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00:00:00,000 --> 00:00:06,800

On this episode of Mythbusters, Mirror, Mirror on the Wall.

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00:00:06,800 --> 00:00:08,800

How many of me can you stand?

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00:00:08,800 --> 00:00:12,800

Adam shed some light on the tale of a 2,000-year-old death ray.

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00:00:12,800 --> 00:00:14,880

Oh, look at that!

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00:00:14,880 --> 00:00:19,240

A story you can't turn your nose up at.

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00:00:19,240 --> 00:00:23,240

The Mythbusters get themselves skunked in the name of science.

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00:00:23,240 --> 00:00:25,000

I think it's working!

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00:00:25,000 --> 00:00:31,000

And Adam and Jamie have bulletproof materials in their sights.

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00:00:31,000 --> 00:00:33,000

Who are the Mythbusters?

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00:00:33,000 --> 00:00:35,000

Is my missing an eyebrow?

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00:00:35,000 --> 00:00:37,000

Adam Savage.

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00:00:37,000 --> 00:00:39,000

I reject your reality and substitute my own.

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00:00:39,000 --> 00:00:41,000

And Jamie Heineman.

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00:00:41,000 --> 00:00:42,000

Crack, damn you.

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00:00:42,000 --> 00:00:45,000

I wouldn't say Jamie's an evil genius.

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00:00:45,000 --> 00:00:49,000

Between them, more than 30 years special effects experience.

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00:00:49,000 --> 00:00:51,000

When will the fun ever stop?

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

Just tell the Myths, they put them to the test.

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00:01:03,000 --> 00:01:07,000

First up, a myth from the Mists of Antiquity.

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00:01:07,000 --> 00:01:11,000

This time we have what I believe is the oldest myth that Mythbusters has tested.

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00:01:11,000 --> 00:01:17,000

It comes from the 3rd century BC, right from the mind of the famous scientist Archimedes.

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00:01:17,000 --> 00:01:24,000

And the idea is that Archimedes apparently utilized the sun's energy and mirrors

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00:01:24,000 --> 00:01:28,000

to set fire to enemy ships during the Punic Wars.

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00:01:28,000 --> 00:01:30,000

Making a solar-powered weapon?

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00:01:30,000 --> 00:01:33,000

Sounds right up the Mythbusters alley.

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00:01:33,000 --> 00:01:37,000

Well, haven't people speculated that he got his warriors to use their shields to create the mirror?

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00:01:37,000 --> 00:01:42,000

Absolutely, that's one of the main theories, and it is the very first theory that we're going to test.

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00:01:42,000 --> 00:01:45,000

And that is ancient bronze shields.

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00:01:45,000 --> 00:01:50,000

The plan? Use sheets of bronze to focus the sun's rays on a Roman warship

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00:01:50,000 --> 00:01:53,000

and see if they can set it on fire.

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00:01:53,000 --> 00:01:56,000

Anyone spot the wrinkle in the plan?

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00:01:56,000 --> 00:02:03,000

Roman warships, or triremes as they were known, no longer exist outside of Hollywood.

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00:02:08,000 --> 00:02:11,000

What is the actual thickness we're looking for? What's the thickness of a Roman trimerine?

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00:02:11,000 --> 00:02:14,000

Adam gives the build team its biggest challenge.

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00:02:14,000 --> 00:02:22,000

Try and construct part of a trireme using only materials available to the Romans in 215 BC.

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00:02:22,000 --> 00:02:26,000

The key factor here is actually the density of the wood, its flammability.

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00:02:26,000 --> 00:02:30,000

We want to be able to make this death where we have a certain temperature

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00:02:30,000 --> 00:02:34,000

that would have set fire to this kind of boat.

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00:02:34,000 --> 00:02:38,000

While Tori and Carrier are left to grapple with that little problem,

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00:02:39,000 --> 00:02:44,000

Folkloreist Heather Joseph Witham has been brushing up on her ancient history.

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00:02:44,000 --> 00:02:48,000

Archimedes was definitely a real person, and his many inventions and discoveries

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00:02:48,000 --> 00:02:51,000

were documented by historians of his time period.

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00:02:51,000 --> 00:02:59,000

However, the ancient death ray wasn't written about until 800 years after it was supposed to have occurred by Anthenius.

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00:02:59,000 --> 00:03:03,000

Therefore, this story has been debated ever since.

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00:03:04,000 --> 00:03:07,000

Adam and Jamie have found some bronze.

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00:03:07,000 --> 00:03:10,000

What do you think? Do you think I can set fire to a boat with this?

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00:03:10,000 --> 00:03:14,000

Well, if we get enough of them, yeah. It's pretty bright.

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00:03:14,000 --> 00:03:20,000

I can feel the heat on my face from it. Ow! It hurts my eyes. You like doing this, don't you?

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00:03:20,000 --> 00:03:21,000

Oh, I really enjoy it.

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00:03:21,000 --> 00:03:27,000

Unfortunately, the price tag's even more dazzling, so Adam might have to rethink the plan.

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00:03:27,000 --> 00:03:31,000

So Tori, this is actual bronze. This is the most ancient material we're testing,

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00:03:31,000 --> 00:03:34,000

and Archimedes definitely would have had access to this.

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00:03:34,000 --> 00:03:40,000

He decides to test a range of materials to see how they reflect both visible light and heat.

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00:03:40,000 --> 00:03:42,000

How many of me can you stand?

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00:03:42,000 --> 00:03:48,000

Armed with a light meter and a laser thermometer, the guys turn the spotlight on bronze,

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00:03:48,000 --> 00:03:54,000

a bronze-colored plastic called Mylar, aluminum, and an ordinary household mirror.

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00:03:55,000 --> 00:04:03,000

So it's reading 111. It's reflecting twice as much visible light, but like 30% less infrared.

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00:04:03,000 --> 00:04:05,000

I have no idea what that means, but it's fascinating.

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00:04:05,000 --> 00:04:11,000

Archimedes was actually onto something. I mean, the bronze and the aluminum gave us the highest reflectivity of infrared light.

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00:04:11,000 --> 00:04:16,000

But we still don't know whether infrared or visible light is more important at this distance,

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00:04:16,000 --> 00:04:18,000

so I think we need to move this experiment to a bigger scale.

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00:04:18,000 --> 00:04:20,000

I think we need to go outside and start running some tests.

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00:04:20,000 --> 00:04:21,000

Yeah, I think that's a really good idea.

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00:04:21,000 --> 00:04:24,000

How's the Roman trireme coming along?

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00:04:24,000 --> 00:04:26,000

Uh, slowly.

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00:04:26,000 --> 00:04:29,000

I've been deacon out and reading too many books,

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00:04:29,000 --> 00:04:33,000

and totally forgetting about the experiment and just trying to actually make a Roman trireme.

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00:04:33,000 --> 00:04:36,000

So I would go back. That'll be much easier.

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00:04:36,000 --> 00:04:40,000

They don't have to build an entire vessel, just a section of the hull.

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00:04:40,000 --> 00:04:42,000

We're ready to get our wood!

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00:04:45,000 --> 00:04:47,000

This was where the siege took place.

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00:04:47,000 --> 00:04:51,000

Greeks hanging out right here, trying to keep Sicily,

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00:04:51,000 --> 00:04:55,000

and these Roman battleships trying to come in and take it.

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00:04:55,000 --> 00:04:58,000

What was that about geeking out, Carrie?

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00:04:58,000 --> 00:05:00,000

We're building a Roman trireme.

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00:05:00,000 --> 00:05:03,000

I was wondering where you keep your wood from 200 BC.

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00:05:03,000 --> 00:05:06,000

Triremes were made from a type of European pine.

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00:05:06,000 --> 00:05:09,000

Wouldn't you know it? These guys are fresh out.

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00:05:09,000 --> 00:05:12,000

Let me show you what we normally recommend for triremes.

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00:05:16,000 --> 00:05:19,000

The nearest match is spruce.

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00:05:19,000 --> 00:05:23,000

Not perfect, but short of going to Italy, it'll have to do.

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00:05:23,000 --> 00:05:25,000

That doesn't seem too safe.

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00:05:26,000 --> 00:05:29,000

Somewhat frightening. People didn't like driving behind me.

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00:05:29,000 --> 00:05:30,000

I'll tell you that.

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00:05:38,000 --> 00:05:44,000

At the same time, the trireme team work on their best Adam and Jamie impressions.

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00:05:44,000 --> 00:05:48,000

We just need a piece of wood. We don't actually need to build this.

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00:05:48,000 --> 00:05:53,000

Well, Jamie, I don't know. I mean, you know, you gotta be accurate.

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00:05:53,000 --> 00:05:57,000

I think it's more accurate if we just use a piece of the correct wood.

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00:05:57,000 --> 00:05:58,000

Yeah.

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00:06:01,000 --> 00:06:04,000

I'm going to need to do four down low and four behind.

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00:06:04,000 --> 00:06:08,000

Tari goes off to help Adam, who's still trying to work out which material

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00:06:08,000 --> 00:06:10,000

he should use for the death ray.

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00:06:10,000 --> 00:06:12,000

So we're going to take a reading with the mylar,

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00:06:12,000 --> 00:06:14,000

and then you're going to switch to the plex,

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00:06:14,000 --> 00:06:16,000

and we'll take a reading with that, and then you'll switch to the mirror,

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00:06:16,000 --> 00:06:17,000

and then we'll done.

