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00:00:00,000 --> 00:00:29,840

Revealed in upcoming episodes of this program are the contents of a recently

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00:00:29,840 --> 00:00:36,840

unearthed repository classified by the secret government, the Phenomenon Archives.

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00:00:59,840 --> 00:01:29,360

Energy. Without it, the world economy would grind to a catastrophic halt. In the 20th

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00:01:59,360 --> 00:02:06,360

century, the world's largest planet, the Earth's largest planet, the Earth's largest

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00:02:06,360 --> 00:02:15,360

planet, the Earth's largest planet, the Earth's largest planet, the Earth's largest planet,

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00:02:15,360 --> 00:02:24,360

the Earth's largest planet, the Earth's largest planet, the Earth's largest planet, the Earth's

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00:02:24,360 --> 00:02:30,320

largest planet. Over a century ago, visionary novelist Jules Verne wrote, I believe that

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00:02:30,320 --> 00:02:37,400

water will one day be employed as a fuel, that hydrogen and oxygen which constitute it, used

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00:02:37,400 --> 00:02:48,480

singly or together, will furnish an inexhaustible source of heat and light. On March 23, 1989,

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00:02:48,480 --> 00:02:54,360

Jules Verne's prophecy of a world powered by water rose upon the landscape of popular

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00:02:54,360 --> 00:02:55,360

culture.

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00:02:55,360 --> 00:03:01,600

Two distinguished chemists, Dr. Martin Fleischmann and Dr. Stanley Pons announced to the amazement

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00:03:01,600 --> 00:03:07,920

of the world that they had detected a nuclear-like reaction that could turn water into a powerful

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00:03:07,920 --> 00:03:09,680

new fuel.

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00:03:09,680 --> 00:03:15,600

Their discovery became known as cold fusion because they said it delivered fusion energy

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00:03:15,720 --> 00:03:19,560

like that produced in the sun without emitting deadly radiation.

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00:03:19,560 --> 00:03:24,000

We didn't call it cold fusion at all.

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00:03:24,000 --> 00:03:30,000

That was a term which was wished on us, but we never called it that.

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00:03:30,000 --> 00:03:36,820

We felt the processes had to be nuclear to account for the high levels of the energy.

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00:03:36,820 --> 00:03:42,320

In answer to their claim, the Department of Energy quickly assembled a review panel headed

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00:03:42,320 --> 00:03:44,440

up by Dr. John Hezenga.

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00:03:44,440 --> 00:03:51,000

We wrote a very negative report and concluded that the results that were being presented

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00:03:51,000 --> 00:03:55,920

to us were contrary to everything we had found out about nuclear physics over the last 50

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00:03:55,920 --> 00:03:59,200

years.

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00:03:59,200 --> 00:04:04,600

The sword of this panel's condemnation struck with speed and brutality, ignoring the facts

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00:04:04,600 --> 00:04:07,000

in a blind rush to judgment.

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00:04:07,000 --> 00:04:13,920

Hot fusion physics people have been very vigorous in their denunciation of this being called

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00:04:14,800 --> 00:04:21,800

Right away, reports came in of excess heat, much too large to be from any chemical reaction.

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00:04:22,520 --> 00:04:27,280

Laboratories from Texas to India confirmed the presence of Tritium, a vital determining

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00:04:27,280 --> 00:04:29,480

feature of a nuclear reaction.

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00:04:29,480 --> 00:04:34,960

Within two or three weeks, we got the first results and several groups started saying,

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00:04:34,960 --> 00:04:41,960

yes, we are seeing excess heat, but the most important and unbelievable phenomenon at that

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00:04:42,880 --> 00:04:45,480

time was the observation of Tritium.

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00:04:45,480 --> 00:04:48,600

A mud-slinging frenzy followed.

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00:04:48,600 --> 00:04:53,440

The old guard of the scientific establishment, with their powerful influence in media and

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00:04:53,440 --> 00:05:00,440

government, did everything possible to denounce ponds, fleshmen and their unprecedented work.

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00:05:00,560 --> 00:05:06,040

In conclusion, we have no evidence in our laboratory with any of our samples for fusion.

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00:05:06,040 --> 00:05:11,200

I'm very sorry that Professor Lewis has no information on the Tritium levels.

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00:05:11,400 --> 00:05:17,400

This is available and is available in the correction list to the paper.

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00:05:17,400 --> 00:05:19,200

We know the foreground, we don't know the background.

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00:05:19,200 --> 00:05:20,200

I would like to specifically...

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00:05:20,200 --> 00:05:24,720

I beg your pardon, the background is available in the corrections to the paper.

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00:05:24,720 --> 00:05:25,720

That might be.

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00:05:25,720 --> 00:05:27,720

I would like to specifically hear whether or not helium...

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00:05:27,720 --> 00:05:30,720

Please don't, don't, don't laugh it off.

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00:05:30,720 --> 00:05:36,120

...peer reviewed publications like Nature divisively shamed the discoverers with allegations

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00:05:36,120 --> 00:05:43,120

of incompetence, touching off one of the greatest tragedies in the history of science.

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00:05:44,080 --> 00:05:51,080

I think that, broadly speaking, it's dead and it will remain dead for a long, long time.

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00:06:06,120 --> 00:06:13,120

This was a discovery perhaps as significant as the Wright Brothers' first flight at Kitty

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00:06:15,040 --> 00:06:22,040

Hawke. But instead of embracing it, the governors of official science declared war on cold fusion.

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00:06:22,200 --> 00:06:27,440

Was the promise of cold fusion too good to be true, or was it trampled on by clothed-minded,

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00:06:27,440 --> 00:06:32,440

greedy power brokers whose special interests outweighed the public good?

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00:06:32,440 --> 00:06:38,440

Fusion and oxygen, the components of water, are two of the most reactive elements on Earth.

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00:06:38,440 --> 00:06:43,520

Electrolysis, the process of extracting them from water as gas, has been known to science

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00:06:43,520 --> 00:06:49,680

for nearly 200 years. This knowledge has enabled us to develop fuels, some of which are used

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00:06:49,680 --> 00:06:55,440

to propel manned rockets into space. Though powerful, these chemical fuels don't hold

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00:06:55,440 --> 00:06:59,640

a candle to the energy release of a nuclear reaction.

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00:06:59,640 --> 00:07:03,880

The fire of this miracle was at the heart of what Ponds and Fleischmann offered to the

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00:07:03,880 --> 00:07:08,240

world with their groundbreaking cold fusion process.

