

1

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

Please, don't try anything that you're about to see us do at home. Ever.

2

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

In this episode of MythBusters...

3

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

It's science!

4

00:00:13,000 --> 00:00:17,000

...the build team minds a myth from ancient China...

5

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

as Carrie keeps an ear out for an invading army.

6

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

I couldn't hear anything.

7

00:00:23,000 --> 00:00:27,000

And are we being fooled by the five-second rule?

8

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

Oh, I picked it up after like three seconds. Would you eat it?

9

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

Adam takes precautions in this bacteria bonanza.

10

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

No French kissing.

11

00:00:35,000 --> 00:00:36,000

Adam.

12

00:00:36,000 --> 00:00:37,000

I don't eat my own food.

13

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

Who are the MythBusters?

14

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

Adam Savage.

15

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

I reject your reality and substitute my own.

16

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

And Jamie Heineman.

17

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

We're either gonna die or we're gonna fly.

18

00:00:48,000 --> 00:00:52,000

Between them more than 30 years special effects experience.

19

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

That was intense.

20

00:00:54,000 --> 00:00:56,000

They don't just tell the myths...

21

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

they put them to the test.

22

00:01:09,000 --> 00:01:11,000

So, what's the myth? What do we got?

23

00:01:11,000 --> 00:01:13,000

This is Chinese invasion alarm.

24

00:01:13,000 --> 00:01:16,000

We got it from a high school science class which posts on our website.

25

00:01:16,000 --> 00:01:20,000

Apparently the Chinese had an early warning detection system for approaching armies...

26

00:01:20,000 --> 00:01:25,000

that involved stretching a leather membrane over the mouth of an 80-liter pottery jar.

27

00:01:25,000 --> 00:01:28,000

Then what they would do is strategically drill holes around the town...

28

00:01:28,000 --> 00:01:31,000

and lower these drums deep into these shafts.

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00:01:31,000 --> 00:01:34,000

Men with the best hearing were stationed around these shafts...

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00:01:34,000 --> 00:01:37,000

and they could listen to the vibrations.

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00:01:37,000 --> 00:01:40,000

They could not only tell how far away the armies were...

32

00:01:40,000 --> 00:01:42,000

but from what direction they were coming from.

33

00:01:42,000 --> 00:01:46,000

Wow, it's kind of like an ancient rudimentary transducer, some kind.

34

00:01:46,000 --> 00:01:50,000

And it also sounds like something that we're all familiar with in old westerns.

35

00:01:50,000 --> 00:01:56,000

Keeping an ear to the ground perhaps refers to the fact that terra firma transmits sound waves.

36

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

According to Hollywood at least, these can be detected by the highly-tuned ear.

37

00:02:01,000 --> 00:02:06,000

A French scouting party like it's not.

38

00:02:32,000 --> 00:02:37,000

With the gratuitous goat play behind them, they stumble into the pottery section...

39

00:02:37,000 --> 00:02:40,000

where, spoiled for choice, they take pot luck.

40

00:02:40,000 --> 00:02:44,000

How old are these? Could they be considered ancient?

41

00:02:44,000 --> 00:02:46,000

This one is almost 100 years old.

42

00:02:46,000 --> 00:02:48,000

100 years? Is this 100 years old?

43

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

Yeah, that's antique.

44

00:02:51,000 --> 00:02:53,000

Oh, wow.

45

00:02:53,000 --> 00:02:55,000

Stickers newer though.

46

00:02:55,000 --> 00:02:57,000

That face itself could be 100 years old.

47

00:02:57,000 --> 00:02:59,000

That's a good start. What are these made out of?

48

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

They're made by, you know, clay or ceramic.

49

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

Ceramic, okay.

50

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

It's a very good one.

51

00:03:05,000 --> 00:03:09,000

This is the bit where they ask the shop owner if she's heard of the myth...

52

00:03:09,000 --> 00:03:15,000

that they used to use these pots, they would bury them in the ground and cover them with leather skins.

53

00:03:15,000 --> 00:03:18,000

And this is the bit where the shopkeeper says...

54

00:03:18,000 --> 00:03:20,000

No, I didn't hear about that.

55

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

Do you think it would work?

56

00:03:21,000 --> 00:03:24,000

I have no idea because I haven't tried it before.

57

00:03:24,000 --> 00:03:26,000

Can't say fairer than that.

58

00:03:26,000 --> 00:03:30,000

Armed with a variety of pots, they head for home.

59

00:03:30,000 --> 00:03:32,000

Taxi!

60

00:03:32,000 --> 00:03:38,000

Back at M5, Grant and Carrie join forces to turn their pots into drums.

61

00:03:38,000 --> 00:03:40,000

Jammin'.

62

00:03:43,000 --> 00:03:47,000

The number of drums they've made between them amounts to less than one.

63

00:03:47,000 --> 00:03:50,000

So they decide to pool their ignorance.

64

00:03:50,000 --> 00:03:53,000

Apologies to everyone who actually makes their own drums.

65

00:03:53,000 --> 00:03:55,000

We have no idea what we're doing.

66

00:03:55,000 --> 00:03:58,000

Meanwhile, Tauri's marching to his own beat...

67

00:03:58,000 --> 00:04:02,000

by building mechanical boots to simulate an advancing army.

68

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

I think that's gonna work pretty good.

69

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

Grant and Carrie have slipped into a workman-like rhythm...

70

00:04:08,000 --> 00:04:11,000

and the first drum looks relatively professional.

71

00:04:11,000 --> 00:04:13,000

Tauri's impressed.

72

00:04:13,000 --> 00:04:15,000

Look at our little drum, Tauri.

73

00:04:15,000 --> 00:04:16,000

Doesn't this look cool?

74

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

Wow, you guys are like regular drum makers.

75

00:04:18,000 --> 00:04:21,000

How'd you learn how to make the...

76

00:04:21,000 --> 00:04:23,000

...fake it, just like everything we do.

77

00:04:23,000 --> 00:04:25,000

Everything's running smoothly.

78

00:04:25,000 --> 00:04:28,000

The build team is operating like a well-oiled machine.

79

00:04:28,000 --> 00:04:30,000

What could possibly go wrong?

80

00:04:32,000 --> 00:04:33,000

After the break...

81

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

I love having bacteriological tests done.

82

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

Adam and Jamie count colonies in their bacterial empire.

83

00:04:41,000 --> 00:04:42,000

Oh, I got something in my eye.

84

00:04:42,000 --> 00:04:46,000

And Carrie gets to shave a goat for science.

85

00:04:46,000 --> 00:04:49,000

You know, my people come from a long line of goat shavers.

86

00:04:51,000 --> 00:04:53,000

Well, I believe you're about to tell us...

87

00:04:53,000 --> 00:04:56,000

a classic American old wives tale.

88

00:04:56,000 --> 00:04:58,000

Absolutely. Having kids, I'm really familiar with this.

89

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

It's the five-second rule.

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

And the rule is, if you drop a piece of food on the floor...

91

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

and retrieve it within five seconds...

92

00:05:05,000 --> 00:05:08,000

it won't have actually gathered any bacteria...

93

00:05:08,000 --> 00:05:11,000

or viruses from the floor, and it's okay to eat it.

94

00:05:11,000 --> 00:05:14,000

And really, it's a very good thing.

95

00:05:14,000 --> 00:05:16,000

I think it's a good thing.

96

00:05:16,000 --> 00:05:18,000

I think it's a good thing.

97

00:05:19,000 --> 00:05:22,000

And really, it's almost always...

98

00:05:22,000 --> 00:05:24,000

you have to say, five-second rule,

99

00:05:24,000 --> 00:05:26,000

before you pop that cookie in your mouth.

100

00:05:26,000 --> 00:05:28,000

Or that toast.

101

00:05:28,000 --> 00:05:31,000

In an earlier myth, the team was testing whether toast...

102

00:05:31,000 --> 00:05:34,000

really does drop butterside down.

103

00:05:34,000 --> 00:05:37,000

Yes. You're gonna eat those.

104

00:05:37,000 --> 00:05:41,000

A hungry Scotty invoked the five-second rule.

105

00:05:41,000 --> 00:05:42,000

What's that rule?

106

00:05:42,000 --> 00:05:44,000

That if you drop something on the floor...