97

00:06:17,000 --> 00:06:19,000

Looks like he's lining up a class photo,

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00:06:19,000 --> 00:06:25,000

but this class is failing one basic test, aiming their mirrors at the target.

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00:06:25,000 --> 00:06:27,000

Gather the men. Come on.

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00:06:27,000 --> 00:06:31,000

Makes you wonder how 300 Greek soldiers with heavy shields manage that.

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00:06:31,000 --> 00:06:36,000

We're busting the myth that eight people can coordinate the simplest of movements.

102

00:06:38,000 --> 00:06:39,000

91.

103

00:06:39,000 --> 00:06:40,000

Who's that?

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00:06:40,000 --> 00:06:41,000

One thing is certain.

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00:06:41,000 --> 00:06:46,000

Bronze over just a couple of feet is more efficient at transmitting thermal energy,

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00:06:46,000 --> 00:06:52,000

but over 30 feet, glass is far more efficient because it's a much more focused beam,

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00:06:52,000 --> 00:06:55,000

and the bronze is just as polished as you can make it.

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00:06:55,000 --> 00:06:56,000

It's still somewhat diffuse.

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00:06:56,000 --> 00:07:00,000

But Adam, the ancient Greeks didn't have flawless glass mirrors, did they?

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00:07:00,000 --> 00:07:02,000

I kind of got it wrong, actually.

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00:07:02,000 --> 00:07:08,000

They had access to making very polished mirrors by coating their bronze with silver and mercury

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00:07:08,000 --> 00:07:10,000

and getting highly polished mirrors.

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00:07:10,000 --> 00:07:14,000

So we're actually going with something very close to technology that was available to them.

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00:07:14,000 --> 00:07:16,000

Jamie, you're not on the target.

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00:07:16,000 --> 00:07:21,000

Jamie thinks that, on reflection, his fellow myth buster is on the right track.

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00:07:21,000 --> 00:07:23,000

I think it's looking surprisingly good, actually.

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00:07:23,000 --> 00:07:29,000

Even with a small test like this, we saw a significant increase in temperature right away,

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00:07:29,000 --> 00:07:35,000

and we're going to be going dramatically up in numbers with mirrors that we use on the real thing.

119

00:07:35,000 --> 00:07:37,000

I don't see any problem here.

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00:07:37,000 --> 00:07:39,000

I think we're going to set something on fire.

121

00:07:45,000 --> 00:07:51,000

I'm looking forward to this because this is yet another common object,

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00:07:51,000 --> 00:07:56,000

an everyday household object that's put to some kind of really destructive use,

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00:07:56,000 --> 00:07:58,000

which is sort of fun somehow.

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00:07:58,000 --> 00:08:00,000

Got to worry about that guy.

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00:08:00,000 --> 00:08:01,000

Good times.

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00:08:01,000 --> 00:08:06,000

Later, we'll see if Adam can turn a bunch of mirrors into a death ray.

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00:08:06,000 --> 00:08:17,000

Once again, the myth busters have become whiff busters.

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00:08:17,000 --> 00:08:22,000

First, they had to get the stench of decomposing pig out of a corvette.

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00:08:22,000 --> 00:08:28,000

Now, Adam and Jamie want to find out how do you remove the fetted funk of a skunk?

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00:08:31,000 --> 00:08:34,000

So back during the Great Depression, when you were growing up on a farm in Indiana,

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00:08:35,000 --> 00:08:37,000

did you ever get sprayed by a skunk?

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00:08:37,000 --> 00:08:42,000

Well, actually I was, but it was just a little bit, and so it almost doesn't count.

133

00:08:42,000 --> 00:08:49,000

I did, however, experience close up what was like handling a pet that had been sprayed thoroughly by a skunk,

134

00:08:49,000 --> 00:08:52,000

and I tell you, it'll make you lose your lunch.

135

00:08:52,000 --> 00:08:55,000

The plan is simple and extremely smelly.

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00:08:55,000 --> 00:09:01,000

Adam and Jamie will find a skunk, get it to hose them with its caustic cologne,

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00:09:01,000 --> 00:09:06,000

then try to get rid of the smell using a bunch of time-honored home remedies,

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00:09:06,000 --> 00:09:11,000

including tomato juice, beer, and feminine hygiene products.

139

00:09:11,000 --> 00:09:16,000

They need to build a decontamination shower and a pool for the runoff.

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00:09:16,000 --> 00:09:22,000

I'm afraid of getting sprayed and, you know, vomiting right in our cleaning pool,

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00:09:22,000 --> 00:09:25,000

and then, you know, I don't know what to do after that.

142

00:09:26,000 --> 00:09:31,000

These guys have created special effects for dozens of movies and TV commercials,

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00:09:31,000 --> 00:09:36,000

so building a shower cubicle at a black plastic pool is a no-brainer.

144

00:09:36,000 --> 00:09:38,000

I can see right through that.

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00:09:38,000 --> 00:09:42,000

Although they haven't given much thought to privacy.

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00:09:43,000 --> 00:09:47,000

And it's even easier when part of the rig already exists.

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00:09:47,000 --> 00:09:52,000

This is actually our bubbling rig from the Titanic myth.

148

00:09:52,000 --> 00:09:56,000

So nothing goes unused at the myth buster.

149

00:10:04,000 --> 00:10:08,000

Look at that. Pretty as a picture. You're very on decontamination chamber.

150

00:10:08,000 --> 00:10:10,000

So you want to hand me the hose over the top?

151

00:10:10,000 --> 00:10:21,000

Oh, that's great!

152

00:10:25,000 --> 00:10:26,000

Look at that.

153

00:10:26,000 --> 00:10:28,000

You know, install one in your home?

154

00:10:28,000 --> 00:10:30,000

I don't need to. I just bring this one home.

155

00:10:31,000 --> 00:10:36,000

So we've got a table full of home remedies for skunk smell right here.

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00:10:36,000 --> 00:10:38,000

And some professional ones.

157

00:10:38,000 --> 00:10:40,000

We've got the tomato paste.

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00:10:40,000 --> 00:10:43,000

We've got your hydrogen peroxide, baking soda, vinegar mixture.

159

00:10:43,000 --> 00:10:46,000

We've got your feminine hygiene products.

160

00:10:46,000 --> 00:10:48,000

Dish soap. Beer.

161

00:10:48,000 --> 00:10:50,000

Are we drinking the beer or are we cleaning with it?

162

00:10:50,000 --> 00:10:53,000

Well, if we get clean with it, we'll have one later.

163

00:10:55,000 --> 00:10:57,000

This is one of those things I'm not looking forward to.

164

00:10:57,000 --> 00:11:00,000

Yeah, there's no excuse for getting out of this one, is there?

165

00:11:00,000 --> 00:11:02,000

It's not dangerous.

166

00:11:02,000 --> 00:11:05,000

As far as I'm aware, it's just unpleasant.

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00:11:05,000 --> 00:11:10,000

In fact, that reminds me, we need a bucket in case, you know, my hemp sandwich comes back.

168

00:11:10,000 --> 00:11:12,000

I'm pleasant as it gets too much.

169

00:11:12,000 --> 00:11:15,000

Yeah, exactly. All right, I'm going to get a bucket.

170

00:11:18,000 --> 00:11:20,000

Skunks, huh?

171

00:11:20,000 --> 00:11:22,000

I'm not looking forward to this.

172

00:11:22,000 --> 00:11:24,000

All we need is a skunk.

173

00:11:24,000 --> 00:11:27,000

Enter the guys from Critter Control.

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00:11:27,000 --> 00:11:30,000

Jeff Wrangles nuisance wildlife for a living.

175

00:11:30,000 --> 00:11:33,000

And skunks are high on the list.

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00:11:33,000 --> 00:11:36,000

Amazingly, he has never been sprayed.

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00:11:36,000 --> 00:11:41,000

But I mean, it's an occupational hazard, so you must know some of the many old wives' tales

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00:11:41,000 --> 00:11:43,000

about how to get rid of the smell of a skunk.

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00:11:43,000 --> 00:11:48,000

Well, yeah, there's one with the hydrogen peroxide and baking soda and liquid dish soap.

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00:11:48,000 --> 00:11:51,000

That's probably pretty good for pets.

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00:11:51,000 --> 00:11:56,000

Now, the most famous one that we've all heard all our lives is, of course, tomato juice.

182

00:11:56,000 --> 00:11:58,000

Can you tell us about that?

183

00:11:58,000 --> 00:12:01,000

Well, if you like red dogs, you know.

184

00:12:03,000 --> 00:12:07,000

Now, till I'm wearing clothes that were bought by the production, I'm going to stand over here.

185

00:12:07,000 --> 00:12:13,000

That cage will stay somewhere dark and quiet while everyone prepares to do battle with the putrid smell.

186

00:12:13,000 --> 00:12:15,000

Does it look happy?

187

00:12:15,000 --> 00:12:17,000

The crew's taking no chances.

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00:12:17,000 --> 00:12:20,000

It's wall-to-wall protective suits and nose plugs.

189

00:12:20,000 --> 00:12:22,000

Okay, I think I'm ready.

190

00:12:22,000 --> 00:12:27,000

Our stars, however, are going for a more relaxed, outdoorsy feel.

191

00:12:27,000 --> 00:12:29,000

You know, for some reason, I keep...

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00:12:29,000 --> 00:12:32,000

I realize that we're going to get sprayed by a skunk somewhere in the very near future.

193

00:12:32,000 --> 00:12:38,000

But what I'm thinking about more is, wow, I'm just about to have, like, gallons of tomato sauce poured all over me.