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00:07:08,240 --> 00:07:15,240

When positively charged deuterons are attracted to the Platinum cathode, they cram together

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00:07:15,240 --> 00:07:20,080

and there are millions and millions of them inside the cathode, getting closer and closer

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00:07:20,080 --> 00:07:27,080

and then they fuse, and they create energy in the form of helium. There's more energy

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00:07:27,880 --> 00:07:34,160

in one cubic mile of sea water than in all the known oil reserves on Earth. You could

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00:07:34,160 --> 00:07:41,160

drive your car 55 million miles on a gallon of heavy water. Maybe the end of pollution.

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00:07:42,880 --> 00:07:48,120

Hollywood's starry eyed version of energy from water seems the stuff of fantasy, and

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00:07:48,120 --> 00:07:53,560

while it is true that a definitive theory describing the effect has eluded scientists.

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00:07:53,560 --> 00:07:59,040

Former chief science writer for MIT, engineer Dr. Eugene Maloff has assembled the evidence

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00:07:59,040 --> 00:08:02,120

that takes the illusion out of cold fusion.

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00:08:02,120 --> 00:08:09,120

When I finished my book Fire from Ice in 1991, I concluded that the evidence for cold fusion

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00:08:09,120 --> 00:08:14,800

was overwhelmingly compelling. Today, we can no longer say that the evidence is overwhelmingly

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00:08:14,800 --> 00:08:17,960

compelling. It is now 100% certain.

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00:08:17,960 --> 00:08:24,520

Exmised early on by carpers and critics, the field of cold fusion is very much alive.

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00:08:24,520 --> 00:08:30,560

Energy producing devices exist today that seem to defy the conventions of modern science.

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00:08:30,560 --> 00:08:37,560

We're getting nuclear energy output without the nuclear radiation byproducts.

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00:08:37,760 --> 00:08:42,760

If an atom were a huge athletic stadium, at its center would be a nucleus the size of

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00:08:42,760 --> 00:08:49,040

a pea. In turn, an atom in the eye of this mouse would compare in size to the mouse,

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00:08:49,040 --> 00:08:55,400

in the same way the mouse compares in size to the entire Earth. This comparison is characteristic

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00:08:55,400 --> 00:09:01,160

of the monumental challenge faced by scientists worldwide in their effort to unravel the riddle

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00:09:01,160 --> 00:09:02,760

of the cold fusion effect.

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00:09:02,760 --> 00:09:07,680

Our critics would say that the problem with cold fusion is that there is no theory to

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00:09:07,680 --> 00:09:12,680

describe it. The problem is completely different. The problem is that there are far too many

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00:09:13,280 --> 00:09:18,760

theories which purport to describe the same set of observations. And no more than one

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00:09:18,760 --> 00:09:21,260

of these theories can be correct.

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00:09:21,260 --> 00:09:26,440

Fusion takes place when the nuclei of two atoms, usually hydrogen, collide and fuse

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00:09:26,440 --> 00:09:32,040

together, releasing vast amounts of energy. Prevailing theories suggest that this can

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00:09:32,040 --> 00:09:39,040

only happen at extreme temperatures like those found on the sun or in a nuclear blast.

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00:09:39,720 --> 00:09:46,280

Experimental reactor facilities like the Jet Plasma Hot Fusion site in England have

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00:09:46,280 --> 00:09:50,720

attempted to replicate the fusion process of the sun for decades.

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00:09:50,720 --> 00:09:54,520

Because current technology demands that more energy has to be put into a reaction than

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00:09:54,520 --> 00:10:01,520

comes out, it hasn't been economically viable. However, Stanley Ponds of the University of

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00:10:02,040 --> 00:10:07,040

Utah and Martin Fleischman of the University of Southampton claimed that they could create

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00:10:07,040 --> 00:10:14,040

a fusion reaction at room temperature and make fusion energy a reality with the potential

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00:10:15,320 --> 00:10:19,720

of making uncounted billions of energy dollars.

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00:10:19,720 --> 00:10:25,400

Scientists at Hot Fusion facilities like Princeton and MIT seeking to replicate solar fusion

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00:10:25,400 --> 00:10:31,360

have received untold billions for the building of magnetically ringed Tokamak reactors. Although

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00:10:31,360 --> 00:10:36,960

a great deal has been learned through experimentation in this field, the process itself has never

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00:10:36,960 --> 00:10:41,320

produced a single watt of excess power.

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00:10:41,320 --> 00:10:47,040

At the time of the Ponds and Fleischman announcement, Hot Fusion research was in full swing.
Several

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00:10:47,040 --> 00:10:51,920

powerful university budgets were reliant upon research dollars siphoned off government

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00:10:51,920 --> 00:10:54,480

coffers into the development of this technology.

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00:10:54,480 --> 00:11:01,480

Partly it was a very unfortunate time to make such an announcement for various political

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00:11:01,760 --> 00:11:07,200

reasons really. The situation in the United States, the situation with regard to the program

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00:11:07,200 --> 00:11:14,200

in Hot Fusion, that was against state. But also of course was the fact that we were not

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00:11:14,400 --> 00:11:17,080

ready to make such an announcement.

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00:11:17,080 --> 00:11:24,080

Cold Fusion violates most of what I was taught in nuclear chemistry.

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00:11:24,320 --> 00:11:29,920

Once you see it happen in front of you and your own apparatus, it's pretty convincing

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00:11:30,000 --> 00:11:35,240

that there's a reality and that's what I base my continued interest on.

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00:11:35,240 --> 00:11:40,360

Since Ponds and Fleischman were both well aware of the pitfalls of premature publicity, why

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00:11:40,360 --> 00:11:45,200

would they bypass the accepted conventions of the peer review system and announce their

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00:11:45,200 --> 00:11:46,640

discovery through the media?

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00:11:46,640 --> 00:11:52,240

I was thinking these guys are not full, they know what they're doing. These are good scientists.

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00:11:52,240 --> 00:11:57,440

Prior to the 1989 announcement, Stephen E. Jones, a physics professor at nearby Brigham

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00:11:57,440 --> 00:12:03,060

Young University, learned of Ponds and Fleischman's work through an informant at the DOE. In

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00:12:03,060 --> 00:12:08,280

a flagrant example of shameless opportunism, Jones insisted on going public quickly with

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00:12:08,280 --> 00:12:12,080

his comparatively much less clear results.

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00:12:12,080 --> 00:12:17,120

Disparaging the excess heat claims of Fleischman and Ponds, Jones' announcement would have

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00:12:17,120 --> 00:12:22,000

effectively prevented the two scientists from patenting their process, a process they had

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00:12:22,000 --> 00:12:25,320

developed on their own over long years of research.