107

00:05:44,000 --> 00:05:46,000

and it's within five seconds that you pick it up,

108

00:05:46,000 --> 00:05:48,000

you can still eat it.

109

00:05:48,000 --> 00:05:50,000

Some viewers may wish to look away...

110

00:05:50,000 --> 00:05:53,000

as Scotty eats toast that's been on the sidewalk.

111

00:05:53,000 --> 00:05:54,000

Yes!

112

00:05:54,000 --> 00:05:57,000

Okay, I'm gonna say, oh, I want...

113

00:05:57,000 --> 00:05:59,000

well, I guess I won't say that.

114

00:05:59,000 --> 00:06:01,000

So was Scotty safe to snack?

115

00:06:01,000 --> 00:06:05,000

Or did she ingest a battalion of bacteria?

116

00:06:05,000 --> 00:06:07,000

Oh, I picked it up after like three seconds.

117

00:06:07,000 --> 00:06:08,000

Would you eat it?

118

00:06:08,000 --> 00:06:11,000

But I wouldn't eat it just because you've handled it.

119

00:06:12,000 --> 00:06:15,000

To make things easier, we've gotten some contact plates...

120

00:06:15,000 --> 00:06:17,000

which have a growth medium inside them...

121

00:06:17,000 --> 00:06:20,000

that can grow either bacteria or fungi...

122

00:06:20,000 --> 00:06:22,000

which can produce really harmful toxins.

123

00:06:22,000 --> 00:06:24,000

And the first thing we're gonna do is take those...

124

00:06:24,000 --> 00:06:27,000

and see what the distribution of fungi and bacteria is...

125

00:06:27,000 --> 00:06:28,000

on your kitchen floor.

126

00:06:28,000 --> 00:06:30,000

Before they drop the food,

127

00:06:30,000 --> 00:06:33,000

they need to know the bacteria distribution on Jamie's floor.

128

00:06:33,000 --> 00:06:37,000

So is M5 as neat and clean as a new pin?

129

00:06:37,000 --> 00:06:40,000

Or is it a filth-ridden bucket of scum?

130

00:06:41,000 --> 00:06:44,000

Adam and Jeremy don't want to contaminate their samples.

131

00:06:44,000 --> 00:06:46,000

So they don gloves and masks.

132

00:06:46,000 --> 00:06:48,000

In line with the myth,

133

00:06:48,000 --> 00:06:51,000

each contact plate will get five seconds exposure...

134

00:06:51,000 --> 00:06:53,000

to different sections of floor.

135

00:06:53,000 --> 00:06:56,000

So I'm gonna grab one of these plates here.

136

00:06:56,000 --> 00:06:59,000

And in here, we're gonna test in front of the sink...

137

00:06:59,000 --> 00:07:01,000

and in front of the fridge.

138

00:07:01,000 --> 00:07:02,000

Okay.

139

00:07:02,000 --> 00:07:05,000

The contact plates contain a tryptic soy medium...

140

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

which may sound like a vegan psychic...

141

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

but is actually a substance that encourages the growth of bacteria.

142

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

Can you tell me when to go?

143

00:07:14,000 --> 00:07:15,000

Go.

144

00:07:15,000 --> 00:07:17,000

If the floor is contaminated,

145

00:07:17,000 --> 00:07:19,000

the contact plates will show it.

146

00:07:19,000 --> 00:07:22,000

Four... five. Four... five.

147

00:07:22,000 --> 00:07:24,000

Once they've swabbed the kitchen's decks,

148

00:07:24,000 --> 00:07:26,000

they head for the Mythbusters mess hall.

149

00:07:26,000 --> 00:07:28,000

Okay, ready.

150

00:07:30,000 --> 00:07:33,000

Then it's downstairs to the shop floor.

151

00:07:33,000 --> 00:07:36,000

You know, now we get to find out definitively...

152

00:07:36,000 --> 00:07:38,000

just how clean your shop is.

153

00:07:38,000 --> 00:07:39,000

It's a shop. What do you want?

154

00:07:39,000 --> 00:07:41,000

I want to be able to eat off the damn floor.

155

00:07:41,000 --> 00:07:43,000

What's my immune system for anyway?

156

00:07:43,000 --> 00:07:46,000

Four... five.

157

00:07:46,000 --> 00:07:48,000

Right. Bathroom.

158

00:07:48,000 --> 00:07:51,000

Over the years, the Mythbusters bathroom has played host...

159

00:07:51,000 --> 00:07:54,000

to some less-than-hygienic hijinks.

160

00:07:54,000 --> 00:07:57,000

It's housed ducks and skunks...

161

00:07:57,000 --> 00:08:03,000

and been rubbed down with engine grease.

162

00:08:03,000 --> 00:08:06,000

This place looks a little dingy, Jimmy.

163

00:08:06,000 --> 00:08:09,000

Yeah, this may well be the dirtiest part of the shop, huh?

164

00:08:09,000 --> 00:08:13,000

I just want to do one brush for my own personal edification...

165

00:08:13,000 --> 00:08:15,000

right on the toilet seat,

166

00:08:15,000 --> 00:08:18,000

because I've heard a myth that the toilet seat's actually the cleanest place...

167

00:08:18,000 --> 00:08:20,000

in any given house.

168

00:08:20,000 --> 00:08:24,000

Good. Four... five.

169

00:08:24,000 --> 00:08:26,000

That's why I love this job.

170

00:08:26,000 --> 00:08:28,000

All right, you ready to incubate these guys?

171

00:08:28,000 --> 00:08:29,000

All right.

172

00:08:29,000 --> 00:08:34,000

They'll incubate the plates for 24 hours at 98.6 degrees Fahrenheit.

173

00:08:34,000 --> 00:08:37,000

Otherwise known as body temperature.

174

00:08:37,000 --> 00:08:39,000

Shop floor.

175

00:08:39,000 --> 00:08:42,000

Lunch table. Kitchen sink.

176

00:08:42,000 --> 00:08:45,000

And my personal favorite, the toilet seat.

177

00:08:47,000 --> 00:08:53,000

Early indications suggest that M5 may be a little workshop of horrors.

178

00:08:56,000 --> 00:09:00,000

The build team is testing the myth that ancient Chinese cities...

179

00:09:00,000 --> 00:09:04,000

used pottery drums to listen out for approaching armies.

180

00:09:05,000 --> 00:09:07,000

Tari's been working on a marching machine,

181

00:09:07,000 --> 00:09:11,000

while Kari and Grant have been having a bash at making drums.

182

00:09:11,000 --> 00:09:15,000

Everything's been going smoothly, which is a pity,

183

00:09:15,000 --> 00:09:18,000

as they learn that they've been barking up the wrong myth.

184

00:09:18,000 --> 00:09:21,000

We just received some new information about this story...

185

00:09:21,000 --> 00:09:24,000

that's going to radically change the direction that we're going to have to take.

186

00:09:24,000 --> 00:09:29,000

And, you know, what happened was the publishers of the textbook...

187

00:09:29,000 --> 00:09:31,000

that was the source of the original story,

188

00:09:31,000 --> 00:09:33,000

have sent us their fact-checking sheets.

189

00:09:33,000 --> 00:09:36,000

Their source for this story comes from a book, Mount Zu,

190

00:09:36,000 --> 00:09:39,000

which is about four-century BC.

191

00:09:39,000 --> 00:09:42,000

The shafts were five paces apart.

192

00:09:42,000 --> 00:09:45,000

They were 15 feet below the base of the city wall.

193

00:09:45,000 --> 00:09:49,000

We found out the size of the pottery jars were 40 toe,

194

00:09:49,000 --> 00:09:51,000

which is equivalent to 200 liters.

195

00:09:51,000 --> 00:09:53,000

I mean, that's a little bigger than we had thought before.

196

00:09:53,000 --> 00:09:56,000

The most significant thing of all is the fact that this was to detect...

197

00:09:56,000 --> 00:09:59,000

the tunneling and mining of a besieging army...

198

00:09:59,000 --> 00:10:02,000

and not an approaching marching one.

199

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

The history of warfare is shot through with examples of military tunnels,

200

00:10:07,000 --> 00:10:11,000

as this documentary film from the First World War shows.

201

00:10:11,000 --> 00:10:16,000

Below the ground, the tunnelers are at work on mines under the enemy positions.