194

00:12:38,000 --> 00:12:39,000

Is that appealing?

195

00:12:39,000 --> 00:12:40,000

No, not at all.

196

00:12:40,000 --> 00:12:45,000

Adam, if that's what's worrying you, you obviously never had a dose of oda skunk.

197

00:12:45,000 --> 00:12:50,000

They used to live behind my house where I grew up, and I definitely smelled them a couple times this summer

198

00:12:50,000 --> 00:12:53,000

and saw them all the time, but I've never actually been sprayed.

199

00:12:53,000 --> 00:12:58,000

Skunk musk is secreted in two grape-sized glands at the base of the tail

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00:12:58,000 --> 00:13:02,000

and can be aimed with deadly accuracy over several feet.

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00:13:02,000 --> 00:13:07,000

The noxious liquid is made up of a rancid recipe of chemicals called thiols.

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

Thiols are the compounds that cause decomposing flesh and feces to smell bad.

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00:13:13,000 --> 00:13:21,000

Thiols are activated by water molecules, so trying to wash out the skunk smell only results in more skunk smell.

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00:13:21,000 --> 00:13:27,000

It's the kind of thing that you really have to experience to understand the problem.

205

00:13:27,000 --> 00:13:33,000

My vote is going to go for the home remedy of hydrogen peroxide, baking soda, and dish soap.

206

00:13:33,000 --> 00:13:39,000

I think that probably has the highest chance of actually neutralizing the smell on a chemical level and cleaning it off my body.

207

00:13:39,000 --> 00:13:47,000

I'm also curious about the commercial stench remover, skunk remover, because, you know, it's guaranteed.

208

00:13:47,000 --> 00:13:49,000

And so it ought to work.

209

00:13:49,000 --> 00:13:53,000

Okay, it's time for our guest star to kick up a stink.

210

00:13:53,000 --> 00:13:58,000

What's the typical trajectory? They like lift their tail and then it kind of, as it comes up.

211

00:13:58,000 --> 00:14:01,000

Yeah, I mean, they'll aim.

212

00:14:01,000 --> 00:14:07,000

And you'll tell when they're being threatened. They'll start pouncing with their front feet. That's a warning.

213

00:14:07,000 --> 00:14:12,000

Hey, you know, I haven't asked this before, but does their scent like burn when it hits your skin?

214

00:14:12,000 --> 00:14:14,000

No. Okay, good.

215

00:14:14,000 --> 00:14:16,000

Oh, God.

216

00:14:16,000 --> 00:14:23,000

Now, you've got to stay near as, you know, business end.

217

00:14:23,000 --> 00:14:28,000

You'd think it wouldn't be too difficult getting a skunk to fire off a couple of rounds.

218

00:14:28,000 --> 00:14:34,000

Jamie and Adam are primed for a point blank blast of malodorous musk.

219

00:14:34,000 --> 00:14:39,000

But this skunk is remaining calm, cool, and collected.

220

00:14:39,000 --> 00:14:45,000

Have you ever had a skunk spray in a cage? Is there something that, you know, what you want to do is probably get your hand moving behind?

221

00:14:45,000 --> 00:14:47,000

Behind?

222

00:14:47,000 --> 00:14:49,000

Well, behind you, so we can see it.

223

00:14:49,000 --> 00:14:53,000

Watch out, everyone, I've got a loaded skunk. This is how you hypnotize a skunk.

224

00:14:53,000 --> 00:14:55,000

Come on, bud.

225

00:14:55,000 --> 00:14:57,000

Woo!

226

00:14:57,000 --> 00:15:00,000

Come on, left-legged bud.

227

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

Jamie, I think you should start singing.

228

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

You know, they say never work with children or animals.

229

00:15:08,000 --> 00:15:11,000

These skunks hate the sounds of industry.

230

00:15:11,000 --> 00:15:13,000

The mythbusters are trying everything.

231

00:15:13,000 --> 00:15:15,000

Drills, drives, and plays.

232

00:15:15,000 --> 00:15:18,000

But there's not even a single squalid squirt.

233

00:15:18,000 --> 00:15:20,000

Do we have another skunk?

234

00:15:20,000 --> 00:15:22,000

We ended up with one of those friendly skunks.

235

00:15:22,000 --> 00:15:28,000

We had a bit of a let down, you know. We got ourselves all psyched to get skunked.

236

00:15:28,000 --> 00:15:33,000

We managed to find Buddha reincarnated as a skunk. It was like we couldn't do anything to get him to go.

237

00:15:33,000 --> 00:15:40,000

Nothing happened. What are you going to do? You know, we couldn't hurt or even seriously harass the poor thing.

238

00:15:40,000 --> 00:15:42,000

Well, it doesn't work. Can we go now?

239

00:15:44,000 --> 00:15:50,000

The reluctant skunk actually foiled our attempts to get sprayed the other day.

240

00:15:50,000 --> 00:15:52,000

What's on the agenda now? What do we do?

241

00:15:52,000 --> 00:15:55,000

Well, we've got two more skunks coming.

242

00:15:55,000 --> 00:16:00,000

And, you know, one can only assume that sooner or later we're going to get one that works.

243

00:16:00,000 --> 00:16:07,000

And just in case that doesn't work, we have a backup, which is odour the skunk. It's synthetic skunk.

244

00:16:07,000 --> 00:16:10,000

But it's the same stuff as the skunk scent?

245

00:16:10,000 --> 00:16:14,000

It's chemically identical. It smells like it to me from here.

246

00:16:14,000 --> 00:16:20,000

Oh, man. I might lose my lunch today. So there's just no way we're escaping getting sprayed.

247

00:16:20,000 --> 00:16:23,000

No. We're going to stink, no matter what.

248

00:16:23,000 --> 00:16:25,000

All in the name of science.

249

00:16:25,000 --> 00:16:32,000

Adam and Jamie have a table full of products that are supposed to bust the stink of skunk.

250

00:16:32,000 --> 00:16:37,000

But they need a skunk with more spunk. The critic control man returns.

251

00:16:37,000 --> 00:16:39,000

You got a couple of stinkers for us.

252

00:16:39,000 --> 00:16:42,000

Well, I got one. You got one. It's a female.

253

00:16:42,000 --> 00:16:44,000

I think it's smaller.

254

00:16:46,000 --> 00:16:50,000

The boys go into their skunk-scaring routine.

255

00:16:50,000 --> 00:16:55,000

But once again, unbelievably, they come up smelling of roses.

256

00:16:55,000 --> 00:17:03,000

Well, Jamie, once again, we've proved something radical on MythBusters that skunks apparently don't spray and you can't blow them off.

257

00:17:03,000 --> 00:17:06,000

It's possible that this little girl's out of ammo.

258

00:17:06,000 --> 00:17:10,000

A skunk scent glands hold about a tablespoon of musk.

259

00:17:10,000 --> 00:17:14,000

When the tank's empty, it can take up to 10 days to produce more.

260

00:17:14,000 --> 00:17:18,000

Time to sample the synthetic smell.

261

00:17:18,000 --> 00:17:20,000

Distilled disgust.

262

00:17:20,000 --> 00:17:23,000

Viles of vile stench.

263

00:17:23,000 --> 00:17:25,000

And it's not even out yet.

264

00:17:25,000 --> 00:17:27,000

These are actually sealed glass little things, huh?

265

00:17:27,000 --> 00:17:29,000

I believe.

266

00:17:29,000 --> 00:17:31,000

Yeah, I believe they are.

267

00:17:32,000 --> 00:17:37,000

I'm as ready as I'll ever be, which is not that fair. No, not that ready.

268

00:17:41,000 --> 00:17:44,000

Christine won our competition to become a MythTher.

269

00:17:44,000 --> 00:17:47,000

Right now, she's probably wishing she hadn't.

270

00:17:52,000 --> 00:17:55,000

Oh, yeah, there's a big wet spot right there.

271

00:17:55,000 --> 00:17:57,000

Oh, but I did, of course.

272

00:18:01,000 --> 00:18:04,000

Man, that is the stuff.

273

00:18:04,000 --> 00:18:08,000

Maybe this might inspire our shy skunk to join in.

274

00:18:08,000 --> 00:18:12,000

What do you think, girl? Does it smell familiar, huh?

275

00:18:12,000 --> 00:18:16,000

Yeah, can't quite. Don't know what to make of this, do you?

276

00:18:16,000 --> 00:18:21,000

She's like, these guys are ugly, but they smell great.

277

00:18:23,000 --> 00:18:28,000

But now there's another problem. This bad smell isn't hanging around.

278

00:18:28,000 --> 00:18:31,000

It's wearing off really fast.

279

00:18:31,000 --> 00:18:35,000

I mean, either that or I'm getting used to it, which is really disturbing.

280

00:18:35,000 --> 00:18:39,000

Turns out the substitutes know substitute for the real thing.

281

00:18:39,000 --> 00:18:42,000

Sorry, guys, you'll have to find a skunk.

282

00:18:42,000 --> 00:18:46,000

You know, I'm sorry to see this little guy go. I really kind of got attached to him.

283

00:18:46,000 --> 00:18:50,000

Don't worry, guys. Skunk number three is on its way.

284

00:18:51,000 --> 00:18:57,000

The Mythbusters are trying to solve an ancient riddle.

285

00:18:57,000 --> 00:19:02,000

Did the scientist Archimedes destroy a Roman fleet using only mirrors?