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00:12:27,640 --> 00:12:31,920

On the advice of university attorneys, Ponds and Fleischman, feeling their backs to the

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00:12:31,920 --> 00:12:35,920

wall, reluctantly delivered their work to public scrutiny.

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00:12:39,200 --> 00:12:43,920

Though their discovery posed a very clear challenge to the energy industry, it was the

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00:12:43,920 --> 00:12:50,320

scientific community, mostly physicists, which raised the specter of doubt and wrongdoing.

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00:12:50,320 --> 00:12:54,400

This experiment hasn't been produced by any national laboratory or any university yet

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00:12:54,400 --> 00:12:56,160

without a good football team.

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00:12:56,160 --> 00:12:59,160

Our cold fusion researcher, Dr. Robert Bush.

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00:12:59,160 --> 00:13:05,240

Our reaction was not unlike that of other physicists who thought on the one hand, gee,

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00:13:05,240 --> 00:13:08,880

that would be marvelous if they're doing it, and then on the other hand, my God, chemists

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00:13:08,880 --> 00:13:15,760

doing it for probably pennies compared to what physicists have taken from the public

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00:13:15,760 --> 00:13:20,560

coffer over the last 40 years in order of \$40 billion to do hot fusion.

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00:13:20,560 --> 00:13:22,480

It was war from the outset.

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00:13:22,480 --> 00:13:27,720

On April 14th, 1989, Dr. Glenn Seaborg, a Nobel laureate with a distinguished record

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00:13:27,720 --> 00:13:34,840

in conventional nuclear science, told then President Bush, it is not due to nuclear fusion.

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00:13:34,840 --> 00:13:39,440

Secretary of Energy, Admiral James Watkins nevertheless enlisted many federally funded

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00:13:39,440 --> 00:13:42,800

laboratories to investigate the cold fusion claim.

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00:13:43,560 --> 00:13:49,760

Admiral Watkins, who was at that time headed the Department of Energy, he had an edict.

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00:13:49,760 --> 00:13:53,920

He said, this must be verified in two weeks.

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00:13:53,920 --> 00:13:59,040

I'm going to put the whole of the DOE labs on it, as I had put the whole of my team on

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00:13:59,040 --> 00:14:00,040

it.

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00:14:00,040 --> 00:14:03,680

And of course, it turned out that you couldn't get any results under four weeks.

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00:14:03,680 --> 00:14:07,000

So he demanded the impossible, you see.

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00:14:07,000 --> 00:14:11,520

Massachusetts Institute of Technology was one of the testing facilities selected by the

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00:14:11,520 --> 00:14:12,960

Department of Energy.

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00:14:12,960 --> 00:14:18,200

MIT's hot fusion director, Professor Ronald R. Parker, fired the next salvo.

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00:14:18,200 --> 00:14:23,560

On the front page of the Boston Herald, Parker accused Fleischmann and Ponds of possible fraud

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00:14:23,560 --> 00:14:27,200

and of engaging in scientific schlock.

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00:14:27,200 --> 00:14:32,000

It was a well-timed directive to the American Physical Society to go on the attack against

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00:14:32,000 --> 00:14:34,440

cold fusion.

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00:14:34,440 --> 00:14:38,640

For instance, Professor William Happer, a hot fusion veteran and advisor to Secretary

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00:14:38,720 --> 00:14:43,680

Watkins, was quoted as saying, just by looking at Fleischmann and Ponds on television, you

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00:14:43,680 --> 00:14:46,600

could tell they were incompetent boobs.

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00:14:46,600 --> 00:14:49,600

Credibility for a scientist is the coin of the realm.

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00:14:49,600 --> 00:14:54,440

And if you lose that coin, then you can't get grant funding.

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00:14:54,440 --> 00:14:57,320

Your work becomes regarded as inferior.

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00:14:57,320 --> 00:15:01,960

And you slip down notches in the eyes of your peers.

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00:15:01,960 --> 00:15:03,600

And this is a real disaster.

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00:15:03,600 --> 00:15:08,000

For five years prior to their announcement, Fleischmann and Ponds had used their own money

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00:15:08,080 --> 00:15:12,640

to conduct experiments, passing a current through an electrochemical cell containing

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00:15:12,640 --> 00:15:15,880

deuterium oxide, heavy water.

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00:15:15,880 --> 00:15:20,000

One of the electrodes in the cell was made of the precious metal palladium.

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00:15:20,000 --> 00:15:25,360

The electrical current separated out individual deuterium atoms and forced them to pack tightly

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00:15:25,360 --> 00:15:27,960

into the palladium cathode.

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00:15:27,960 --> 00:15:31,000

What happened next remains a mystery.

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00:15:31,000 --> 00:15:35,320

Whether it was nuclear fusion or something else, the heat energy that came out of that

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00:15:35,320 --> 00:15:41,240

little jar was thousands to millions of times what could be explained by any known chemical

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00:15:41,240 --> 00:15:44,240

reaction.

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00:15:44,240 --> 00:15:57,960

To most classically trained physicists, the idea that low level nuclear reactions could

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00:15:57,960 --> 00:16:01,440

produce significant heat energy was unthinkable.

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00:16:01,440 --> 00:16:04,680

The nuclei of atoms are all positively charged.

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00:16:04,680 --> 00:16:06,000

They repel each other.

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00:16:06,000 --> 00:16:10,320

They don't want to come together or fuse, except at millions of degrees.

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00:16:10,320 --> 00:16:14,480

And when they do, deadly radiation can be the result.

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00:16:14,480 --> 00:16:20,400

The U.S. Department of Energy, or DOE, convened a review panel in April of 1989.

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00:16:20,400 --> 00:16:25,680

Dr. John Hezinga, an early cold fusion critic, was assigned to a chair position, though his

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00:16:25,680 --> 00:16:29,000

bias against cold fusion was well known.

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00:16:29,000 --> 00:16:36,360

Hezinga claimed cold fusion was nonsense and advised authorities against a formal investigation.

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00:16:36,360 --> 00:16:42,520

By mid-July, the DOE panel had completed their damning report.

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00:16:42,520 --> 00:16:47,120

Earlier in this century, a very distinguished chemist by the name of Irving Langmer defined

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00:16:47,120 --> 00:16:51,920

pathological science as the science of things that aren't true.

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00:16:51,920 --> 00:16:58,560

And I have labeled my book, Cold Fusion, the Scientific Fiasco of the Century, simply because

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00:16:59,120 --> 00:17:04,560

there's no experimental evidence at this point that any nuclear reaction products have been

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00:17:04,560 --> 00:17:05,560

formed.

