible, so I have to leave this open.

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00:20:39,480 --> 00:20:47,480

Now to sum up, I believe, A, that life exists elsewhere in the universe.

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00:20:47,480 --> 00:20:58,480

On the other hand, I do not believe that the so-called UFOs can even exist outside of our

atmosphere.

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00:20:58,480 --> 00:21:08,480

I think they are natural phenomena, but if we ever get to visit one's place,

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00:21:08,480 --> 00:21:19,480

I believe that the life forms, the intelligent life forms that build this ship will be built along the lines of our chemistry

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00:21:19,480 --> 00:21:28,480

and will obey the mechanical laws which have come into play in building the bodies of Earth creatures.

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00:21:28,480 --> 00:21:29,480

Thank you.