286

00:19:02,000 --> 00:19:07,000

While Adam's working on the death ray, the target's taking shape.

287

00:19:07,000 --> 00:19:10,000

This has been a crazy experience trying to build this,

288

00:19:10,000 --> 00:19:15,000

and I can't imagine people back then with the tools they had building these sort of ships.

289

00:19:15,000 --> 00:19:19,000

I mean, it's amazing to me. So Archimedes coming up with something so brilliant.

290

00:19:19,000 --> 00:19:23,000

I mean, he came up with so many weapons. This has got to be true.

291

00:19:23,000 --> 00:19:25,000

Torey's not so sure.

292

00:19:25,000 --> 00:19:31,000

He better run a flamethrower because I don't think those mirrors are going to work.

293

00:19:31,000 --> 00:19:34,000

Jamie's got a flamethrower in his office.

294

00:19:37,000 --> 00:19:41,000

The vessel now has to be caulked or made watertight,

295

00:19:41,000 --> 00:19:45,000

and they're doing it the same way the ancient Romans did.

296

00:19:45,000 --> 00:19:48,000

First, hemp fiber is wedged between the planes.

297

00:19:48,000 --> 00:19:50,000

It's really just...

298

00:19:50,000 --> 00:19:53,000

Jamie, after traveling around the world, it's so...

299

00:20:01,000 --> 00:20:03,000

Freaks!

300

00:20:07,000 --> 00:20:09,000

I'm going to be sick.

301

00:20:11,000 --> 00:20:13,000

Then just add tar.

302

00:20:17,000 --> 00:20:18,000

And finally...

303

00:20:18,000 --> 00:20:24,000

We covered the raw wood with the beeswax to preserve it from the sea water.

304

00:20:24,000 --> 00:20:26,000

Hemp, tar and wax.

305

00:20:26,000 --> 00:20:31,000

It's almost as if the Roman fleet chose the most flammable materials they could find.

306

00:20:33,000 --> 00:20:35,000

That's going to be cool.

307

00:20:42,000 --> 00:20:48,000

Now, it just so happens that Mythbusters safety officer, Jim Rockwell, is a bit of an old salt.

308

00:20:48,000 --> 00:20:50,000

He loves a sea shanty.

309

00:20:56,000 --> 00:21:02,000

And if things go according to plan, he might have to learn a couple of verses of smoke on the

water.

310

00:21:02,000 --> 00:21:04,000

There's not much on a boat that doesn't burn.

311

00:21:04,000 --> 00:21:07,000

In fact, fire is one of the biggest hazards at sea.

312

00:21:07,000 --> 00:21:19,000

And when you mix a light wood like pine or fir with wax and pitch and loose up pieces of rope, unspun yarns of rope,

313

00:21:19,000 --> 00:21:22,000

it's just a tinder box floating around.

314

00:21:23,000 --> 00:21:26,000

So the trireme section is ship shape.

315

00:21:26,000 --> 00:21:30,000

Adams chosen the type of mirrors he wants for his death ray.

316

00:21:30,000 --> 00:21:38,000

Now he has to work out how many he'll need and how best to arrange them to harness the sun's boat burning potential.

317

00:21:38,000 --> 00:21:44,000

This right here represents a 112th scale model of the Archimedes death ray experiment.

318

00:21:44,000 --> 00:21:46,000

We're going to actually do for real.

319

00:21:46,000 --> 00:21:52,000

Here's our miniature boat and here's 13 James focusing the sun's energy on the target.

320

00:21:52,000 --> 00:21:54,000

So we'll be able to aim all these guys up.

321

00:21:54,000 --> 00:21:59,000

So there are three methods that Archimedes could have used to actually focus sunlight and set fire to his enemies.

322

00:21:59,000 --> 00:22:05,000

The first and the simplest one is actually handing a mirror to every one of X number of soldiers on the shore.

323

00:22:05,000 --> 00:22:10,000

The problem with that is it takes a lot of soldiers to get a focused beam to get something strong enough.

324

00:22:10,000 --> 00:22:18,000

And as we saw in our test with even eight people, it's really hard to coordinate even that small number to focus their mirrors all at the same point.

325

00:22:18,000 --> 00:22:24,000

Gather! Gather the men! Come on! Hold it there! Come on people! What's going on here?

326

00:22:24,000 --> 00:22:28,000

Focus! Attention deficit disorder is going on.

327

00:22:28,000 --> 00:22:35,000

The second method is to have all the soldiers who are holding these mirrors actually point their mirrors at a secondary mirror, which then focuses on the source.

328

00:22:35,000 --> 00:22:40,000

The problem with this is unless that mirror is curved, it sends out a scattering of beams.

329

00:22:40,000 --> 00:22:46,000

And you can see that up on the wall up here. There. You can see that it's not a focused beam.

330

00:22:46,000 --> 00:22:51,000

It's an array just like these guys. So that method's pretty much out.

331

00:22:51,000 --> 00:22:53,000

Adam builds a miniature rig.

332

00:22:53,000 --> 00:22:56,000

Did you know that Archimedes built the first disco ball?

333

00:22:56,000 --> 00:22:59,000

And the result is quite illuminating.

334

00:22:59,000 --> 00:23:09,000

The third approach and the one we think that Archimedes was probably most likely to have stumbled upon is holding all of the mirrors inside a common structure with a common focal point.

335

00:23:09,000 --> 00:23:17,000

Although this arrangement, which is called a Fresnel arrangement, wasn't invented for another thousand years, its concept would have been very clear to Archimedes.

336

00:23:17,000 --> 00:23:25,000

And that is that as each mirror gets farther away from center, its angle is increased so it's still aiming at a common point.

337

00:23:25,000 --> 00:23:34,000

And in this way, you're actually able to get all of these mirrors, 61 of them focused at one spot, and we're looking actually to make a whole bunch more mirrors than this.

338

00:23:34,000 --> 00:23:37,000

So I think this is the most likely arrangement we're going to go with.

339

00:23:37,000 --> 00:23:41,000

They tap solar power in a similar way.

340

00:23:41,000 --> 00:23:52,000

At the Solar 2 project in California's Mojave Desert, almost 2,000 giant mirrors reflect sunlight onto a central tower containing molten salt.

341

00:23:52,000 --> 00:23:58,000

The superheated salt is then used to boil water and the steam powers a generator.

342

00:23:58,000 --> 00:24:03,000

The result? Enough electricity to power 10,000 homes.

343

00:24:03,000 --> 00:24:12,000

Now, Adam knows the sun produces 100 watts of energy per square foot, so 300 mirrors should produce 30 kilowatts per square foot.

344

00:24:12,000 --> 00:24:16,000

And that's hard, about 600 degrees.

345

00:24:16,000 --> 00:24:18,000

How many mirrors have we got so far?

346

00:24:18,000 --> 00:24:19,000

About 250.

347

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

Those mirrors will be screwed to a frame measuring more than 400 square feet.

348

00:24:33,000 --> 00:24:40,000

This is actually my depth gauge so I can focus the mirror array from behind it.

349

00:24:40,000 --> 00:24:50,000

All the mirrors have a screw adjusting their angle, and this depth gauge tells me how far a given screw should be out for a given row.

350

00:24:53,000 --> 00:24:56,000

The setup is big and time is short.

351

00:24:56,000 --> 00:25:00,000

I need to start drawing these circles because I need to drill 300 holes.

352

00:25:00,000 --> 00:25:04,000

It's not like I'm sitting over here goofing off.

353

00:25:04,000 --> 00:25:06,000

I'm just trying to get this thing right.

354

00:25:06,000 --> 00:25:09,000

I want this thing as tight as it possibly can.

355

00:25:09,000 --> 00:25:14,000

But I understand we only have another day and a half to finish this.

356

00:25:14,000 --> 00:25:18,000

Oh, no, we have four hours to finish this.

357

00:25:18,000 --> 00:25:20,000

We have tomorrow to install it.

358

00:25:22,000 --> 00:25:26,000

So begins a Fresnel lens frenzy.

359

00:25:26,000 --> 00:25:30,000

They've got paper on them so that we don't blind ourselves and we're trying to focus it.

360

00:25:30,000 --> 00:25:33,000

Or burn down somebody's house or something like that.

361

00:25:51,000 --> 00:25:53,000

Adam, this looks like a small one, but a fun one.

362

00:25:53,000 --> 00:25:58,000

Oh, lots of fun. There's tons of myths out there about what is bulletproof and what isn't.

363

00:25:58,000 --> 00:26:01,000

And we're going to set out to test as many of them as we can.

364

00:26:01,000 --> 00:26:05,000

What do we got? We got playing cards, books, Zippo lighters.

365

00:26:07,000 --> 00:26:10,000

It's off to the Shabo Gun Club to test this myth.

366

00:26:10,000 --> 00:26:12,000

The setup is simple.

367

00:26:12,000 --> 00:26:19,000

In place of a human body, one slab of ballistics gel, and a selection of mythical bullet-stopping items.

368

00:26:19,000 --> 00:26:23,000

Target number one, a book. Hard cover, naturally.

369

00:26:23,000 --> 00:26:28,000

And the weapon of choice, a .22 caliber rifle.

370

00:26:29,000 --> 00:26:31,000

Dead center.

371

00:26:31,000 --> 00:26:33,000

Well, pull it out. Let's see if it went through.

372

00:26:34,000 --> 00:26:36,000

It did not.

373

00:26:36,000 --> 00:26:40,000

So somewhere, oh, look at what it did.