202

00:10:16,000 --> 00:10:20,000

Listening for their sapping suggests that enemy countermining is close.

203

00:10:22,000 --> 00:10:25,000

Borrowing armies monitored each other's movements...

204

00:10:25,000 --> 00:10:28,000

by listening out for the sounds of nearby digging.

205

00:10:29,000 --> 00:10:32,000

When this is confirmed, work must be hurried.

206

00:10:34,000 --> 00:10:38,000

Galleries beneath the enemy positions were packed with explosives,

207

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

then detonated.

208

00:10:43,000 --> 00:10:48,000

According to the myth, the ancient Chinese also used military tunnels.

209

00:10:49,000 --> 00:10:52,000

Ah, well, that makes so much more sense.

210

00:10:52,000 --> 00:10:57,000

I was trying to wrap my head around why you could use these embedded drums in shafts

211

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

to detect an oncoming army when you could use watchtowers and signal fires

212

00:11:00,000 --> 00:11:03,000

to do it at the speed of light instead of the speed of sound.

213

00:11:03,000 --> 00:11:06,000

That sounds like it makes our experiment a lot easier.

214

00:11:06,000 --> 00:11:10,000

The new research reveals that the myth originated with Mo Tzu,

215

00:11:10,000 --> 00:11:13,000

a philosopher who was writing about 400 BC.

216

00:11:14,000 --> 00:11:20,000

He described an early warning system designed to protect walled cities against tunneling invaders.

217

00:11:21,000 --> 00:11:24,000

It comprised a system of sunken drums,

218

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

which could pick up vibrations from underground digging.

219

00:11:28,000 --> 00:11:31,000

By comparing the intensity of the sound at different locations,

220

00:11:31,000 --> 00:11:36,000

centuries could determine the direction of an incoming tunnel and intercept it.

221

00:11:40,000 --> 00:11:42,000

To get this myth back on track,

222

00:11:42,000 --> 00:11:48,000

Carrie and Tori take another pot shot at another pot shop to find a 200-liter vessel.

223

00:11:48,000 --> 00:11:50,000

Ooh, God, this one's pretty. Look at that glaze.

224

00:11:50,000 --> 00:11:53,000

Oh, I love these. They're so cute.

225

00:11:54,000 --> 00:11:56,000

I'm so happy. Look at that.

226

00:11:56,000 --> 00:12:01,000

Tori leaves the browsing to Carrie and gets down to the business at hand.

227

00:12:03,000 --> 00:12:05,000

Okay, what do you got for height?

228

00:12:05,000 --> 00:12:07,000

58 inches.

229

00:12:07,000 --> 00:12:09,000

504. That's about...

230

00:12:09,000 --> 00:12:11,000

That's too much. 41 inches.

231

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

41? Exactly 200 liters.

232

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

I think we found our pot.

233

00:12:17,000 --> 00:12:21,000

They've got their pot, so it's back to M5 to shave a goat.

234

00:12:21,000 --> 00:12:23,000

No kidding. Really.

235

00:12:23,000 --> 00:12:28,000

You know, my people come from a long line of goat shavers, so I feel it's in my blood.

236

00:12:28,000 --> 00:12:32,000

Apparently, goat skins for the fuller drum only come covered in hair,

237

00:12:32,000 --> 00:12:36,000

which presents Carrie with yet another opportunity for growth.

238

00:12:36,000 --> 00:12:38,000

I can't say I'm necessarily looking forward to shaving the goat,

239

00:12:38,000 --> 00:12:41,000

but I am looking forward to calling my parents tonight and be like,

240

00:12:41,000 --> 00:12:44,000

Guess what I did today?

241

00:12:44,000 --> 00:12:48,000

Carrie's never shaved a goat, but she's incredibly well connected,

242

00:12:48,000 --> 00:12:52,000

proving that it's not what you know, it's who you know.

243

00:12:52,000 --> 00:12:54,000

We talked to Akbar the goat shaver,

244

00:12:54,000 --> 00:12:57,000

and what he recommended is to first take clippers,

245

00:12:57,000 --> 00:13:00,000

then stretch it after it's been soaked for half an hour,

246

00:13:00,000 --> 00:13:06,000

and then take one of those little disposable razors so that you can get the fine stubble.

247

00:13:06,000 --> 00:13:10,000

In the world of goat shaving, Akbar is king.

248

00:13:10,000 --> 00:13:14,000

Carrie follows his instructions to the letter with royal results.

249

00:13:14,000 --> 00:13:16,000

Excellent job shaving your goat.

250

00:13:17,000 --> 00:13:21,000

The skin is soaked in water so that it's ready for stretching.

251

00:13:21,000 --> 00:13:25,000

Then placed over the mouth of the 200-liter pot.

252

00:13:25,000 --> 00:13:28,000

With a morning's practice under their belts,

253

00:13:28,000 --> 00:13:31,000

Carrie and Grant make light work of stringing the drum.

254

00:13:31,000 --> 00:13:35,000

When the skin is taught, they give it one final shave.

255

00:13:37,000 --> 00:13:39,000

Shaving the drum skin.

256

00:13:41,000 --> 00:13:44,000

Coming up, Mythbusters takes microbiology 101.

257

00:13:44,000 --> 00:13:48,000

Would only a fool use the five-second rule?

258

00:13:48,000 --> 00:13:50,000

Don't try this at home.

259

00:13:51,000 --> 00:13:55,000

And the built-in goes underground in Chinese invasion alarm.

260

00:13:55,000 --> 00:13:57,000

Let's do some exploring.

261

00:14:05,000 --> 00:14:11,000

According to the five-second rule, food that has been on the floor for five seconds or less will be uncontaminated.

262

00:14:11,000 --> 00:14:12,000

Good.

263

00:14:12,000 --> 00:14:20,000

To test the myth, Adam and Jamie have placed bacteria contact plates on different parts of M5's floor for five seconds of peats.

264

00:14:22,000 --> 00:14:26,000

The plates have been incubating for 24 hours at body temperature

265

00:14:26,000 --> 00:14:29,000

to see just how much bacteria they've picked up.

266

00:14:30,000 --> 00:14:31,000

Let's scoop them up.

267

00:14:31,000 --> 00:14:32,000

Ooh.

268

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

They're all kind of yummy, aren't they?

269

00:14:34,000 --> 00:14:37,000

Oh man, this stuff is rigged.

270

00:14:37,000 --> 00:14:38,000

Yep.

271

00:14:38,000 --> 00:14:44,000

To discover M5's level of hygiene, the guys count the number of bacteria colonies on each sample.

272

00:14:44,000 --> 00:14:47,000

The bathroom of the two looks like a bloody horror shot.

273

00:14:47,000 --> 00:14:51,000

I think I dropped it right in someone's drop of whee or something.

274

00:14:51,000 --> 00:14:54,000

Shop floor number two, 132.

275

00:14:54,000 --> 00:14:56,000

Lunch table number two?

276

00:14:56,000 --> 00:14:57,000

Yeah.

277

00:14:57,000 --> 00:14:58,000

26 colonies.

278

00:14:58,000 --> 00:15:01,000

Adam's like a kid with a new chemistry set.

279

00:15:01,000 --> 00:15:04,000

I love having bacteriological tests done.

280

00:15:04,000 --> 00:15:08,000

Come to think of it, Adam is a kid with a new chemistry set.

281

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

Later on, I want to lick one of these and get a dog to lick one and see if my mouth is cleaner than a dog's mouth.

282

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

How are you going to feel if it turns out your mouth is dirtier than a dog's?

283

00:15:19,000 --> 00:15:20,000

That's fine.

284

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

It's served me just fine until now.

285

00:15:22,000 --> 00:15:23,000

There's no reason to freak out.

286

00:15:23,000 --> 00:15:29,000

Adam's busting to check the results of the toilet seat myth, and it's a Eureka moment.

287

00:15:29,000 --> 00:15:30,000

Whoa!

288

00:15:30,000 --> 00:15:34,000

There is no, almost no bacteria on the toilet seat.

289

00:15:34,000 --> 00:15:37,000

That is so cool.

290

00:15:37,000 --> 00:15:40,000

We have proven a myth.

291

00:15:40,000 --> 00:15:49,000

Looking at our samples just briefly from all over MythBusters, your toilet seat seems to be the most bacteria free.