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00:17:05,560 --> 00:17:12,920

Therefore, the claim that cold fusion is a nuclear reaction process without a commensurate

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00:17:12,920 --> 00:17:19,400

amount of nuclear reaction products is simply pathological science.

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00:17:19,400 --> 00:17:24,120

But ten years of results from successful experiments support another conclusion.

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00:17:24,120 --> 00:17:29,240

There are thousands of papers that have already been published on cold fusion showing the

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00:17:29,240 --> 00:17:35,440

evidence for the excess heat, the nuclear products including helium, tritium, low-level

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00:17:35,440 --> 00:17:41,400

neutrons, but at the same time we have the establishment of physics and the establishment

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00:17:41,400 --> 00:17:45,920

of science for that matter totally ignoring this and in fact mocking it.

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00:17:45,920 --> 00:17:51,160

Very quickly I realized that cold fusion was going to be the world's best example of

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00:17:51,160 --> 00:17:52,960

pathological science.

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00:17:52,960 --> 00:17:59,480

The criticism of pathological science is one which has quite frequently been leveled

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00:17:59,480 --> 00:18:05,600

at unusual investigations which admittedly sometimes are at fault.

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00:18:05,600 --> 00:18:14,680

However, there is also the situation that people will criticize a field long after they

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00:18:14,680 --> 00:18:18,600

should really have given up and that is pathological criticism.

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00:18:18,600 --> 00:18:23,840

They just get trapped in a situation, they have made a criticism, they have to maintain

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00:18:23,840 --> 00:18:27,680

that criticism against all the evidence.

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00:18:27,680 --> 00:18:33,200

After decades of painstaking observation through his own homemade ground glass lenses, the

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00:18:33,200 --> 00:18:38,960

Dutch janitor Antony Luwenhoek opened our eyes to the realm of microbiology in the year

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00:18:38,960 --> 00:18:42,160

1675.

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00:18:42,160 --> 00:18:47,280

The world of science, however, continued to thumb its nose at the field for nearly 200

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00:18:47,280 --> 00:19:05,360

years, ridiculing the work of men like the great Louis Pasteur.

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00:19:05,360 --> 00:19:09,560

Inventor Thomas Edison's vision of a world powered by direct current had its roots in

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00:19:09,560 --> 00:19:11,360

his own pocketbook.

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00:19:11,360 --> 00:19:16,400

His public criticisms of the work of rival Nikola Tesla almost cost civilization the

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00:19:16,400 --> 00:19:21,160

miracle of AC current.

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00:19:21,160 --> 00:19:28,600

When the Wright brothers first flew in 1903, no papers covered as tall because everybody

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00:19:28,600 --> 00:19:33,520

was convinced, certainly the American press, that heavy-than-air flight was totally impossible.

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00:19:33,520 --> 00:19:36,040

All the top scientists said this is nonsense.

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00:19:36,040 --> 00:19:42,560

And editors wouldn't even bother to send journalists or photographers to interview the Wrights

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00:19:42,560 --> 00:19:46,280

or even to take pictures of them flying in full public view.

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00:19:46,280 --> 00:19:53,400

And it wasn't for about five years that eventually they realized, my goodness, this is real.

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00:19:53,400 --> 00:19:55,120

Heavy-than-air flight is possible.

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00:19:55,120 --> 00:20:03,560

And I think a similar thing is going to happen with so-called cold fusion.

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00:20:03,560 --> 00:20:08,440

The scientific groundwork for cold fusion has been accomplished with great difficulty

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00:20:08,440 --> 00:20:14,720

by underfunded scientists toiling over experiments in laboratories and basements around the world.

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00:20:14,720 --> 00:20:19,400

Whether their efforts remain eclipsed by hot fusion and other cash cow programs or win

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00:20:19,400 --> 00:20:24,440

the support of science and the public will be revealed over time.

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00:20:24,440 --> 00:20:29,120

Despite the nasty accusations made against cold fusion, accomplished scientists like

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00:20:29,120 --> 00:20:34,200

Dr. Bob Bush and Dr. Edmund Storms of the Los Alamos Laboratory continued their leading

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00:20:34,200 --> 00:20:37,440

edge work, often producing extraordinary results.

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00:20:37,440 --> 00:20:43,760

We were seeing this marvelous effect of excess power and integrate over time, excess heat,

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00:20:43,760 --> 00:20:44,880

in our own laboratory.

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00:20:44,880 --> 00:20:48,280

So it wasn't as if we had to take somebody else's word for it.

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00:20:48,280 --> 00:20:49,280

We had proved it.

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00:20:49,280 --> 00:20:54,120

The conclusion was that the amount of palladium that you could fit on your thumb would be

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00:20:54,120 --> 00:20:58,880

enough to produce a reactor that would supply the city of Los Angeles with all their power

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00:20:58,880 --> 00:20:59,880

need.

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00:20:59,880 --> 00:21:04,760

Supporting evidence mounted throughout the 90s, yet revered experts like Hezinga, Happer

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00:21:04,760 --> 00:21:11,360

and Morrison clung to their original conclusions, flying the one prevailing negative DOE report

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00:21:11,360 --> 00:21:12,880

as their standard.

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00:21:12,880 --> 00:21:15,760

There is something new coming up.

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00:21:15,760 --> 00:21:23,440

You know, professors who teach physics hate to change their courses.

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00:21:23,440 --> 00:21:32,960

And generally, they don't appreciate monsters which crop up and which cannot be explained.

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00:21:32,960 --> 00:21:36,720

It was in the frame of the present knowledge.

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00:21:36,720 --> 00:21:42,960

Sociologists of science have said that if you get four big names in a field of science

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00:21:42,960 --> 00:21:48,400

to stand up and say that something isn't so, that unfortunately all of the other people

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00:21:48,400 --> 00:21:51,440

tend to fall into a line kind of herd like.

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00:21:51,440 --> 00:21:57,680

When science becomes a part of the belief structure of society, you have the danger

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00:21:57,680 --> 00:22:01,560

that people aren't going to go beyond the boundaries of that science.

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00:22:01,560 --> 00:22:05,600

In every year we are discovering things that we didn't know last year.

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00:22:05,600 --> 00:22:11,080

So science must always keep pace with discovery and discovery is a real time process.

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00:22:11,080 --> 00:22:13,360

It is not about dogma.

