

1

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

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

2

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

Me beauties.

3

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

Sea dogs Adam and Jamie have plundered the seven seas for pirate parable and maritime

4

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

myth.

5

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

I'm so pumped!

6

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

First, do more seamen die from the wooden shrapnel than the actual cannonball.

7

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

Definitely made a lot of shrapnel.

8

00:00:47,000 --> 00:00:52,500

Then, Carrie Grant and Tori have their eye on the story that pirate patches were a night

9

00:00:52,500 --> 00:00:53,500

vision aid.

10

00:00:53,500 --> 00:00:54,500

That was quite funny.

11

00:00:54,500 --> 00:01:00,500

Next, Adam gets dirty and Jamie cleans up. Will Rum remove everyday pirate stains?

12

00:01:00,500 --> 00:01:02,500

The flight of the pirate laundremen.

13

00:01:02,500 --> 00:01:04,500

Okay, I'm ready for battle.

14

00:01:04,500 --> 00:01:10,500

And finally, is it Hollywood hocus pocus or can you slow a high fall with a knife sale?

15

00:01:10,500 --> 00:01:13,500

A nasty, irish, scurvy dog.

16

00:01:17,500 --> 00:01:19,500

Who are the myth musters?

17

00:01:19,500 --> 00:01:20,500

Adam Savage.

18

00:01:20,500 --> 00:01:21,500

Dangerous mind.

19

00:01:21,500 --> 00:01:22,500

Middle-man.

20

00:01:22,500 --> 00:01:24,500

And Jamie Heinemann.

21

00:01:26,500 --> 00:01:30,500

Between them over 30 years special effects experience.

22

00:01:32,500 --> 00:01:34,500

Joining them, Tori Belachie.

23

00:01:34,500 --> 00:01:35,500

I miss you buddy.

24

00:01:35,500 --> 00:01:36,500

Carrie Byron.

25

00:01:36,500 --> 00:01:38,500

Don't try what you're about to see at home.

26

00:01:38,500 --> 00:01:39,500

And Grant Imahara.

27

00:01:39,500 --> 00:01:41,500

I'm pumping as fast as I can.

28

00:01:41,500 --> 00:01:43,500

They don't just tell the myths.

29

00:01:44,500 --> 00:01:46,500

They put them to the test.

30

00:01:52,500 --> 00:01:53,500

The Myth.

31

00:02:05,500 --> 00:02:08,500

Something tells me I know the answer to this one.

32

00:02:08,500 --> 00:02:10,500

What's the myth?

33

00:02:10,500 --> 00:02:11,500

Right.

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00:02:11,500 --> 00:02:16,500

The myth is that in a firefight with some pirates,

35

00:02:16,500 --> 00:02:18,500

in a fuselage of cannonballs,

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00:02:18,500 --> 00:02:22,500

that you would be more in danger of the shrapnel

37

00:02:22,500 --> 00:02:25,500

than the cannonballs themselves.

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00:02:28,500 --> 00:02:30,500

He's speechless.

39

00:02:33,500 --> 00:02:34,500

Army hearties.

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00:02:34,500 --> 00:02:38,500

This myth comes straight from the glory days of pirate privateers.

41

00:02:38,500 --> 00:02:39,500

Morgan.

42

00:02:39,500 --> 00:02:44,500

Skilled, blagged cappins would run down their heavy, treasure-laden prey,

43

00:02:44,500 --> 00:02:47,500

then deliver a mighty broadside.

44

00:02:47,500 --> 00:02:50,500

On the uproar fire.

45

00:02:50,500 --> 00:02:54,500

But is it true the deadly splinters created on impact

46

00:02:54,500 --> 00:02:58,500

cause more deaths than the cannonball itself?

47

00:02:58,500 --> 00:03:01,500

We'll close for the killin' and barter.

48

00:03:01,500 --> 00:03:04,500

And I'll take the look-a-larry from the far yard.

49

00:03:05,500 --> 00:03:07,500

So what's the plan?

50

00:03:07,500 --> 00:03:10,500

Well, last time we tried to find a cannon,

51

00:03:10,500 --> 00:03:13,500

the best we could do was find one that just shot blanks.

52

00:03:13,500 --> 00:03:17,500

This time we need to find one that fires a real cannonball.

53

00:03:17,500 --> 00:03:20,500

And they're not gonna be that easy to find, I don't think.

54

00:03:20,500 --> 00:03:23,500

Now let's put the researches on it.

55

00:03:23,500 --> 00:03:26,500

And in the meantime, I've got some fabulous ideas

56

00:03:26,500 --> 00:03:30,500

for a small-scale air-powered cannon.

57

00:03:34,500 --> 00:03:36,500

Turn your face around.

58

00:03:36,500 --> 00:03:39,500

Now if you'd be unfamiliar with pirateon ways,

59

00:03:39,500 --> 00:03:42,500

listen up and listen close.

60

00:03:42,500 --> 00:03:45,500

It's Pirate Speak Lesson Number One.