374

00:26:40,000 --> 00:26:42,000

Punch the paper.

375

00:26:42,000 --> 00:26:45,000

Where's your round?

376

00:26:45,000 --> 00:26:46,000

There it is.

377

00:26:46,000 --> 00:26:48,000

There's your round.

378

00:26:48,000 --> 00:26:51,000

It's probably actually about 400 pages that made it through.

379

00:26:51,000 --> 00:26:54,000

So shall we try a .357 Magnum, see if it makes it all the way through?

380

00:27:01,000 --> 00:27:02,000

Did I even hit it?

381

00:27:02,000 --> 00:27:03,000

Over the top.

382

00:27:03,000 --> 00:27:04,000

Over the top?

383

00:27:05,000 --> 00:27:06,000

That's pretty lame.

384

00:27:06,000 --> 00:27:07,000

Another round.

385

00:27:07,000 --> 00:27:12,000

This test reveals Adam would struggle to hit the side of a barn.

386

00:27:12,000 --> 00:27:13,000

From the inside.

387

00:27:13,000 --> 00:27:14,000

I think it's your turn, sir.

388

00:27:14,000 --> 00:27:16,000

I can't seem to hit that damn thing.

389

00:27:16,000 --> 00:27:17,000

Okay.

390

00:27:28,000 --> 00:27:29,000

Let's see what it did.

391

00:27:29,000 --> 00:27:30,000

All right.

392

00:27:30,000 --> 00:27:32,000

Oh, went all the way through.

393

00:27:32,000 --> 00:27:33,000

Okay, so...

394

00:27:33,000 --> 00:27:40,000

A book won't stop at .357 Magnum, but I've never considered a book to be really body armor anyway.

395

00:27:40,000 --> 00:27:43,000

Our next target, a deck of cards.

396

00:27:43,000 --> 00:27:46,000

The Joker gets another chance with the .22.

397

00:27:47,000 --> 00:27:49,000

We're going hot, eyes and ears.

398

00:27:52,000 --> 00:27:53,000

Good shot, Adam.

399

00:27:53,000 --> 00:27:54,000

Thank you, Uncle Jamie.

400

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

And it went through it.

401

00:28:02,000 --> 00:28:03,000

It did.

402

00:28:03,000 --> 00:28:04,000

It went all the way through it.

403

00:28:04,000 --> 00:28:06,000

But not through the Ballistics Gel, you can see it.

404

00:28:06,000 --> 00:28:08,000

Yeah, no, it made it about six inches into the Ballistics Gel.

405

00:28:08,000 --> 00:28:12,000

Still, if you had one of these in your pocket, it wouldn't do you any good at all.

406

00:28:12,000 --> 00:28:14,000

I think it's time to try the Zippo.

407

00:28:14,000 --> 00:28:15,000

Okay.

408

00:28:15,000 --> 00:28:16,000

Are you ready, Ace?

409

00:28:16,000 --> 00:28:17,000

Yeah.

410

00:28:17,000 --> 00:28:18,000

All right, let's do it.

411

00:28:27,000 --> 00:28:28,000

Looks like you hit it pretty good.

412

00:28:28,000 --> 00:28:30,000

Books, cards, lighters.

413

00:28:30,000 --> 00:28:32,000

None will stop a bullet.

414

00:28:33,000 --> 00:28:37,000

Now Adam and Jamie want to put another myth in the line of fire.

415

00:28:37,000 --> 00:28:40,000

And this one's a little closer to home.

416

00:28:43,000 --> 00:28:46,000

Every time the Mythbusters have made something go bang,

417

00:28:47,000 --> 00:28:52,000

they've done so from behind the safety of a high impact resistant plastic screen.

418

00:28:53,000 --> 00:28:55,000

But how safe were they?

419

00:28:55,000 --> 00:28:58,000

Were the Mythbusters living their own myth?

420

00:28:58,000 --> 00:28:59,000

There we go.

421

00:28:59,000 --> 00:29:00,000

All right, ready?

422

00:29:03,000 --> 00:29:07,000

Yeah, well last season, Jamie, we protected ourselves from a whole bunch of our experiments

423

00:29:07,000 --> 00:29:12,000

using this quarter inch polycarbonate, which you told us all was actually bulletproof,

424

00:29:12,000 --> 00:29:13,000

and it's not.

425

00:29:13,000 --> 00:29:15,000

I don't recall it that way.

426

00:29:15,000 --> 00:29:20,000

You know, that was quarter inch polycarbonate, and I never said that quarter inch was bulletproof.

427

00:29:20,000 --> 00:29:25,000

Oh, I believe that the very next cut in this segment is you saying bulletproof first.

428

00:29:25,000 --> 00:29:26,000

I don't stop a bullet.

429

00:29:26,000 --> 00:29:30,000

It'll stop all sorts of shrapnel, and I just love the stuff.

430

00:29:30,000 --> 00:29:31,000

Well, not exactly.

431

00:29:31,000 --> 00:29:33,000

It'll stop a bullet.

432

00:29:33,000 --> 00:29:34,000

Well, what were you thinking?

433

00:29:34,000 --> 00:29:37,000

It can't stop a bullet, so it's not bulletproof.

434

00:29:37,000 --> 00:29:42,000

That plastic is a bulletproof plastic when it's used in appropriate thicknesses and arrangements.

435

00:29:42,000 --> 00:29:46,000

Anyway, we've got a sheet up there of what we had in our blast chamber,

436

00:29:46,000 --> 00:29:50,000

and we're going to fire some bullets at it and see how bulletproof it actually is.

437

00:29:50,000 --> 00:29:55,000

So our first shot is going to be at the quarter inch polycarbonate, and we'll see what it does.

438

00:29:55,000 --> 00:29:58,000

You know, it most likely, my guess, is it'll shatter.

439

00:29:58,000 --> 00:30:01,000

Well, and that's why I think you should take the first shot, farm boy,

440

00:30:01,000 --> 00:30:04,000

and show us how bulletproof it actually is.

441

00:30:04,000 --> 00:30:05,000

All right.

442

00:30:05,000 --> 00:30:06,000

Have a good one.

443

00:30:06,000 --> 00:30:11,000

To test the stopping power of their blast screen, they'll use the 22.

444

00:30:11,000 --> 00:30:13,000

Did you miss the last shot?

445

00:30:13,000 --> 00:30:15,000

It looks like it.

446

00:30:15,000 --> 00:30:17,000

Oh, look at that.

447

00:30:17,000 --> 00:30:19,000

Yeah, bullet right through.

448

00:30:19,000 --> 00:30:24,000

It's worth remembering the guys aren't actually being shot at in their experiments,

449

00:30:24,000 --> 00:30:29,000

but it's got them wondering what they should be behind if they ever are.

450

00:30:29,000 --> 00:30:31,000

Not even remotely bulletproof.

451

00:30:31,000 --> 00:30:33,000

Okay, well, let's try the real thing.

452

00:30:33,000 --> 00:30:34,000

Let's do the real thing.

453

00:30:34,000 --> 00:30:36,000

Ugh.

454

00:30:36,000 --> 00:30:39,000

This stuff is a little bit more than a bulletproof plastic.

455

00:30:39,000 --> 00:30:41,000

Let's do the real thing.

456

00:30:41,000 --> 00:30:42,000

Ugh.

457

00:30:42,000 --> 00:30:45,000

This stuff is rated bullet resistant.

458

00:30:45,000 --> 00:30:48,000

Again, they're using the 22.

459

00:30:48,000 --> 00:30:50,000

Okay, I'm firing.

460

00:30:50,000 --> 00:30:51,000

Wow.

461

00:30:51,000 --> 00:30:55,000

It's a little high.

462

00:30:55,000 --> 00:31:00,000

All of a sudden he's like, yeah, it's a little high.

463

00:31:00,000 --> 00:31:04,000

Yeah, that definitely stopped it.

464

00:31:04,000 --> 00:31:07,000

The bullet hasn't even penetrated halfway.

465

00:31:07,000 --> 00:31:11,000

Once again, they pull out the 357 Magnum.

466

00:31:11,000 --> 00:31:15,000

Well, that looks almost like a bullseye.

467

00:31:15,000 --> 00:31:16,000

Wow.

468

00:31:16,000 --> 00:31:20,000

Look, it's like completely encased in the plastic.

469

00:31:20,000 --> 00:31:22,000

Oh, that is really cool.

470

00:31:22,000 --> 00:31:27,000

So the 357 Magnum didn't penetrate the bulletproof glass either.

471

00:31:27,000 --> 00:31:30,000

Clearly, this calls for something special.

472

00:31:30,000 --> 00:31:32,000

This is the 44 Magnum, right?

473

00:31:32,000 --> 00:31:34,000

This is the 44 Magnum.

474

00:31:34,000 --> 00:31:36,000

The first cousin to the Dirty Hairy Gun.

475

00:31:36,000 --> 00:31:39,000

So this is the most powerful handgun in the world.

476

00:31:39,000 --> 00:31:41,000

That's the kind that movie was made?

477

00:31:41,000 --> 00:31:42,000

Yes.

478

00:31:42,000 --> 00:31:47,000

The fabled 44 Magnum, Dirty Hairy's weapon of choice.

479

00:31:47,000 --> 00:31:48,000

Take a breath.

480

00:31:48,000 --> 00:31:51,000

Relax.

481

00:31:51,000 --> 00:31:58,000

But again, that tough little box has stopped the bullet.