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00:22:13,360 --> 00:22:18,320

Professor George Miley, director of the Fusion Studies Laboratory at the University of Illinois,

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00:22:18,320 --> 00:22:23,440

was one of the few editors of a peer-reviewed journal to accept papers on cold fusion.

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00:22:23,440 --> 00:22:28,760

Let's take a tritium as an example which has worked that Tom Clater has done at Los

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00:22:28,760 --> 00:22:29,760

Alamos.

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00:22:29,760 --> 00:22:34,680

I was asked him, have you convinced your management at Los Alamos that tritium is real?

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00:22:34,680 --> 00:22:37,360

And he said, no I haven't.

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00:22:37,360 --> 00:22:42,320

Problem is that I only get a positive result three times out of ten.

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00:22:42,320 --> 00:22:44,040

Now think about that.

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00:22:44,040 --> 00:22:51,520

If it happens once, the inquisitive scientists should say, well how did it happen?

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00:22:51,520 --> 00:22:56,120

Let's find out how we can ultimately make it happen consistently.

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00:22:56,120 --> 00:23:01,280

At SRI International, Dr. Michael McCubert was one of the first scientists to replicate

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00:23:01,280 --> 00:23:03,360

the cold fusion effect.

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00:23:03,360 --> 00:23:09,040

There is clearly evidence of anomalous excess heat which occur in these experiments.

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00:23:09,040 --> 00:23:15,040

There are also in similar experiments evidence of an anomalous nuclear process.

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00:23:15,040 --> 00:23:22,560

It's my suspicion, my bias if you like, that the two anomalies are in fact connected.

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00:23:22,560 --> 00:23:26,920

In the free-for-all that followed the cold fusion announcement, hot fusion proponents

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00:23:26,920 --> 00:23:31,840

drew this specious conclusion that cold fusion must work like hot fusion.

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00:23:31,840 --> 00:23:37,120

If Pons and Fleischmann are alive, they contended, then their results must be faulty since the

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00:23:37,120 --> 00:23:41,920

neutron radiation from the fusion reaction would surely have killed them.

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00:23:41,920 --> 00:23:47,760

They refused to consider that another form of the same process might be at work.

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00:23:47,760 --> 00:23:52,000

In the years that have followed, the cold fusion process has repeatedly produced not

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00:23:52,000 --> 00:23:57,440

only heat energy, but also nuclear byproducts such as tritium and the ash from a nuclear

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00:23:57,440 --> 00:24:03,320

reaction, that all-important indicator of nuclear fusion, helium.

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00:24:03,320 --> 00:24:07,040

It's clearly not possible to produce helium from a chemical process.

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00:24:07,040 --> 00:24:12,600

The only possibility that remains is that the helium is produced by a nuclear process.

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00:24:12,600 --> 00:24:18,160

If the helium is produced by a nuclear process, then necessarily there will be an associated

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00:24:18,160 --> 00:24:19,400

release of heat.

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00:24:19,400 --> 00:24:25,040

Basically, we were just trying to find out when we had excess heat, would there be helium

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00:24:25,040 --> 00:24:31,320

present in the sample, and when there was no excess heat, we would find no helium present.

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00:24:31,320 --> 00:24:34,280

Eight times when we had excess heat, we found helium.

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00:24:34,280 --> 00:24:41,760

We ran controls six times when there was no excess heat, there was no helium.

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00:24:41,760 --> 00:24:46,920

Were the alleged negative findings of MIT and Caltech what soured science and the public

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00:24:46,920 --> 00:24:49,880

to the cold fusion claim?

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00:24:49,880 --> 00:24:54,880

Ponds and Fleischman had after all breached scientific etiquette by going public first,

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00:24:54,880 --> 00:24:58,800

instead of through the accepted channels of the peer-reviewed system.

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00:24:58,800 --> 00:25:05,280

Data should be published in the most reputable of scientific journals.

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00:25:05,280 --> 00:25:09,120

It should not be published first in the newspapers.

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00:25:09,120 --> 00:25:15,760

It should not be disseminated through the popular media until in fact the information

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00:25:15,760 --> 00:25:17,800

can be replicated.

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00:25:17,800 --> 00:25:21,720

Officials at the University of Utah were chastised for their haste in publicizing the

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00:25:21,720 --> 00:25:25,240

discovery through the media.

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00:25:25,240 --> 00:25:27,760

There's a hypothesis, an idea.

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00:25:27,760 --> 00:25:31,640

The idea is tested in the laboratory.

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00:25:31,640 --> 00:25:34,080

It's written up in a journal.

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00:25:34,080 --> 00:25:39,000

It undergoes peer-review, which means people, experts in the field, look at that information.

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00:25:39,000 --> 00:25:43,640

They test its validity, they ask questions about its validity, then it's published in

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00:25:43,640 --> 00:25:49,200

the journal, then of course the scientific community reads it, then the scientific community

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00:25:49,200 --> 00:25:50,640

tries to test it.

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00:25:50,640 --> 00:25:52,640

Can they repeat this experiment?

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00:25:52,640 --> 00:25:58,880

Indeed, data affirming vital aspects of the discovery was published in reputable journals.

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00:25:58,880 --> 00:26:04,120

But the presiding agenda of official science, the science of money and politics, drowned

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00:26:04,120 --> 00:26:08,040

the truth in accusations of impropriety and outright fraud.

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00:26:08,040 --> 00:26:14,280

When it was first said by flashmen and ponds at Colfshuson Existed, this went all the way

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00:26:14,280 --> 00:26:20,560

up to the president, and the president appointed special committee of 22 excellent scientists

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00:26:20,560 --> 00:26:22,200

to investigate it.

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00:26:22,200 --> 00:26:25,760

And these scientists announced that they were going to Utah and to other laboratories to

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00:26:25,760 --> 00:26:27,800

try and see what was happening.

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00:26:27,800 --> 00:26:32,640

But every time they went to this laboratory, by some miracle none of the cells worked at

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00:26:32,640 --> 00:26:33,640

this time.

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00:26:33,640 --> 00:26:40,960

So when the ERAB panel came through with Heisinga as a chairman on July the 6th, 1989, to visit,

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00:26:40,960 --> 00:26:46,760

they were looking very lightly at the heat measurements and very strongly at the absence

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00:26:46,760 --> 00:26:48,720

of neutrons and tritium.

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00:26:48,720 --> 00:26:55,320

Once they saw no neutrons and tritium, they could use that to denounce the field and protect

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00:26:55,320 --> 00:26:57,440

their budgets.