292

00:15:49,000 --> 00:15:55,000

Well, you know, that doesn't really surprise me a whole lot because we're testing the floor, you know?

293

00:15:55,000 --> 00:15:59,000

But people don't rub their bare bottoms on your floor all the time.

294

00:15:59,000 --> 00:16:07,000

I mean, you know, I'm thinking, this is everyone in the company, but has sat where I put this peature dish.

295

00:16:07,000 --> 00:16:13,000

If cleanliness is next to godliness, then heaven is on MythBusters' toilet seat.

296

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

Toilet humor aside, what did the floor test show?

297

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

On all of these figures, there's sometimes a very wide variability between two spots we chose that were side by side.

298

00:16:23,000 --> 00:16:30,000

I mean, we might not end up testing the five-second rule here, we might end up testing where you happen to drop the piece of food.

299

00:16:30,000 --> 00:16:43,000

What we need to do is to start with a sterile surface and evenly contaminate it so that we have an even playing field and that will boil it down to the time, not the actual surface or what's on it.

300

00:16:43,000 --> 00:16:47,000

Right, so cleanly bacterial...

301

00:16:47,000 --> 00:16:50,000

Right, that sounds great.

302

00:16:51,000 --> 00:17:00,000

In the myth of the five-second rule, Adam and Jamie have decided to make a uniformly filthy piece of floor.

303

00:17:00,000 --> 00:17:05,000

That way, when they drop food on it, they should get consistent contamination.

304

00:17:05,000 --> 00:17:07,000

I see some pans.

305

00:17:07,000 --> 00:17:09,000

We have some tiles.

306

00:17:09,000 --> 00:17:11,000

We have floor tiles.

307

00:17:11,000 --> 00:17:13,000

We have beef broth.

308

00:17:13,000 --> 00:17:16,000

And we have some pans.

309

00:17:16,000 --> 00:17:20,000

For some reason, whenever I see the pans, I have the desire to smash them on my head.

310

00:17:20,000 --> 00:17:21,000

You ready?

311

00:17:21,000 --> 00:17:22,000

Yeah.

312

00:17:22,000 --> 00:17:23,000

See if I can get a perfect face print.

313

00:17:23,000 --> 00:17:26,000

So with that out of the way, what's the plan?

314

00:17:26,000 --> 00:17:33,000

So the plan is that once we get these trimmed down to fit in the pans, we're going to pour beef broth.

315

00:17:33,000 --> 00:17:35,000

What's beef broth?

316

00:17:35,000 --> 00:17:37,000

Is it beef broth?

317

00:17:37,000 --> 00:17:48,000

They leave the floor tiles to rot in the big boy and Adam turns his attention to another mini myth.

318

00:17:48,000 --> 00:17:54,000

I've always heard that a dog's mouth is supposedly cleaner than a human's mouth.

319

00:17:54,000 --> 00:17:57,000

So this has got nothing to do with the five-second rule.

320

00:17:57,000 --> 00:18:00,000

We're just comparing your hygiene to a dog's, right?

321

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

Not my hygiene.

322

00:18:01,000 --> 00:18:05,000

A human's hygiene in their mouth to a dog's hygiene.

323

00:18:05,000 --> 00:18:11,000

I guess empirically what we will be testing is my hygiene against Linda's dog, but...

324

00:18:11,000 --> 00:18:15,000

Just do it. Just look at the darn thing.

325

00:18:15,000 --> 00:18:17,000

All right. Here we go. First science.

326

00:18:17,000 --> 00:18:19,000

Ew!

327

00:18:21,000 --> 00:18:23,000

Doesn't taste like anything.

328

00:18:23,000 --> 00:18:24,000

Where's the dog?

329

00:18:24,000 --> 00:18:26,000

Bring on the dog!

330

00:18:27,000 --> 00:18:30,000

Want to lick the sterile agar plate?

331

00:18:30,000 --> 00:18:34,000

Oh, Lou, that's perfect. Thank you. Good girl.

332

00:18:34,000 --> 00:18:39,000

Is it just me or does Lulu look quietly confident? Time will tell.

333

00:18:39,000 --> 00:18:44,000

Back at the myth of the five-second rule, the floor tiles are fully festered.

334

00:18:44,000 --> 00:18:45,000

What, five days now?

335

00:18:45,000 --> 00:18:47,000

They smell really, really bad.

336

00:18:47,000 --> 00:18:53,000

Yeah, I know. Let's get them out, hang them up and dry them off and see if we can use them today.

337

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

Jamie punches out plastic templates which will ensure sample sizes are consistent.

338

00:19:03,000 --> 00:19:07,000

While they're sterilizing in the microwave, Adam gloves up.

339

00:19:07,000 --> 00:19:11,000

Coming up, MythBusters takes microbiology 101.

340

00:19:13,000 --> 00:19:17,000

Adam has to behave like this. It's in his contract.

341

00:19:17,000 --> 00:19:20,000

But whatever you do, don't do this at home.

342

00:19:20,000 --> 00:19:28,000

To test the five-second rule, they'll use a wet food, a dry food, and an evenly contaminated floor tile.

343

00:19:28,000 --> 00:19:29,000

So?

344

00:19:29,000 --> 00:19:30,000

It's science!

345

00:19:30,000 --> 00:19:36,000

Samples of wet pastrami and dry crackers are exposed for two seconds and six seconds.

346

00:19:36,000 --> 00:19:40,000

In other words, for less than and more than five seconds.

347

00:19:40,000 --> 00:19:47,000

They also do a control on samples that don't touch the floor at all, in case they are already coated with bacteria.

348

00:19:47,000 --> 00:19:49,000

Control number two.

349

00:19:49,000 --> 00:19:54,000

I know I love building big things and blowing stuff up, but this is also super, super fun.

350

00:19:54,000 --> 00:19:56,000

Okay, fishing out a new one?

351

00:19:56,000 --> 00:19:57,000

He doesn't care.

352

00:19:57,000 --> 00:19:58,000

And go.

353

00:20:06,000 --> 00:20:10,000

And the bulk of our MythBusters bacteriologic test is done.

354

00:20:10,000 --> 00:20:11,000

Cool.

355

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

Can't wait to find out what happens.

356

00:20:28,000 --> 00:20:34,000

In the myth of the Chinese invasion alarm, Carrie takes a step back in time

357

00:20:34,000 --> 00:20:39,000

to abandon 19th century gold diggings in the hills beyond San Francisco.

358

00:20:39,000 --> 00:20:44,000

Frank Jacobi leads Carrie through the dark passageways of the Priest Mine,

359

00:20:44,000 --> 00:20:47,000

one of the oldest hard rock mines in California.

360

00:20:47,000 --> 00:20:50,000

The walls are etched with history.

361

00:20:50,000 --> 00:20:56,000

Like the mythical tunnels of the Chinese invasion alarm, the Priest Mine was dug by hand.

362

00:20:56,000 --> 00:20:59,000

One of the things that is a surprise in here is what you're leaning against.

363

00:20:59,000 --> 00:21:01,000

Take a good close look at the walls there.

364

00:21:01,000 --> 00:21:03,000

And what do you see on those walls?

365

00:21:03,000 --> 00:21:04,000

Looks like Freddy Krueger was in here.

366

00:21:04,000 --> 00:21:09,000

What those are, those are the miners' tool marks that they used to carve out this tunnel.

367

00:21:09,000 --> 00:21:13,000

Those are the chisel and pick marks from 150-plus years ago.

368

00:21:13,000 --> 00:21:20,000

This is as close as they're going to get to an ancient Chinese military tunnel in modern

California.

369

00:21:20,000 --> 00:21:25,000

Now they have to find a location where they can simulate the sound of an underground army.

370

00:21:25,000 --> 00:21:32,000

And then up here is the air shaft going up to the surface about 55 feet to the top, to the wooden roof up there.

371

00:21:32,000 --> 00:21:38,000

This place is beautiful. I'm thinking for our criteria, we need two things.

372

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

We need very specifically a 15-foot shaft that has a floor at the bottom and an open mine.

373

00:21:44,000 --> 00:21:48,000

The Priest Mine perfectly fulfills one criteria.

374

00:21:48,000 --> 00:21:54,000

So they resurface to look for a nearby spot where they can sink their early warning hole.