482

00:31:58,000 --> 00:32:00,000

It did about the same as the 357.

483

00:32:00,000 --> 00:32:03,000

It's a bigger hole, but it didn't go any deeper, I don't think.

484

00:32:03,000 --> 00:32:06,000

Right, but it means it's spread out more energy right there.

485

00:32:06,000 --> 00:32:08,000

God, that's fantastic.

486

00:32:08,000 --> 00:32:11,000

It's becoming a source of considerable frustration.

487

00:32:11,000 --> 00:32:13,000

So we got to stop pussyfooting around here.

488

00:32:13,000 --> 00:32:16,000

What do you got that will make it through that thing?

489

00:32:16,000 --> 00:32:22,000

What they've got is the Springfield 30 Ot 6, the oldest caliber rifle on the grounds.

490

00:32:22,000 --> 00:32:30,000

And the Mythbusters last chance to see if bulletproof really means bulletproof.

491

00:32:31,000 --> 00:32:33,000

That went right through it.

492

00:32:33,000 --> 00:32:36,000

Wow, look at that.

493

00:32:36,000 --> 00:32:40,000

Went right through that side and right through that side.

494

00:32:40,000 --> 00:32:43,000

It didn't even make the thing jump.

495

00:32:43,000 --> 00:32:49,000

Wow, you know, this stuff is pretty impressive what it did with the handguns.

496

00:32:49,000 --> 00:32:51,000

It's exactly what they rated it for.

497

00:32:51,000 --> 00:32:53,000

You know, it's not made for a high-powered rifle.

498

00:32:53,000 --> 00:32:56,000

Yeah, well, and we were using the highest-powered thing they had on site today.

499

00:33:01,000 --> 00:33:05,000

Well, we lined them up, we knocked them down, and we fired some big guns.

500

00:33:05,000 --> 00:33:07,000

What turned out to be bulletproof or not?

501

00:33:07,000 --> 00:33:09,000

We're playing cards bulletproof?

502

00:33:09,000 --> 00:33:10,000

Nope.

503

00:33:10,000 --> 00:33:11,000

We're books or bibles?

504

00:33:11,000 --> 00:33:12,000

No.

505

00:33:12,000 --> 00:33:13,000

A Zippo lighter?

506

00:33:13,000 --> 00:33:14,000

No.

507

00:33:14,000 --> 00:33:16,000

And last year's blast chamber?

508

00:33:16,000 --> 00:33:17,000

No.

509

00:33:17,000 --> 00:33:21,000

So polycarbonate itself is not inherently bulletproof.

510

00:33:21,000 --> 00:33:25,000

It has to be laminated in a whole bunch of sheets, especially, and be really thick, right?

511

00:33:25,000 --> 00:33:29,000

Well, polycarbonate itself is not used as a bulletproof plastic.

512

00:33:29,000 --> 00:33:33,000

It's got to be laminated and specially put together as a bulletproof product.

513

00:33:33,000 --> 00:33:35,000

And it's actually just bullet-resistant.

514

00:33:35,000 --> 00:33:40,000

So it depends on the circumstances, whether it's going to resist the right bullet at the right time.

515

00:33:40,000 --> 00:33:41,000

Right.

516

00:33:41,000 --> 00:33:47,000

And all these other household objects and things that are supposed to stop bullets and famous stories about them stopping bullets,

517

00:33:47,000 --> 00:33:49,000

wrong, wrong, wrong, any wrong.

518

00:33:49,000 --> 00:33:50,000

Rollity wrong?

519

00:33:50,000 --> 00:33:52,000

Wrongity wrong.

520

00:33:52,000 --> 00:33:53,000

You said, rollity wrong.

521

00:33:53,000 --> 00:33:54,000

I did not.

522

00:33:59,000 --> 00:34:00,000

Simple.

523

00:34:00,000 --> 00:34:05,000

Get sprayed by a skunk and test a batch of home remedies for removing the smell.

524

00:34:05,000 --> 00:34:09,000

Trouble is, the mythbusters just can't get sprayed.

525

00:34:09,000 --> 00:34:11,000

What we want is a little bit of this.

526

00:34:14,000 --> 00:34:17,000

This skunks from a different supplier.

527

00:34:17,000 --> 00:34:20,000

Do you have some advice about the best way to blow this off a skunk?

528

00:34:20,000 --> 00:34:24,000

I mean, we've, we've, we think we've tried everything.

529

00:34:24,000 --> 00:34:26,000

I'll tell you, I have not found it difficult.

530

00:34:26,000 --> 00:34:28,000

So all you got to do is expose that thing.

531

00:34:28,000 --> 00:34:29,000

Right now it's covered.

532

00:34:29,000 --> 00:34:32,000

And when you take that off, it's going to feel threatened.

533

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

So you think we're going to get sprayed?

534

00:34:34,000 --> 00:34:35,000

Yeah, absolutely.

535

00:34:35,000 --> 00:34:37,000

I'd be shocked if you didn't.

536

00:34:38,000 --> 00:34:40,000

Well, Regan, prepare to be shocked.

537

00:34:41,000 --> 00:34:43,000

That is a really good bark.

538

00:34:45,000 --> 00:34:48,000

Maybe it's just the wrong season for skunk spray.

539

00:34:48,000 --> 00:34:50,000

I've never seen it happen this way.

540

00:34:50,000 --> 00:34:51,000

It's incredible.

541

00:34:51,000 --> 00:34:53,000

I mean, it's, this is, this is third time.

542

00:34:53,000 --> 00:34:55,000

There's only one option left.

543

00:34:55,000 --> 00:35:01,000

Let the skunk out of its cage and see if it will spray when cornered in a confined space.

544

00:35:01,000 --> 00:35:03,000

Thanks for putting it in the women's bathroom.

545

00:35:04,000 --> 00:35:06,000

Hey, oh my God, oh my God, oh my God.

546

00:35:06,000 --> 00:35:07,000

Woo!

547

00:35:10,000 --> 00:35:11,000

I'm trying to ease it up.

548

00:35:13,000 --> 00:35:14,000

Oh, he squirted.

549

00:35:14,000 --> 00:35:15,000

Yeah, he definitely squirted.

550

00:35:15,000 --> 00:35:16,000

Yeah, I can smell it.

551

00:35:16,000 --> 00:35:17,000

You smell it?

552

00:35:17,000 --> 00:35:18,000

It's bad.

553

00:35:18,000 --> 00:35:20,000

And finally, he squirted my shoe.

554

00:35:20,000 --> 00:35:22,000

The only thing I didn't want him to squirt, he squirted.

555

00:35:23,000 --> 00:35:25,000

Never seen anyone so happy to be skunked.

556

00:35:25,000 --> 00:35:27,000

Finally, we smell foul.

557

00:35:28,000 --> 00:35:30,000

I totally slacked home skunk.

558

00:35:36,000 --> 00:35:39,000

At last, a chance to test our skunk smell remedies.

559

00:35:43,000 --> 00:35:47,000

Remedy number one, an all time favorite, tomato juice.

560

00:35:47,000 --> 00:35:49,000

Jamie, marinate.

561

00:35:50,000 --> 00:35:53,000

Wow, this is like performance art.

562

00:35:53,000 --> 00:35:57,000

Now, not only do they stink, they're pink.

563

00:36:02,000 --> 00:36:08,000

For everybody out there that thinks we have a great job, think again.

564

00:36:08,000 --> 00:36:13,000

Mythbuster builder Scotty has volunteered to be the nose that knows.

565

00:36:13,000 --> 00:36:16,000

He just smelled like a bloody Mary.

566

00:36:16,000 --> 00:36:17,000

No, bloody Mary.

567

00:36:19,000 --> 00:36:21,000

Woo, no, that's not skunk.

568

00:36:22,000 --> 00:36:24,000

You know, I can't really tell for sure.

569

00:36:24,000 --> 00:36:26,000

I mean, Scotty didn't smell anything on us.

570

00:36:26,000 --> 00:36:30,000

And we got sprayed, so, you know, it seems like it must have done something.

571

00:36:30,000 --> 00:36:31,000

Yeah.

572

00:36:34,000 --> 00:36:41,000

Problem is, for this experiment to work, Adam and Jamie have to be re-skunked after each test.

573

00:36:41,000 --> 00:36:44,000

But this little critter isn't giving up any more juice.

574

00:36:44,000 --> 00:36:48,000

Maybe the sight of Adam and Jamie in their underwear sent it into shock.

575

00:36:53,000 --> 00:36:57,000

So it's goodbye to Regan and his skunk and hello, Plan B.

576

00:36:57,000 --> 00:36:59,000

It's so hard to get the skunk to spray.

577

00:36:59,000 --> 00:37:05,000

I mean, we feel relatively fine now, but the bathroom where we had the skunk, it reeks.

578

00:37:05,000 --> 00:37:10,000

So I think we ought to finish the test in here, use some of our substances in here and see what we can clean up.

579

00:37:10,000 --> 00:37:11,000

Beer.

580

00:37:12,000 --> 00:37:15,000

Will beer de-skunk or will it be debunked?

581

00:37:15,000 --> 00:37:18,000

What are you doing? You're spraying it all over the floor. That's going to help.

582

00:37:18,000 --> 00:37:20,000

You start at the top and you work down.

583

00:37:20,000 --> 00:37:23,000

It's hard being Jamie sometimes.

584

00:37:23,000 --> 00:37:28,000

Humans are very sensitive to tiles, the chemicals in skunk spray.