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00:26:57,440 --> 00:27:03,240

And fascinatingly, many of the people on that panel, a couple of them I should say, came

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00:27:03,240 --> 00:27:11,800

to me looking for research funds on this field, even though publicly they were speaking

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00:27:11,800 --> 00:27:15,200

with our Congress against having Congress put any money in it.

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00:27:15,200 --> 00:27:20,160

Early on they were able to show that ponds and flashmen essentially made some serious

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00:27:20,160 --> 00:27:23,080

mistakes in their interpretation of the nuclear physics.

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00:27:23,080 --> 00:27:31,680

Eventually, I think because of this bad nuclear physics, the physicists threw out the good

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00:27:32,040 --> 00:27:40,040

baby, which was the excess heat effect, along with the bad nuclear interpretation bathwater.

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00:27:40,400 --> 00:27:44,840

Also working in the field of cold fusion were esteemed scientists with personal knowledge

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00:27:44,840 --> 00:27:49,040

of and confidence in the work of ponds and flashmen.

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00:27:49,040 --> 00:27:52,560

Scientists whose careers were likewise untarnished.

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00:27:52,560 --> 00:27:57,600

Texas A&M professor John Bacchris, regarded as a world-class electrochemist, led a research

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00:27:57,600 --> 00:28:02,000

group at Texas A&M that produced essential evidence of the fusion phenomenon.

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00:28:02,000 --> 00:28:10,440

The first thing was this thing called tritium, which was a sub-form of hydrogen, which should

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00:28:10,440 --> 00:28:16,240

not exist except in extremely tiny quantities.

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00:28:16,240 --> 00:28:23,320

And we found that by working these cells of flashmen and ponds that we could produce this

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00:28:23,320 --> 00:28:26,040

tritium in great abundance.

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00:28:26,040 --> 00:28:29,600

That was the first clear proof of the phenomenon.

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00:28:29,600 --> 00:28:34,960

For two or two or so or not, in the first experiment that we ran some three or four months after

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00:28:34,960 --> 00:28:38,520

the initial announcement, we saw some evidence of excess heat.

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00:28:38,520 --> 00:28:44,240

And what we see in our laboratory is no evidence for any unusual nuclear or chemical reactions.

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00:28:44,240 --> 00:28:52,440

Having seen the effect with my own eyes that claims from a few that this is impossible,

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00:28:52,440 --> 00:29:00,000

inconsistently with all known laws of nuclear physics, these suggestions are in fact irrelevant.

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00:29:00,000 --> 00:29:03,720

At Texas A&M, the Bacchris group came under attack.

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00:29:03,720 --> 00:29:09,040

Science journalist Gary Taubes wrote an inflammatory article in Science Magazine alleging that someone

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00:29:09,040 --> 00:29:12,160

in the group had spiked the experiment with tritium.

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00:29:12,160 --> 00:29:16,160

Although proven false, the accusation was enough to smear the work of the group and

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00:29:16,160 --> 00:29:19,040

place Dr. Bacchris in the line of fire.

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00:29:19,040 --> 00:29:22,640

Well I was 69 years old at that time and I took the attitude.

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00:29:22,640 --> 00:29:24,960

I suppose they're farming, right?

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00:29:24,960 --> 00:29:26,640

It doesn't really matter.

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00:29:26,640 --> 00:29:28,400

I had my career.

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00:29:28,400 --> 00:29:31,840

The worst they could do would be to say go.

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00:29:31,840 --> 00:29:36,480

But finally the university revolted against this.

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00:29:36,480 --> 00:29:38,480

They set up an inquiry.

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00:29:38,480 --> 00:29:44,280

Normally we'd say someone's innocent until proven guilty and you'd be given the opportunity

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00:29:44,280 --> 00:29:53,360

to have a trial rather than having an article written about what you've done wrong and identifies

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00:29:53,360 --> 00:29:58,640

being guilty in the press rather than due process.

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00:29:58,640 --> 00:30:00,640

Finally they came out okay.

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00:30:00,640 --> 00:30:02,800

I mean they gave me another letter.

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00:30:02,800 --> 00:30:05,920

I'd had the letter of complete exoneration.

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00:30:05,920 --> 00:30:11,960

But I think the main part was that I had done work which was against the paradigm.

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00:30:11,960 --> 00:30:16,000

You know people said that they'd been to other universities and people had laughed at it and

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00:30:16,000 --> 00:30:20,320

said what the heck are you doing trying to disprove the laws of nuclear physics.

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00:30:20,320 --> 00:30:28,800

And of course that's exactly what we were doing and succeeding.

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00:30:28,800 --> 00:30:33,760

With government labs like Los Alamos and universities around the world confirming the presence of

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00:30:33,760 --> 00:30:37,520

excess heat and nuclear products why the continued debate?

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00:30:37,520 --> 00:30:41,920

Why do influential skeptics still insist that nothing unusual is going on?

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00:30:41,920 --> 00:30:45,880

What would motivate such blatant distortion of the facts?

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00:30:45,880 --> 00:30:53,840

Today scientists must live in a world run by finances and not only to maintain the good life for themselves

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00:30:53,840 --> 00:30:56,680

but also to stock their labs.

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00:30:56,680 --> 00:31:04,880

Getting more money has become more vital to scientists or as vital to scientists as the research itself.

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00:31:04,880 --> 00:31:10,560

MIT's Hot Fusion Center, a federally funded facility was among the loudest voices to disparage

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00:31:10,560 --> 00:31:13,000

the work of Ponds and Fleischmann.

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00:31:13,000 --> 00:31:18,960

Ironically upon re-examination of their results disturbing inconsistencies appeared.

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00:31:18,960 --> 00:31:26,360

MIT's raw data provided clear evidence of excess heat but in MIT's official report the graph was altered

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00:31:26,360 --> 00:31:29,560

to reflect no excess heat.

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00:31:29,560 --> 00:31:35,520

Engineer Dr. Eugene Malov, chief science journalist in MIT, resigned in protest.

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00:31:35,520 --> 00:31:37,160

That's what I thought, original.

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00:31:37,160 --> 00:31:39,760

In the case of MIT it was a disaster.

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00:31:39,760 --> 00:31:46,760

These people before even analyzing their calorimetry data held a party for the death of coal fusion

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00:31:46,760 --> 00:31:53,200

and then they manipulated the data to make a positive result look negative.

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00:31:53,200 --> 00:31:57,520

Their results don't prove coal fusion but they certainly had a positive result.

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00:31:57,520 --> 00:32:05,720

It's complete nonsense, utterly ridiculous and without foundation and the any allegations

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00:32:05,720 --> 00:32:10,920

along those lines I believe are made by people that don't understand how measurements are made.