375

00:21:54,000 --> 00:21:56,000

I think this might be where we need to dig the hole.

376

00:21:56,000 --> 00:22:01,000

If we can get a backhoe up here and we're this close to a mine, I don't think we're going to get anything more ideal.

377

00:22:01,000 --> 00:22:03,000

Okay, after the break.

378

00:22:03,000 --> 00:22:05,000

This is insane.

379

00:22:05,000 --> 00:22:06,000

They got it, they got it.

380

00:22:06,000 --> 00:22:11,000

The build team avoids backache in the myth of the Chinese invasion alert.

381

00:22:11,000 --> 00:22:18,000

If Carrie, Grant and I were to try to dig this hole, I don't know how long it would take, maybe a week.

382

00:22:24,000 --> 00:22:33,000

In the myth of the Chinese invasion alarm, the build team has been laying the foundations for a foray into the world of ancient underground warfare.

383

00:22:33,000 --> 00:22:38,000

The tightest tap, I think is going to work great.

384

00:22:38,000 --> 00:22:45,000

They're investigating the myth that ancient Chinese cities had a detection system for tunneling invaders.

385

00:22:46,000 --> 00:22:49,000

It's all about seismology.

386

00:22:49,000 --> 00:22:57,000

Rocks, as hard as they seem, are elastic and deform when impacted by force, like in an earthquake.

387

00:22:57,000 --> 00:23:05,000

Today, scientists can pick up seismic waves from even the smallest underground tremors using geophones.

388

00:23:05,000 --> 00:23:11,000

Replace tremors with a tunneling army and the geophones with drums and you've got yourself a myth.

389

00:23:15,000 --> 00:23:23,000

The build team has borrowed some geophones from the U.S. Geological Survey, which they plan to use as controls during their experiment.

390

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

But, as ever, Grant tests them out in the lot of M5.

391

00:23:28,000 --> 00:23:29,000

Go get them, boy.

392

00:23:29,000 --> 00:23:35,000

He's aided by his very own homemade robot, which comes equipped with a handy pickaxe.

393

00:23:35,000 --> 00:23:40,000

The tiny seismic waves are detected by the geophone and displayed on a monitor.

394

00:23:41,000 --> 00:23:50,000

Meanwhile, Tari is constructing a metal and ply gantry, which they'll place over their shaft for safety.

395

00:23:50,000 --> 00:23:53,000

The plan's simple.

396

00:23:53,000 --> 00:23:56,000

Sink a 15-foot shaft and lower in the drum.

397

00:23:56,000 --> 00:24:04,000

30 feet away, in the priest's mind's air shaft, they'll swing their pick and see if the vibrations are detectable.

398

00:24:04,000 --> 00:24:05,000

They're good to go.

399

00:24:05,000 --> 00:24:10,000

Time to load up the Mythbusters mule and head for them their hills.

400

00:24:13,000 --> 00:24:18,000

On second thoughts, they dump the mule and the shovels and bring in a digger.

401

00:24:18,000 --> 00:24:21,000

Ever heard of taking a hammer to crack a nut?

402

00:24:21,000 --> 00:24:23,000

This is insane.

403

00:24:23,000 --> 00:24:25,000

I got it, I got it.

404

00:24:29,000 --> 00:24:38,000

While the build team supervises the city's defenses, Adam and Jamie head below to the mine, which will represent the besieging tunnel.

405

00:24:38,000 --> 00:24:40,000

I don't think I've ever been in the mine before.

406

00:24:40,000 --> 00:24:43,000

Well, then you're just about to have a real neat experience.

407

00:24:43,000 --> 00:24:48,000

Jamie actually used to do silver mining back in the 30s in South America, didn't you?

408

00:24:49,000 --> 00:24:54,000

Well, I noticed this picky has on his shoulder here. I'm watching out for him.

409

00:24:54,000 --> 00:24:56,000

Shall we go on in?

410

00:24:56,000 --> 00:25:01,000

To test the myth, they're looking for three locations where their invading army can go to work.

411

00:25:01,000 --> 00:25:04,000

They couldn't have hoped for anything more authentic.

412

00:25:04,000 --> 00:25:09,000

You can pretty much match up the same pick you have to what you'll see on the wall here.

413

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

This was all pretty much dug by hand. It's the same kind of idea.

414

00:25:14,000 --> 00:25:16,000

Wow.

415

00:25:16,000 --> 00:25:21,000

Now imagine doing that 12 hours a day, day in and day out, seven days a week. No days off.

416

00:25:21,000 --> 00:25:23,000

A lot of work.

417

00:25:23,000 --> 00:25:24,000

Good exercise.

418

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

You betcha.

419

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

Having seen the mine firsthand, the guys take a look at a map to determine exactly where Jamie will launch his assault.

420

00:25:32,000 --> 00:25:35,000

So this is the map that you were talking about?

421

00:25:35,000 --> 00:25:37,000

Yeah, this kind of lays it all out for you.

422

00:25:37,000 --> 00:25:39,000

And what are we right here?

423

00:25:39,000 --> 00:25:42,000

That's correct. That's the entrance to the priest mine.

424

00:25:42,000 --> 00:25:45,000

So that's that little offside room that was one of our sites, right?

425

00:25:45,000 --> 00:25:46,000

That's right.

426

00:25:46,000 --> 00:25:49,000

And that's the shaft where the other site was.

427

00:25:49,000 --> 00:25:50,000

That's right.

428

00:25:50,000 --> 00:25:52,000

So this goes up to the surface right about here.

429

00:25:52,000 --> 00:25:57,000

Our holes probably, our alarm hole is probably right here.

430

00:25:57,000 --> 00:26:06,000

I'd say we look at three sites. I'd say it's that one, this one, and then this one would be the last site that we'd try if neither of these worked.

431

00:26:06,000 --> 00:26:11,000

Sure. Meanwhile, 50 feet above, the chain gang has never had it so good.

432

00:26:11,000 --> 00:26:16,000

Now I'm excited. I can't believe how easy it was to do all this.

433

00:26:16,000 --> 00:26:18,000

Or have somebody else do all this.

434

00:26:18,000 --> 00:26:19,000

Yeah.

435

00:26:19,000 --> 00:26:24,000

Busting ancient myths with modern equipment sits just fine with Tarry.

436

00:26:24,000 --> 00:26:28,000

I mean, this is taking maybe like an hour to dig this hole.

437

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

If Carrie, Grant, and I were to try to dig this hole, I don't know how long it would take. Maybe a

week.

438

00:26:34,000 --> 00:26:39,000

In no time at all, the digger's done digging, and the built-in checks the depth.

439

00:26:39,000 --> 00:26:40,000

At 16 feet.

440

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

All right. We made it.

441

00:26:42,000 --> 00:26:43,000

Yay!

442

00:26:43,000 --> 00:26:44,000

Nice job.

443

00:26:44,000 --> 00:26:45,000

Awesome.

444

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

Woo!

445

00:26:46,000 --> 00:26:47,000

So far so good.

446

00:26:47,000 --> 00:26:48,000

Awesome.

447

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

Then Grant spots a possible spanner in the earthworks.

448

00:26:51,000 --> 00:27:02,000

It's a wet spot on the side of the hole, and that could mean that come tomorrow morning when we come back out here, the hole will be filled with water.

449

00:27:02,000 --> 00:27:08,000

The build team wraps up the day by installing Tarry's homemade safety gantry.

450

00:27:08,000 --> 00:27:10,000

Well, watch yourself, Carrie.

451

00:27:10,000 --> 00:27:11,000

Yeah.

452

00:27:11,000 --> 00:27:14,000

You are almost lost, Carrie.

453

00:27:14,000 --> 00:27:19,000

Tomorrow we'll tell if they have an alarm hole or a bore hole on their hands.

454

00:27:24,000 --> 00:27:29,000

After the break, is Adam's mouth dirtier than a dog's?

455

00:27:29,000 --> 00:27:31,000

I don't eat my own poo.

456

00:27:31,000 --> 00:27:34,000

And will the five-second rule bite the dust?

457

00:27:34,000 --> 00:27:41,000

In another 24 hours, we're going to know the answer to the age-old question of the five-second rule.

458

00:27:47,000 --> 00:27:53,000

At the M5 laboratory, Adam and Jamie are testing the five-second rule on food samples.