585

00:37:28,000 --> 00:37:32,000

We can detect them in minute quantities, parts per billion.

586

00:37:32,000 --> 00:37:39,000

In fact, a sulfur tile is added to odorless natural gas, just so we can detect leaks.

587

00:37:42,000 --> 00:37:45,000

Smells like the men's room in a dive bar.

588

00:37:46,000 --> 00:37:50,000

Yeah, but like a dive bar frequented by skunks?

589

00:37:51,000 --> 00:37:53,000

It's got that skunky beer smell.

590

00:37:53,000 --> 00:37:54,000

It's skunky though still.

591

00:37:54,000 --> 00:37:56,000

It's slightly skunky.

592

00:37:56,000 --> 00:37:57,000

The beer hasn't helped.

593

00:37:57,000 --> 00:38:00,000

The beer covers it up a little bit.

594

00:38:00,000 --> 00:38:05,000

Like I said, it smells like the boys room.

595

00:38:05,000 --> 00:38:09,000

All right, so beer busted.

596

00:38:11,000 --> 00:38:14,000

Okay, that's tomato juice and beer down.

597

00:38:14,000 --> 00:38:16,000

All right, time for feminine hygiene products.

598

00:38:20,000 --> 00:38:21,000

How's that work?

599

00:38:21,000 --> 00:38:23,000

I think you just twist it probably.

600

00:38:23,000 --> 00:38:25,000

So what's in these things?

601

00:38:25,000 --> 00:38:27,000

It's supposed to be vinegar and water.

602

00:38:29,000 --> 00:38:31,000

Yeah, it tastes like vinegar and water.

603

00:38:31,000 --> 00:38:33,000

Talk about a thirst for knowledge.

604

00:38:33,000 --> 00:38:35,000

You know I just took a taste test.

605

00:38:35,000 --> 00:38:40,000

All right, Scotty, you're on.

606

00:38:40,000 --> 00:38:43,000

Well, it didn't get out the beer smell.

607

00:38:43,000 --> 00:38:47,000

Just tell us if there's a little skunk on the wind.

608

00:38:49,000 --> 00:38:50,000

Yeah?

609

00:38:50,000 --> 00:38:51,000

Yeah.

610

00:38:51,000 --> 00:38:54,000

Still a little skunky.

611

00:38:54,000 --> 00:38:58,000

So feminine hygiene products.

612

00:38:58,000 --> 00:39:00,000

Dush busted also.

613

00:39:00,000 --> 00:39:02,000

Not so fresh.

614

00:39:05,000 --> 00:39:09,000

It seems those tiles are still working their magic.

615

00:39:09,000 --> 00:39:12,000

We're down to our second to last test.

616

00:39:12,000 --> 00:39:14,000

Okay, two answers.

617

00:39:14,000 --> 00:39:20,000

Hydrogen peroxide, baking soda, and just a squirt of dishwashing liquid.

618

00:39:20,000 --> 00:39:22,000

Better, worse, worse.

619

00:39:22,000 --> 00:39:23,000

Really?

620

00:39:23,000 --> 00:39:24,000

Yes.

621

00:39:24,000 --> 00:39:25,000

A lot better.

622

00:39:25,000 --> 00:39:26,000

A lot better.

623

00:39:26,000 --> 00:39:27,000

Smells very clean.

624

00:39:27,000 --> 00:39:30,000

Mmm, home remedy might have worked.

625

00:39:30,000 --> 00:39:32,000

Yeah.

626

00:39:35,000 --> 00:39:39,000

When the peroxide, baking soda, and soap mix,

627

00:39:39,000 --> 00:39:42,000

they release a storm of oxygen molecules.

628

00:39:42,000 --> 00:39:45,000

Those molecules bond with the tiles in the skunk spray

629

00:39:45,000 --> 00:39:47,000

and change their chemical makeup,

630

00:39:47,000 --> 00:39:50,000

neutralizing their smell in the process.

631

00:39:52,000 --> 00:39:54,000

In fact, it's worked so well

632

00:39:54,000 --> 00:39:58,000

that the bathroom has to be re-skunked for the final test.

633

00:39:58,000 --> 00:39:59,000

Oh!

634

00:39:59,000 --> 00:40:01,000

Ha!

635

00:40:01,000 --> 00:40:05,000

Adam uses up the last of the synthetic skunk stink.

636

00:40:05,000 --> 00:40:07,000

All right, so what is this stuff?

637

00:40:07,000 --> 00:40:09,000

Commercial skunk remover.

638

00:40:09,000 --> 00:40:10,000

Really?

639

00:40:10,000 --> 00:40:11,000

Yeah.

640

00:40:11,000 --> 00:40:12,000

It's made for this purpose.

641

00:40:12,000 --> 00:40:14,000

What does it smell like?

642

00:40:16,000 --> 00:40:18,000

Smells fruity.

643

00:40:18,000 --> 00:40:19,000

Smells orangey.

644

00:40:19,000 --> 00:40:20,000

Makes me kind of thirsty.

645

00:40:20,000 --> 00:40:22,000

Let's go for the reeks in here.

646

00:40:32,000 --> 00:40:34,000

It's pretty good.

647

00:40:34,000 --> 00:40:36,000

Slight bit of skunk.

648

00:40:36,000 --> 00:40:39,000

How do they compare to the home remedy of the last test?

649

00:40:39,000 --> 00:40:41,000

I think the home remedy worked better.

650

00:40:41,000 --> 00:40:44,000

The home remedy worked better than the commercial skunk remover.

651

00:40:45,000 --> 00:40:47,000

I think so.

652

00:40:50,000 --> 00:40:52,000

I think we've created another myth out here, Jimmy.

653

00:40:52,000 --> 00:40:54,000

That skunks want spray netbusters.

654

00:40:54,000 --> 00:40:55,000

Exactly.

655

00:40:55,000 --> 00:40:58,000

I'm ready to walk through the woods with impunity now.

656

00:40:58,000 --> 00:41:00,000

Skunks, look out!

657

00:41:00,000 --> 00:41:02,000

Look out!

658

00:41:07,000 --> 00:41:08,000

Turn your wheels this way.

659

00:41:08,000 --> 00:41:10,000

I want it angled slightly.

660

00:41:12,000 --> 00:41:14,000

It's D-Day for the death ray.

661

00:41:14,000 --> 00:41:16,000

Luckily, it's not overcast.

662

00:41:17,000 --> 00:41:18,000

Dude, do you think this is going to work?

663

00:41:18,000 --> 00:41:20,000

Oh, absolutely not.

664

00:41:20,000 --> 00:41:22,000

All right, let's get it flooded.

665

00:41:22,000 --> 00:41:26,000

The tri-remes being launched on its maiden voyage.

666

00:41:26,000 --> 00:41:29,000

Adam and Tori have to work out a way to float their boat.

667

00:41:30,000 --> 00:41:33,000

And soon, there's drama on the high seas.

668

00:41:33,000 --> 00:41:36,000

We built half a boat and it stopped floating level.

669

00:41:36,000 --> 00:41:38,000

Because it's only half a boat.

670

00:41:38,000 --> 00:41:41,000

So now we're trying to get weight into the back of this thing

671

00:41:41,000 --> 00:41:44,000

so we can get it upright and actually see something that we can burn.

672

00:41:44,000 --> 00:41:46,000

I can't believe we didn't think of this.

673

00:41:46,000 --> 00:41:49,000

I mean, there's an entire crew full of idiots here.

674

00:41:49,000 --> 00:41:51,000

Me included.

675

00:41:56,000 --> 00:41:59,000

At the same time, Adam's death ray has arrived in sections.

676

00:42:00,000 --> 00:42:02,000

Ready for assembly.

677

00:42:02,000 --> 00:42:05,000

These screws that I'm putting in are actually the aiming screws

678

00:42:05,000 --> 00:42:07,000

for all 300 of our mirrors.

679

00:42:07,000 --> 00:42:09,000

And once we get them in,

680

00:42:09,000 --> 00:42:12,000

we have a formula for what their position is,

681

00:42:12,000 --> 00:42:16,000

inner or out, depending on the row and their position on the mirror.

682

00:42:16,000 --> 00:42:18,000

And then we'll get some fire.

683

00:42:30,000 --> 00:42:32,000

So, we got the mirrors down.

684

00:42:32,000 --> 00:42:34,000

Frame's almost done.

685

00:42:34,000 --> 00:42:36,000

We're going to bring the forklift around, lift this puppy up

686

00:42:36,000 --> 00:42:39,000

and see if we can't put our sad little boat out if it's misery.

687

00:42:39,000 --> 00:42:41,000

Not so fast, Adam.

688

00:42:41,000 --> 00:42:43,000

Jamie's arrived on the scene.

689

00:42:43,000 --> 00:42:46,000

And he's not happy with the waterlogged warship.

690

00:42:46,000 --> 00:42:49,000

Adam's job of securing the boat sucks.

691

00:42:49,000 --> 00:42:51,000

Now I've got to fix it.

692

00:42:51,000 --> 00:42:53,000

And I don't think it'll be that big of a deal,

693

00:42:53,000 --> 00:42:55,000

but sort of paying the butt.

694

00:42:55,000 --> 00:42:57,000

The tide's coming in. We have no time.

695

00:42:57,000 --> 00:43:01,000

And this ain't a boat. It's sort of a pile of wood.

696

00:43:01,000 --> 00:43:04,000

Jamie, you know, you're going to put a lot of load on the center of the boat.