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00:32:10,920 --> 00:32:14,360

An official investigation of the fraud was requested.

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00:32:14,360 --> 00:32:21,120

MIT President Charles Vest, concurrently a member of the White House advisory panel for the funding of hot fusion

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00:32:21,120 --> 00:32:25,960

conducted an investigation that was a sham.

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00:32:25,960 --> 00:32:31,440

MIT's Hot Fusion Lab, the very facility which concocted the damning evidence that helped kill

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00:32:31,440 --> 00:32:39,720

government funding for coal fusion in the U.S. went on to receive massive federal funding for its own hot fusion research.

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00:32:39,720 --> 00:32:48,800

To this day MIT's false no is cited as evidence against federal funding and the issuance of U.S.

patents in the field.

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00:32:48,800 --> 00:32:51,600

But MIT did not act alone.

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00:32:51,600 --> 00:33:00,160

I had a man, he was an employee of one of the national labs and he said that on the plane over he had to Santa Fe

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00:33:00,160 --> 00:33:09,280

he had shown his boss some positive results, verifying phenomenon and his boss had told him that if he presented those results he'd be fired.

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00:33:09,280 --> 00:33:14,200

The boss I was working with, at one point I said I should do that kind of experiment, that kind of experiment.

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00:33:14,200 --> 00:33:19,320

I said look I said I'm more interested by doing something in coal fusion.

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00:33:19,320 --> 00:33:23,040

I said coal fusion, I mean don't do that.

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00:33:23,040 --> 00:33:24,520

He said why should I not do that?

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00:33:24,520 --> 00:33:25,720

He said because it doesn't work.

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00:33:25,720 --> 00:33:26,920

I said yes it works.

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00:33:26,920 --> 00:33:35,120

I've done experiments, I know people who have done experiments, I know ponds and flyschman and look, if you decide to do it you cannot work with me anymore

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00:33:35,120 --> 00:33:38,080

because I don't want my name to be attached to your name.

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00:33:38,080 --> 00:33:43,680

With congressional funding dead, flyschman and ponds moved to France to carry on their research.

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00:33:47,280 --> 00:33:53,920

By 1992 we had video recordings of intense energy release.

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00:33:53,920 --> 00:33:59,200

By the summer of 1994 we had demonstrated sustained energy release.

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00:33:59,200 --> 00:34:04,080

If you say you want, you wish to make this into a device by about the year 2000.

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00:34:04,080 --> 00:34:14,480

If the resources had been available we would have got to the year, to that particular point, probably before the year 2000.

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00:34:14,480 --> 00:34:16,480

But this did not happen.

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00:34:17,480 --> 00:34:26,480

Coal fusion pioneers carried on despite continued attacks on their reputations and careers.

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00:34:26,480 --> 00:34:35,480

By 1999 eight international conferences had been held with several thousand technical papers published in peer-reviewed journals worldwide.

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00:34:35,480 --> 00:34:43,480

In the U.S. the Electric Power Research Institute or EPRI, a private consortium including dozens of utility companies,

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00:34:43,480 --> 00:34:47,480

had \$10 million to investigate coal fusion claims.

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00:34:47,480 --> 00:34:54,480

In its final report EPRI concluded, quote, definite evidence of nuclear reactions were detected.

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00:34:54,480 --> 00:35:02,480

But with the federal funding out of the picture, proponents of coal fusion had to look elsewhere to continue their revolutionary science.

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00:35:02,480 --> 00:35:08,480

In the mid-90s the government of Japan funded a coal fusion program called New Hydrogen Energy.

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00:35:08,480 --> 00:35:14,480

Though short-lived, it inspired many Japanese scientists to break new ground in this area.

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00:35:14,480 --> 00:35:19,480

The governments of Italy and France funded research and many private startups in the U.S.

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00:35:19,480 --> 00:35:29,480

convinced of the commercial potential of the process began securing related patents while carefully avoiding the stigma of being tagged coal fusion.

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00:35:30,480 --> 00:35:39,480

Over the last decade independent inventors have developed coal fusion devices that have at first glance seen promising,

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00:35:39,480 --> 00:35:43,480

only to fall short when examined by qualified scientists.

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00:35:43,480 --> 00:35:51,480

But what if a coal fusion device did exist that produced excess heat consistently before trained independent eyes?

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00:35:51,480 --> 00:35:58,480

Clean energy technologies of Sarasota, Florida has already brought scientific demonstration cells to market.

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00:35:58,480 --> 00:36:08,480

Using ordinary water and tiny metal coated beads, they claim their Patterson power cell is produced up to 1,000 times the input power.

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00:36:08,480 --> 00:36:14,480

Motorola sponsored a test of this cell wherein 20 watts of heat were produced for 11 hours.

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00:36:14,480 --> 00:36:19,480

This heat continued even after the tiny input electricity was turned off.

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00:36:19,480 --> 00:36:22,480

They start producing excess heat almost right away, you know.

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00:36:22,480 --> 00:36:25,480

By the time we do the measurements, there's already excess heat.

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00:36:25,480 --> 00:36:34,480

While carefully avoiding being called coal fusion, Dr. Randall Mills of Blacklight Power in New Jersey has attracted substantial funding,

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00:36:34,480 --> 00:36:40,480

creating a company positioned to be a leading manufacturer in the new energy age.

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00:36:40,480 --> 00:36:48,480

Some of our better experiments with the electrolytic cell have generated as much as 1,000% excess heat.

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00:36:48,480 --> 00:36:53,480

For example, if we put one watt into the cell, we will get 10 watts out.

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00:36:53,480 --> 00:37:02,480

This vessel is sitting here making, as we watch, helium 4 and the temperature is 215 degrees centigrade.

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00:37:02,480 --> 00:37:09,480

This is the key. You change this just a little bit and it doesn't work at all.

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00:37:09,480 --> 00:37:18,480

Now this is a very novel concept that you can have a nuclear fusion occur at 215 centigrade and 1 atmosphere pressure.

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00:37:18,480 --> 00:37:24,480

The temperature record quite clearly indicates in these experiments, as it does in less cases experiments,

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00:37:24,480 --> 00:37:36,480

that there is an unexplained source of heat and the magnitude of that source of heat is approximately the right value to account for the observed helium.

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00:37:36,480 --> 00:37:42,480

So inside this vessel now for six, seven weeks, we have had deuterium fusing to helium 4

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00:37:42,480 --> 00:37:49,480

and given this excess temperature of about 35 degrees centigrade, which is big, a really big effect.