459

00:27:53,000 --> 00:27:58,000

While they wait for their samples to incubate, they check out a related myth.

460

00:27:58,000 --> 00:28:00,000

Let's see the dogs move along.

461

00:28:05,000 --> 00:28:08,000

Well, that's clear enough.

462

00:28:08,000 --> 00:28:11,000

That looks pretty definitive. That's my mouth.

463

00:28:11,000 --> 00:28:17,000

I can see tons of little bacteria and colonies growing in exactly the shape of my tongue.

464

00:28:17,000 --> 00:28:22,000

And here, where Lulu licked, I see a much smaller concentration.

465

00:28:22,000 --> 00:28:25,000

So no French kissing dogs, I think, is our conclusion here.

466

00:28:25,000 --> 00:28:28,000

I would be more inclined to say no French kissing Adam.

467

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

And you know, my mouth isn't representative of sample. I don't eat my own poo.

468

00:28:33,000 --> 00:28:35,000

Let's take that as rare.

469

00:28:35,000 --> 00:28:41,000

Nonetheless, if bacteria count as your benchmark, you've got to smooch the punch.

470

00:28:41,000 --> 00:28:45,000

Bacteria myths are being busted by the bucket full.

471

00:28:45,000 --> 00:28:47,000

But how about the big one?

472

00:28:47,000 --> 00:28:51,000

The meat and cracker samples are fully incubated and ready to be counted.

473

00:28:51,000 --> 00:28:55,000

So this is supposed to be our definitive test of the five-second rule.

474

00:28:55,000 --> 00:28:57,000

What do you think is actually going to happen?

475

00:28:57,000 --> 00:28:59,000

I don't think there's going to be any significant difference.

476

00:28:59,000 --> 00:29:04,000

I tend to agree with you that there's not going to be a significant difference between two seconds and six seconds.

477

00:29:04,000 --> 00:29:07,000

But shall we start counting?

478

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

The results show that all the food did pick up bacteria from the floor top.

479

00:29:12,000 --> 00:29:15,000

21 for cracker, two seconds.

480

00:29:15,000 --> 00:29:19,000

But the wet pastrami picked up more than the dry crackers.

481

00:29:19,000 --> 00:29:21,000

322 for meat, six seconds.

482

00:29:21,000 --> 00:29:26,000

On the crucial question of time, the results were less than definitive,

483

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

with no conclusive distinctions between the two-second and the six-second samples.

484

00:29:31,000 --> 00:29:37,000

So does that mean that it's better to eat crackers that have been dropped on the floor than pastrami that's been dropped on the floor?

485

00:29:37,000 --> 00:29:44,000

Well, not exactly, but it does mean that if there is something harmful there on the floor, the odds are the pastrami is more likely to pick it up.

486

00:29:44,000 --> 00:29:46,000

But what about the five-second rule?

487

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

Was there a difference between the samples dropped for two seconds and the samples dropped for six seconds?

488

00:29:50,000 --> 00:29:53,000

Well, I don't think the results were all that conclusive.

489

00:29:53,000 --> 00:30:03,000

But as far as I can tell, time didn't seem to be a factor because all the samples seemed to show about the same amount of contamination no matter how long they sat on the floor.

490

00:30:03,000 --> 00:30:06,000

But I'm not ready to put this one to rest just yet.

491

00:30:06,000 --> 00:30:09,000

I think we have one more test to do.

492

00:30:09,000 --> 00:30:12,000

It's not really about the food and it's not really about the floor.

493

00:30:12,000 --> 00:30:13,000

It's about the time.

494

00:30:13,000 --> 00:30:21,000

And I'd like to eliminate the food and try applying our contact plates directly to our inoculated floor surface for the correct periods of time.

495

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

Two seconds, six seconds, and see if there's any difference in how much bacteria they pick up.

496

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

I think that makes sense. It's removing all the other variables.

497

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

The five-second rule has been around a long time and it's not giving up without a fight.

498

00:30:36,000 --> 00:30:44,000

By leaving out the food in this final test, they eliminate every variable except the crucial one, time.

499

00:30:44,000 --> 00:30:49,000

Well, in another 24 hours we're going to know the answer to the age-old question.

500

00:30:50,000 --> 00:30:52,000

Of the five-second rule.

501

00:30:52,000 --> 00:30:54,000

Load me up.

502

00:30:54,000 --> 00:30:57,000

24 hours later, it's time to count the colonies.

503

00:30:57,000 --> 00:31:05,000

If there's any truth to the five-second rule, the two-second plates should have far less bacteria than the six-second ones.

504

00:31:05,000 --> 00:31:07,000

Wow, that's a...

505

00:31:07,000 --> 00:31:08,000

Dude.

506

00:31:08,000 --> 00:31:10,000

Two-second exposure is huge.

507

00:31:10,000 --> 00:31:17,000

The colony count is so massive as to be uncountable, but it looks identical for both.

508

00:31:17,000 --> 00:31:23,000

There's no discernible difference between the samples, regardless of how long they spent on the floor.

509

00:31:23,000 --> 00:31:25,000

This is really the definitive test for this myth.

510

00:31:25,000 --> 00:31:32,000

We could test a million different foods and get a million different results, but right here, eliminating all other factors purely on time.

511

00:31:32,000 --> 00:31:36,000

A two-second exposure is supposed to a six-second exposure. There's no difference.

512

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

They're almost identical, or they are identical.

513

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

Yeah, so that's an excellent result.

514

00:31:41,000 --> 00:31:46,000

The final bell has tolled, and this myth looks out for the count.

515

00:31:46,000 --> 00:31:48,000

Five-second rule. What's the verdict?

516

00:31:48,000 --> 00:31:53,000

Well, I think we were both pretty clear on what the results would be, and it took a little while, but we got it.

517

00:31:53,000 --> 00:32:00,000

There's absolutely no correlation between how much bacteria food picks up and how much time it has spent on the floor.

518

00:32:00,000 --> 00:32:04,000

In fact, it seemed like it was all about everything else but the time.

519

00:32:04,000 --> 00:32:15,000

It was how moist the food was, the surface geometry of the food, what was on the floor and how contaminated it was, and all those kinds of things, but it wasn't about the time.

520

00:32:15,000 --> 00:32:19,000

I had to figure out a bunch of other cool stuff, like the toilet seats, the cleanest place in your shop.

521

00:32:19,000 --> 00:32:25,000

And your mouse dirtier than a dog's. And speaking of which, are you going to let your kids eat off the floor?

522

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

Well, I'm raising them off of your life story that you told me. I figure if they eat off the floor until they're eight or ten, they'll have a super-hardy constitution.

523

00:32:32,000 --> 00:32:35,000

Yeah, right. Well, the myth is busted one way or another.

524

00:32:35,000 --> 00:32:36,000

It's totally busted.

525

00:32:36,000 --> 00:32:38,000

Bada-bing, bada-boom.

526

00:32:45,000 --> 00:32:47,000

There you go. Beauty.

527

00:32:47,000 --> 00:32:51,000

Or is the ancient early warning system a mute myth?

528

00:32:58,000 --> 00:33:02,000

Morning has broken at the walled city of ancient China.

529

00:33:02,000 --> 00:33:04,000

What? Look out for the tree!

530

00:33:04,000 --> 00:33:08,000

The day is dry and clear, but what about the alarm hole?

531

00:33:09,000 --> 00:33:14,000

The build team is praying that it hasn't turned into a pond overnight.

532

00:33:17,000 --> 00:33:19,000

Moment of truth. I'm nervous.

533

00:33:22,000 --> 00:33:24,000

Not bad. Not bad at all.

534

00:33:24,000 --> 00:33:27,000

I see. I mean, there is some mud on this side.

535

00:33:27,000 --> 00:33:28,000

So...

536

00:33:29,000 --> 00:33:30,000

That side's gross.

537

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

Yeah. You know what?

538

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

This is good. I think this is going to be perfect.

539

00:33:34,000 --> 00:33:35,000

Phew!

540

00:33:36,000 --> 00:33:38,000

I didn't sleep so good last night.

541

00:33:40,000 --> 00:33:47,000

Before they lower the drum, Grant wants to test the geophone to make sure that it can detect the tunneling army.