697

00:43:04,000 --> 00:43:06,000

Yeah, yeah, you had your chance.

698

00:43:06,000 --> 00:43:09,000

Let the guy that actually knows a thing or two about ropes and boats do his work

699

00:43:09,000 --> 00:43:11,000

and later the ocean.

700

00:43:11,000 --> 00:43:14,000

If our Phoenicians couldn't build a sufficient boat, it's not my fault, all right?

701

00:43:14,000 --> 00:43:16,000

You were the one that dumped the bag of sand.

702

00:43:16,000 --> 00:43:18,000

All right, I'm backing off.

703

00:43:18,000 --> 00:43:20,000

Skepper Jamie goes to work

704

00:43:20,000 --> 00:43:23,000

with a little help from his first mate, Christine.

705

00:43:23,000 --> 00:43:25,000

I have a job for you.

706

00:43:25,000 --> 00:43:27,000

He's a bit of a landlubber.

707

00:43:27,000 --> 00:43:30,000

No, I need you to stick your hand all the way under there and grab that rope.

708

00:43:34,000 --> 00:43:35,000

I'm working.

709

00:43:35,000 --> 00:43:36,000

Wait.

710

00:43:36,000 --> 00:43:38,000

Oh!

711

00:43:38,000 --> 00:43:40,000

Oh, my God!

712

00:43:43,000 --> 00:43:46,000

Sorry about that. I couldn't help myself.

713

00:43:46,000 --> 00:43:51,000

The trireme should now stay afloat long enough to test the death rate.

714

00:43:51,000 --> 00:43:53,000

So Jamie, some more old, timey stuff from the farm.

715

00:43:53,000 --> 00:43:55,000

Are you going to go fishing with a bow and arrow?

716

00:43:55,000 --> 00:43:57,000

Well, not exactly.

717

00:43:57,000 --> 00:44:00,000

The myth says that Archimedes focused the mirror to hit the boat,

718

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

a boat shot away from the walls of Syracuse.

719

00:44:03,000 --> 00:44:08,000

Realistically, Jamie, we've made this entire thing and all the math is to aim about 60 feet away,

720

00:44:08,000 --> 00:44:12,000

so if you can, just try and not shoot much farther than 60 feet, okay?

721

00:44:12,000 --> 00:44:13,000

All right.

722

00:44:13,000 --> 00:44:14,000

All right, let's see what it does.

723

00:44:14,000 --> 00:44:15,000

Okay.

724

00:44:15,000 --> 00:44:22,000

I know it's gone.

725

00:44:24,000 --> 00:44:31,000

60 feet is the hot zone, the point at which the 300 reflected rays will converge.

726

00:44:31,000 --> 00:44:33,000

60 feet, right there.

727

00:44:33,000 --> 00:44:36,000

The mirror rig is exactly the kind of thing that Adam's good at.

728

00:44:36,000 --> 00:44:38,000

He really flew through this.

729

00:44:38,000 --> 00:44:44,000

It's a big, hard to build thing that he did in just like practically no time at all.

730

00:44:44,000 --> 00:44:46,000

I think it's actually quite brilliant.

731

00:44:46,000 --> 00:44:49,000

Despite that, he doesn't think it'll work.

732

00:44:49,000 --> 00:44:58,000

It's just so hard to imagine that something of this scale would actually set something on fire from 60 feet away.

733

00:44:58,000 --> 00:45:00,000

I just don't know.

734

00:45:00,000 --> 00:45:04,000

I'm actually really excited to see whether this works or not, but my guess is that it won't.

735

00:45:04,000 --> 00:45:08,000

The trickiest part of this challenge is raising the rig.

736

00:45:08,000 --> 00:45:13,000

The worst-case scenario here is that the whole thing is just going to collapse somewhere in the middle of us trying to lift it.

737

00:45:13,000 --> 00:45:17,000

And if that happens, it's going to be like Humpty Dumpty, you know.

738

00:45:17,000 --> 00:45:20,000

All the King's men can't put it back together again.

739

00:45:20,000 --> 00:45:22,000

What's up? We got it, Jamie.

740

00:45:22,000 --> 00:45:24,000

Oh, look at that.

741

00:45:24,000 --> 00:45:27,000

I can't help noticing that it's not on fire.

742

00:45:27,000 --> 00:45:29,000

300 mirrors, it should be on fire.

743

00:45:29,000 --> 00:45:32,000

That's a pretty bright light you got going there, buddy.

744

00:45:32,000 --> 00:45:34,000

The Romans wouldn't know what hit him.

745

00:45:34,000 --> 00:45:36,000

Oh, bright light.

746

00:45:36,000 --> 00:45:38,000

Sail away.

747

00:45:39,000 --> 00:45:42,000

Jamie dons a fire suit.

748

00:45:42,000 --> 00:45:45,000

There he comes.

749

00:45:50,000 --> 00:45:54,000

And bravely wades in to take a temperature reading.

750

00:45:54,000 --> 00:45:56,000

What's a temperature, Jamie?

751

00:45:56,000 --> 00:45:58,000

It's about 150.

752

00:45:58,000 --> 00:45:59,000

150?

753

00:45:59,000 --> 00:46:01,000

Give it a minute.

754

00:46:01,000 --> 00:46:03,000

200 degrees.

755

00:46:03,000 --> 00:46:08,000

The highest temperature we seem to be reading on the boat right now is about 200 degrees.

756

00:46:08,000 --> 00:46:13,000

That's just about 400 degrees shy of ignition temperature.

757

00:46:13,000 --> 00:46:16,000

Even so, the wax is melting.

758

00:46:16,000 --> 00:46:18,000

Oh, I see wax dripping off.

759

00:46:18,000 --> 00:46:22,000

As a boost, the team holds up sheets of mylar.

760

00:46:22,000 --> 00:46:26,000

The added rays bump up the temperature almost 100 degrees.

761

00:46:26,000 --> 00:46:28,000

It's 280 degrees.

762

00:46:28,000 --> 00:46:30,000

284, 287.

763

00:46:30,000 --> 00:46:34,000

The tar begins to smolder, but still no flames.

764

00:46:34,000 --> 00:46:36,000

Something else is clear.

765

00:46:36,000 --> 00:46:42,000

For this to work, you'd want the enemy to stay very still in exactly the right spot.

766

00:46:42,000 --> 00:46:45,000

Our death ray doesn't seem to be working.

767

00:46:45,000 --> 00:46:49,000

I'm standing right in it, and I'm not dead yet.

768

00:46:49,000 --> 00:46:54,000

Despite Adam's best efforts, the beams just aren't concentrated enough.

769

00:46:54,000 --> 00:47:00,000

Instead of meeting at a single point, the 300 rays are scattered across the entire structure.

770

00:47:00,000 --> 00:47:03,000

The sun's energy is diffused.

771

00:47:03,000 --> 00:47:05,000

I don't think we're going to get anything better than this.

772

00:47:05,000 --> 00:47:08,000

I mean, even if we move the whole mirror, which I'm not sure it would survive,

773

00:47:08,000 --> 00:47:12,000

and get into the sun, we're not going to get instant ignition on this.

774

00:47:12,000 --> 00:47:15,000

I think we should call it quits and go for the flaming arrows.

775

00:47:15,000 --> 00:47:17,000

Oh well, nice try, Adam.

776

00:47:17,000 --> 00:47:19,000

Yeah!

777

00:47:23,000 --> 00:47:27,000

Now, that's about 2,000 years bad luck right there.

778

00:47:33,000 --> 00:47:37,000

Not sure you'd want these guys defending against the invading hordes.

779

00:47:37,000 --> 00:47:39,000

This is harder than it looks.

780

00:47:39,000 --> 00:47:42,000

Molotov cocktail, anyone?

781

00:47:48,000 --> 00:47:52,000

The waterlogged triarene just won't burn.

782

00:47:52,000 --> 00:47:56,000

Not even gasoline can provide that elusive spark.

783

00:48:04,000 --> 00:48:05,000

It's busted.

784

00:48:05,000 --> 00:48:09,000

I mean, from a purely practical standpoint, this myth is 100% busted.

785

00:48:09,000 --> 00:48:13,000

If you have enough mirrors that make an effective death ray,

786

00:48:13,000 --> 00:48:15,000

the rig that they're mounted to was going to be so big,

787

00:48:15,000 --> 00:48:18,000

we saw that you can't move it or aim it effectively.

788

00:48:18,000 --> 00:48:21,000

Yeah, Archimedes was a really smart guy,

789

00:48:21,000 --> 00:48:26,000

and like a lot of us, he knew that sometimes the simplest solutions are the best ones.

790

00:48:26,000 --> 00:48:28,000

This is not a simple solution.

791

00:48:28,000 --> 00:48:33,000

No, I mean, you could only use it at a certain time of day when it's most effective,

792

00:48:33,000 --> 00:48:37,000

it's difficult to aim, what are you going to ask your enemy to please show up around noon?

793

00:48:37,000 --> 00:48:39,000

Or what if it's raining?

794

00:48:39,000 --> 00:48:42,000

If I was a Roman, I'd want to show up on a rainy day.

795

00:48:42,000 --> 00:48:47,000

Now, this is definitely, I really, really, really wanted this one to work.

796

00:48:47,000 --> 00:48:50,000

I wanted to see some fire, but the question wasn't whether we could do it,

797

00:48:50,000 --> 00:48:54,000

it's whether Archimedes did it, and I think we showed that he definitely didn't.