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00:37:49,480 --> 00:38:01,480

The technology of catalytic fusion developed by Dr. Les Case is one of the most extraordinary developments we have in the coal fusion field.

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00:38:01,480 --> 00:38:07,480

He has excess heat, massive excess heat, and also helium 4 production.

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00:38:07,480 --> 00:38:14,480

The very nuclear ash that the opponents of coal fusion demanded in the early days.

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00:38:14,480 --> 00:38:27,480

It appears as though he is very close to having a self-sustaining device that will keep hot by itself, generate steam, hot water, perhaps electricity, before much longer.

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00:38:28,480 --> 00:38:36,480

Alchemy, the idea that lead can be turned into gold, was always considered a medieval myth.

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00:38:36,480 --> 00:38:43,480

While modern science has proved the transmutation of elements as possible, the process is far too costly to be practical.

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00:38:43,480 --> 00:38:54,480

Yet as early as 1992, scientists experimenting with coal fusion observed in their spent cells small amounts of metals like copper, silver, and zinc that simply shouldn't be there.

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00:38:54,480 --> 00:38:59,480

Kevin Wolf, a nuclear physicist incidentally, made many measurements to treat him.

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00:38:59,480 --> 00:39:15,480

Then he got some even more astonishing results as early as 1992, which were these transmutational results, the metal forming another metal inside the electrode, which was super, super anti-paradigm.

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00:39:15,480 --> 00:39:24,480

You know, there's that dreadful word alchemy, which we mustn't use, but it was a form of that in a way, that was creating new metals, you see.

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00:39:24,480 --> 00:39:34,480

Tareyoshi Omori and Tarehiko Mizuno of the Hokkaido University in Japan produced volumes of data documenting the production of metals from iron to platinum.

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00:39:34,480 --> 00:39:40,480

Along with these consistently came the production of excess heat energy.

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00:39:41,480 --> 00:39:46,480

The potential environmental benefits of this technology are awesome.

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00:39:46,480 --> 00:39:59,480

Companies like SETI, Trenergy, and the Cincinnati Group are developing ways to solve the world's radioactive waste problem, changing radioactive materials into some other form of harmless metal.

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00:39:59,480 --> 00:40:08,480

In 1999, developments in this area prompted the DOE to award a research grant to Professor George Miley of the University of Illinois.

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00:40:08,480 --> 00:40:16,480

However, within days of the grant announcement, the ever-vigilant critics of cold fusion science attacked Miley's work and killed his funding.

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00:40:16,480 --> 00:40:24,480

On the secret panel set up to repeal the grant was the ardent enemy of cold fusion science himself, Dr. John Hizinga.

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00:40:24,480 --> 00:40:29,480

Nuclear energy was once a laboratory curiosity.

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00:40:29,480 --> 00:40:34,480

So let's assume that these devices can be developed.

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00:40:34,480 --> 00:40:37,480

The future is then almost unlimited.

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00:40:37,480 --> 00:40:47,480

It could be the end of the fossil fuel age, the end of oil and coal, and the end incidentally of many of our worries about global pollution and global warming.

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00:40:47,480 --> 00:41:01,480

While the environmental challenges faced by the U.S. often make front-page news, the pollution problems encountered by third-world nations and countries relying exclusively on fossil fuels fare much worse.

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00:41:01,480 --> 00:41:14,480

Two-third of the cities has problems in pollution, and one-third of the land of my country is damaged by the acid rain.

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00:41:14,480 --> 00:41:20,480

The 80% of the power energy source is from coal.

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00:41:20,480 --> 00:41:31,480

We have 1.2 billion population, and we anticipate it will be one-half or more billion in the middle of next century.

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00:41:31,480 --> 00:41:37,480

We consume one ton of the coal per capita.

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00:41:37,480 --> 00:41:55,480

So if we increase our power consumption by a factor of three, then we will burn about five billion tons of coal in the middle of next century.

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00:41:56,480 --> 00:42:00,480

What is the ultimate potential of cold fusion technology?

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00:42:00,480 --> 00:42:09,480

It has been estimated that 250 miles of coal cars could be replaced with as little as one pickup truck full of heavy water.

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00:42:09,480 --> 00:42:19,480

The daily waste from a 1000 megawatt cold fusion plant would be approximately 150 grams of helium, which is harmless.

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00:42:19,480 --> 00:42:28,480

Compared to some 30,000 tons of carbon dioxide, sulfur dioxide and other wastes produced by a comparable fossil fuel plant.

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00:42:31,480 --> 00:42:45,480

What I like about cold fusion is it is different from thermal power, hydroelectric power or nuclear-efficient power because it is potentially small.

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00:42:45,480 --> 00:42:53,480

And the investments required are much smaller, and hopefully it can be mass produced by industry.

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00:42:53,480 --> 00:43:01,480

And this completely changes the whole concept of power generation distribution consumption.

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00:43:01,480 --> 00:43:05,480

I think the electric power grid will absolutely wither away.

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00:43:05,480 --> 00:43:15,480

I think automobiles, trucks, trains, planes, all forms of transportation will use this new powerful energy source.

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00:43:15,480 --> 00:43:19,480

The writing is on the wall. The fossil fuel age is about to end.

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00:43:19,480 --> 00:43:32,480

Every day the burning of fossil fuels contributes to the destruction of our environment, while the breakthrough discovery of a totally clean, virtually unlimited energy source languishes in obscurity.

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00:43:32,480 --> 00:43:38,480

It's history in the making, what we are living here. I mean, I couldn't dream of a situation like that.

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00:43:38,480 --> 00:43:53,480

Despite a decade of experimentation and a body of indisputable evidence, the gatekeepers of official science continue to deprive us of a technology we so desperately need to be proper stewards of our world.

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00:43:54,480 --> 00:44:08,480

Without some morals or something to believe in on this planet, be it God or science or whatever you truly believe in, what do you have?

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00:44:08,480 --> 00:44:14,480

What do you have? What do you have? What reason do you have to survive? What reason do you have to go on?

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00:44:14,480 --> 00:44:20,480

We did nothing wrong. We made no mistakes in our observations. We made no mistakes.

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00:44:21,480 --> 00:44:33,480

In a world where corruption, greed and political maneuvering often win out over the virtues of the human spirit, we believed, perhaps naively, that an exception might exist in the experimental sciences.

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00:44:33,480 --> 00:44:47,480

The history of science is littered with individual incidents of fraud, patent stealing and flagrant misrepresentation, but here we found a contemporary conspiracy that overshadows most of what we've discovered in the phenomenon archives.