542

00:33:49,000 --> 00:33:51,000

Okay, and contact.

543

00:33:54,000 --> 00:33:55,000

And ready.

544

00:33:55,000 --> 00:34:00,000

I got something very faint. I think I might be able to pick it out.

545

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

Carrie, did you hear anything?

546

00:34:02,000 --> 00:34:04,000

I can't hear anything with my naked ear.

547

00:34:04,000 --> 00:34:07,000

The experiment set up is spot on.

548

00:34:07,000 --> 00:34:14,000

Jamie's digging is out of ear shot, but the geophone can detect faint tremors through the earth.

549

00:34:14,000 --> 00:34:20,000

Now they'll see if the drum can pick up the vibrations with enough resonance to be heard.

550

00:34:20,000 --> 00:34:23,000

The ancient amplifier is lowered slowly into its earthy socket.

551

00:34:23,000 --> 00:34:24,000

Okay.

552

00:34:25,000 --> 00:34:26,000

There we go.

553

00:34:26,000 --> 00:34:27,000

Let's aim it.

554

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

There you go.

555

00:34:29,000 --> 00:34:30,000

Beauty.

556

00:34:32,000 --> 00:34:38,000

So for the first time in more than half a century, this mine will ring to the sound of a swinging pick.

557

00:34:39,000 --> 00:34:42,000

But will the talking drum warn at the end of the day?

558

00:34:42,000 --> 00:34:43,000

I'm not sure.

559

00:34:43,000 --> 00:34:44,000

I'm not sure.

560

00:34:44,000 --> 00:34:45,000

I'm not sure.

561

00:34:45,000 --> 00:34:46,000

I'm not sure.

562

00:34:46,000 --> 00:34:47,000

I'm not sure.

563

00:34:47,000 --> 00:34:48,000

I'm not sure.

564

00:34:48,000 --> 00:34:53,000

But will the talking drum warn Adam and Carrie that invaders are on their way?

565

00:34:53,000 --> 00:34:57,000

So Jamie, if we find gold, are you going to share it with me?

566

00:34:57,000 --> 00:35:02,000

50 feet away, Jamie and Tori are going to play the part of the tunneling Chinese army.

567

00:35:02,000 --> 00:35:06,000

Strike, two, three, and one.

568

00:35:06,000 --> 00:35:11,000

They swing quickly into rhythm, aiming hefty blows at the hard rock.

569

00:35:11,000 --> 00:35:15,000

Four, five, six.

570

00:35:15,000 --> 00:35:20,000

The mine shaft is might so Grant can clearly hear the pick's percussion.

571

00:35:20,000 --> 00:35:25,000

He'll keep an eye on Adam and Carrie, who will signal if they hear a drum beat.

572

00:35:25,000 --> 00:35:32,000

According to the myth, citizens with extraordinary hearing were selected to man these listening posts.

573

00:35:32,000 --> 00:35:36,000

Begging the question, why deaf is a post-Adam is on the job?

574

00:35:37,000 --> 00:35:38,000

Ten.

575

00:35:39,000 --> 00:35:40,000

Eleven.

576

00:35:40,000 --> 00:35:45,000

The drum's in an auditory black hole, but Carrie seems to be picking up something.

577

00:35:46,000 --> 00:35:47,000

Eighteen.

578

00:35:48,000 --> 00:35:49,000

Nineteen.

579

00:35:50,000 --> 00:35:51,000

Twenty.

580

00:35:51,000 --> 00:35:52,000

That's twenty.

581

00:35:53,000 --> 00:35:54,000

Stand by for playback.

582

00:35:54,000 --> 00:35:58,000

The geophone did record the sound, but only just.

583

00:36:00,000 --> 00:36:01,000

So faint.

584

00:36:01,000 --> 00:36:03,000

So how about the drum?

585

00:36:04,000 --> 00:36:08,000

It sounded like a really low hum, and then every time you hit it, it would go,

586

00:36:08,000 --> 00:36:12,000

as if somebody had just barely just going on the drum.

587

00:36:12,000 --> 00:36:14,000

I can't believe that it worked.

588

00:36:14,000 --> 00:36:16,000

It's just, that's incredible.

589

00:36:16,000 --> 00:36:17,000

I can't believe it either.

590

00:36:17,000 --> 00:36:19,000

I'm just, I'm amazed.

591

00:36:21,000 --> 00:36:22,000

It's quite a result.

592

00:36:22,000 --> 00:36:27,000

There seems no doubt that Carrie really was hearing the blows as they happened.

593

00:36:27,000 --> 00:36:30,000

I believe that the noise was definitely coming up the shaft.

594

00:36:30,000 --> 00:36:33,000

I believe the shaft was giving me a little bit of an echo.

595

00:36:33,000 --> 00:36:37,000

There was a lot of ambient noise around above me, birds and shuffling,

596

00:36:37,000 --> 00:36:39,000

but it was very, very different.

597

00:36:39,000 --> 00:36:40,000

I didn't hear it from this year.

598

00:36:40,000 --> 00:36:42,000

I only heard it from this year.

599

00:36:42,000 --> 00:36:45,000

So I firmly believe that the sound was coming from the drum,

600

00:36:45,000 --> 00:36:50,000

and it wasn't as much of a tap as it was a little beat.

601

00:36:51,000 --> 00:36:53,000

We brought out all of this fancy instrumentation.

602

00:36:53,000 --> 00:36:55,000

I mean, look at Grant.

603

00:36:55,000 --> 00:36:58,000

He's completely wired up, earphones, geophones, all that, microphones.

604

00:36:59,000 --> 00:37:01,000

The Chinese invasion alarm seemed to work better.

605

00:37:01,000 --> 00:37:03,000

This is the most exciting part about this job,

606

00:37:03,000 --> 00:37:07,000

is when you walk in with all of these preconceived notions of failure,

607

00:37:07,000 --> 00:37:08,000

like, ah, it's not going to work.

608

00:37:08,000 --> 00:37:09,000

No, there's no way.

609

00:37:09,000 --> 00:37:12,000

I don't think one of us thought this was definitely going to work.

610

00:37:12,000 --> 00:37:13,000

And then it does.

611

00:37:14,000 --> 00:37:16,000

Okay, here is position number two.

612

00:37:17,000 --> 00:37:19,000

Alright, maybe I can finally hear it.

613

00:37:20,000 --> 00:37:21,000

We're in a new location.

614

00:37:21,000 --> 00:37:23,000

We're underneath the drum.

615

00:37:23,000 --> 00:37:25,000

Jamie's going to strike the wall 20 times.

616

00:37:25,000 --> 00:37:26,000

You ready, Jamie?

617

00:37:26,000 --> 00:37:27,000

Okay.

618

00:37:27,000 --> 00:37:28,000

Everybody ready?

619

00:37:28,000 --> 00:37:29,000

We are ready.

620

00:37:29,000 --> 00:37:30,000

We are ready.

621

00:37:30,000 --> 00:37:35,000

Adam's hoping that the hearing trumpet will help overcome his limitations in the listening department.

622

00:37:35,000 --> 00:37:36,000

Striking.

623

00:37:36,000 --> 00:37:41,000

But past experience on Mythbusters suggests it may not be big enough.

624

00:37:41,000 --> 00:37:42,000

Watch that.

625

00:37:42,000 --> 00:37:43,000

You see, sonny?

626

00:37:44,000 --> 00:37:46,000

I can't hear you.

627

00:37:47,000 --> 00:37:51,000

One, two, three.

628

00:37:51,000 --> 00:37:56,000

Grant listens into the tunnel mic and counts off each blow of the pickaxe.

629

00:38:00,000 --> 00:38:07,000

Ten, nine, ten,

630

00:38:12,000 --> 00:38:17,000

sixteen, seventeen, eighteen.

631

00:38:21,000 --> 00:38:22,000

Okay, that's 20.

632

00:38:23,000 --> 00:38:24,000

Did you hear anything?

633

00:38:24,000 --> 00:38:26,000

No, I don't think I did either.

634

00:38:27,000 --> 00:38:31,000

We won't know until we go up there whether it made any difference.

635

00:38:31,000 --> 00:38:35,000

I'm not hearing quite so much reverberation here.

636

00:38:36,000 --> 00:38:37,000

Did you guys hear anything?

637

00:38:37,000 --> 00:38:38,000

Not that time.

638

00:38:38,000 --> 00:38:46,000

No, there were a couple of times when there was something that might have been it, but really, I started looking at your hands when you were counting off the hits.

639

00:38:46,000 --> 00:38:48,000

And I wasn't hearing anything.

640

00:38:48,000 --> 00:38:50,000

Alright, I didn't get much on the geophone either.

641

00:38:50,000 --> 00:38:57,000

So the invasion alarm seems to have a blind spot or rather, deaf spot, directly below it.

642

00:38:57,000 --> 00:39:04,000

For test number three, Jamie and Tari move to a new location 50 feet deep and over 100 feet away.

643

00:39:05,000 --> 00:39:06,000

Okay, I can hear them.

644

00:39:06,000 --> 00:39:07,000

The mic's set.

645

00:39:07,000 --> 00:39:10,000

So this is position three, chapel dugout.

646

00:39:12,000 --> 00:39:13,000

Ready?

647

00:39:13,000 --> 00:39:14,000

We're ready.

648

00:39:15,000 --> 00:39:16,000

Ten, one.

649

00:39:16,000 --> 00:39:19,000

Busting this myth can be backbreaking work.

650

00:39:24,000 --> 00:39:31,000

Nine, ten, eleven, twelve,

651

00:39:37,000 --> 00:39:40,000

sixty, seventeen.

652

00:39:43,000 --> 00:39:45,000

Okay, that's 20.

653

00:39:46,000 --> 00:39:47,000

Nothing.

654

00:39:49,000 --> 00:39:54,000

I think at that rate, we'll be inside the city walls in two months.

655

00:39:55,000 --> 00:39:57,000

I was watching your finger.

656

00:39:58,000 --> 00:40:00,000

Yeah, nothing. I didn't hear anything on that one.

657

00:40:00,000 --> 00:40:02,000

I was watching her finger.

658

00:40:02,000 --> 00:40:03,000

I did.

659

00:40:03,000 --> 00:40:04,000

You did?

660

00:40:04,000 --> 00:40:05,000

She did.

661

00:40:05,000 --> 00:40:07,000

The only time I couldn't hear it was when your jacket chuffed a little bit.

662

00:40:07,000 --> 00:40:08,000

Really?

663

00:40:08,000 --> 00:40:09,000

Yeah.

664

00:40:09,000 --> 00:40:10,000

Wow.

665

00:40:10,000 --> 00:40:12,000

I had my thumb like this and every time I heard it, I would...

666

00:40:12,000 --> 00:40:13,000

Yeah.

667

00:40:13,000 --> 00:40:14,000

And you were nailing it?

668

00:40:14,000 --> 00:40:15,000

Oh yeah, she was nailing it.

669

00:40:15,000 --> 00:40:16,000

She was nailing it.

670

00:40:16,000 --> 00:40:17,000

I was watching her.

671

00:40:17,000 --> 00:40:18,000

Wow.

672

00:40:18,000 --> 00:40:19,000

That's far.

673

00:40:19,000 --> 00:40:20,000

That is far.

674

00:40:20,000 --> 00:40:24,000

That's farther than test number two by actually a not insignificant distance.

675

00:40:24,000 --> 00:40:26,000

I can't believe we heard it.

676

00:40:26,000 --> 00:40:27,000

I mean, that's amazing.

677

00:40:27,000 --> 00:40:32,000

No army's going to tunnel 100 feet down before they start coming towards the city wall.

678

00:40:32,000 --> 00:40:37,000

So I'm thinking this scenario is a lot more likely that they'd just be that far out,

679

00:40:37,000 --> 00:40:39,000

but that's really far to hear it.

680

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

Nice experiment.

681

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

Nice design.

682

00:40:41,000 --> 00:40:42,000

Good rig.

683

00:40:42,000 --> 00:40:43,000

I'm just blown away.

684

00:40:43,000 --> 00:40:48,500

It's been a long day at the coal phase and the besieging army resurfaces to learn its

685

00:40:48,500 --> 00:40:49,500

fate.

686

00:40:49,500 --> 00:40:52,000

Well, what'd you guys find?

687

00:40:52,000 --> 00:40:56,000

We totally, totally heard it.

688

00:40:56,000 --> 00:40:57,000

It worked.

689

00:40:57,000 --> 00:40:58,000

Absolutely.

690

00:40:58,000 --> 00:41:02,000

It worked from there and it worked from position one and it worked from position three.

691

00:41:02,000 --> 00:41:04,000

It did not work from position two.

692

00:41:04,000 --> 00:41:10,920

Second location was a softer strata on the number one and the number three.

693

00:41:10,920 --> 00:41:15,920

We had good hard quarts and we could get a good throw at it.

694

00:41:15,920 --> 00:41:16,920

Yeah.

695

00:41:16,920 --> 00:41:18,920

The other one, I was hitting the roof with soft stuff.

696

00:41:18,920 --> 00:41:21,920

When you were hitting the quarts on that first test, Carrie heard it crystal clear.

697

00:41:21,920 --> 00:41:22,920

That is cool.

698

00:41:22,920 --> 00:41:23,920

Isn't that amazing?

699

00:41:23,920 --> 00:41:24,920

Yeah.

700

00:41:24,920 --> 00:41:26,800

I thought this thing would pick up anything.

701

00:41:26,800 --> 00:41:33,580

I couldn't hear a good thing, but Carrie's up here with a cone and Grant is counting off

702

00:41:33,580 --> 00:41:37,920

the hits and Carrie's not looking at him and she's matching him perfectly.

703

00:41:37,920 --> 00:41:38,920

It was beautiful.

704

00:41:38,920 --> 00:41:41,920

A lot of it when a plan comes together.

705

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

Now the crazy thing is, we couldn't necessarily detect it on all of the equipment when we

706

00:41:47,920 --> 00:41:48,920

first did it.

707

00:41:48,920 --> 00:41:52,920

That this was so the drone was sensitive than the equipment that we bought.

708

00:41:52,920 --> 00:41:59,920

I got a little bit on the G-A-Bone, but the really expensive audio frequency mic didn't

709

00:41:59,920 --> 00:42:00,920

get anything.

710

00:42:00,920 --> 00:42:04,420

In a strange way, it makes sense because it's such a large surface area.

711

00:42:04,420 --> 00:42:10,180

So a small instrument, however sophisticated, might not work quite as well as just a great

712

00:42:10,180 --> 00:42:12,920

big diaphragm that is there receiving the sound waves.

713

00:42:12,920 --> 00:42:15,420

Well, are you guys ready to fill in a hole?

714

00:42:15,420 --> 00:42:16,420

Oh, man.

715

00:42:16,420 --> 00:42:18,420

I've been waiting for that all day.

716

00:42:18,420 --> 00:42:20,420

This should take us about...

717

00:42:20,420 --> 00:42:22,420

Jamie and I are going to see you back at the shop.

718

00:42:22,420 --> 00:42:23,420

You guys have to tell me.

719

00:42:23,420 --> 00:42:24,420

Really?

720

00:42:24,420 --> 00:42:25,420

I'm surprised.

721

00:42:25,420 --> 00:42:26,420

Shocking.

722

00:42:26,420 --> 00:42:30,420

Ladies and gentlemen.

723

00:42:30,420 --> 00:42:45,420

I can't believe that worked.

724

00:42:45,420 --> 00:42:46,920

So what do we think?

725

00:42:46,920 --> 00:42:50,420

Is it busted, plausible, or confirmed?

726

00:42:50,420 --> 00:42:54,660

Well, we know that it was written about in an ancient Chinese text, but we couldn't find

727

00:42:54,660 --> 00:42:57,420

any evidence physically that it ever existed.

728

00:42:57,420 --> 00:43:03,660

Yeah, but it is a fairly complex and esoteric system to write about if it wasn't used at

729

00:43:03,660 --> 00:43:05,420

some point successfully.

730

00:43:05,420 --> 00:43:07,420

So what do we call this, plausible?

731

00:43:07,420 --> 00:43:10,420

I'd say that meets the definition of plausible.

732

00:43:10,420 --> 00:43:11,420

Absolutely plausible.

733

00:43:11,420 --> 00:43:12,420

We agree.

734

00:43:12,420 --> 00:43:13,420

Amazing.