61

00:03:45,500 --> 00:03:49,500

A pirate woman is more commonly referred to as a wench.

62

00:03:49,500 --> 00:03:52,500

Adam briefs myth-wench Jess.

63

00:03:52,500 --> 00:03:55,500

If an air cannon is to be substituted for a real cannon,

64

00:03:55,500 --> 00:03:59,500

it still needs to fire a ball at much the same speed.

65

00:03:59,500 --> 00:04:02,500

When I want to end up with this as slow as possible speed,

66

00:04:02,500 --> 00:04:04,500

a cannonball could hit a boat,

67

00:04:04,500 --> 00:04:07,500

cause I don't think we can match the highest possible speed with the air cannon.

68

00:04:07,500 --> 00:04:11,500

So while Jess hits the history books to find out about muzzle velocities,

69

00:04:11,500 --> 00:04:13,500

Jamie tells us more about the plan.

70

00:04:13,500 --> 00:04:16,500

It's time to get started on the miniature air cannon.

71

00:04:16,500 --> 00:04:20,500

This will be a 20-foot-long schedule 40 pipe

72

00:04:20,500 --> 00:04:24,500

with another schedule 40 pipe and a cap on it on the other end.

73

00:04:24,500 --> 00:04:26,500

A valve will go between the two,

74

00:04:26,500 --> 00:04:29,500

and we're just gonna pressure the thing with shop air.

75

00:04:29,500 --> 00:04:32,500

Turn the valve on, out goes the ball into the wood.

76

00:04:32,500 --> 00:04:35,500

This one is going to be firing a 2-inch ball bearing.

77

00:04:35,500 --> 00:04:39,500

Not exactly what you would have had in the oldie times.

78

00:04:39,500 --> 00:04:42,500

They happen to be the easiest thing for us to get a hold of

79

00:04:42,500 --> 00:04:45,500

because people generally don't fire these things these days.

80

00:04:45,500 --> 00:04:48,500

While hotshot Heidemann puts together a target,

81

00:04:48,500 --> 00:04:52,500

old red-beard savage gets down to the finer plumbing.

82

00:04:52,500 --> 00:04:55,500

I just don't want any leaks. I don't like leaks.

83

00:04:55,500 --> 00:04:58,500

MythWench Jess has crunched the numbers.

84

00:04:58,500 --> 00:05:00,500

For a blistering broadside,

85

00:05:00,500 --> 00:05:05,500

a typical pirate cannonball travels at more than 900 feet per second.

86

00:05:05,500 --> 00:05:08,500

That's way out of their little cannons league.

87

00:05:08,500 --> 00:05:12,500

But they think 600 feet per second will be sufficient to splinter the wood

88

00:05:12,500 --> 00:05:15,500

in a meaningful way.

89

00:05:15,500 --> 00:05:18,500

So Adam, what are you looking for from this test?

90

00:05:18,500 --> 00:05:21,500

There are three things we want to get out of this test.

91

00:05:21,500 --> 00:05:25,500

First and foremost is which of the woods is most shrapnel worthy?

92

00:05:25,500 --> 00:05:27,500

We're only going to use one of them for the large-scale test,

93

00:05:27,500 --> 00:05:30,500

and this is the test where we'll determine which one.

94

00:05:30,500 --> 00:05:34,500

Second is, is there a death zone around the point of impact?

95

00:05:34,500 --> 00:05:36,500

Do splinters travel in a specific direction?

96

00:05:36,500 --> 00:05:41,500

And third, do they travel with enough speed to have a seemingly deadly amount of power?

97

00:05:41,500 --> 00:05:43,500

Do they penetrate?

98

00:05:43,500 --> 00:05:48,500

Pirates weren't choosy about most things, including what their ships were made of.

99

00:05:48,500 --> 00:05:51,500

But three woods seem to be the favorites.

100

00:05:51,500 --> 00:05:54,500

We've got pine, we've got white oak, we've got red oak.

101

00:05:54,500 --> 00:05:56,500

Now, these aren't scaled to the ship,

102

00:05:56,500 --> 00:05:58,500

but that's because on the small-scale test,

103

00:05:58,500 --> 00:06:03,500

we just want to look at relative splintering ability of each of these kinds of woods.

104

00:06:03,500 --> 00:06:05,500

Blimey!

105

00:06:05,500 --> 00:06:10,500

It's simple. Fire the two-inch ball bearing into the three different types of wood.

106

00:06:10,500 --> 00:06:15,500

Examine each splinter pattern, and then select the best for the full-scale test.

107

00:06:15,500 --> 00:06:21,500

And of course, the winner will be the wood with the deadliest spray of shrapnel.

108

00:06:21,500 --> 00:06:25,500

First up on the Cannonball Collision Course, pine planking.

109

00:06:25,500 --> 00:06:30,500

In three, two, one.

110

00:06:31,500 --> 00:06:34,500

We're clear.

111

00:06:34,500 --> 00:06:36,500

Oh, the anticipation.

112

00:06:40,500 --> 00:06:42,500

That is cool!

113

00:06:42,500 --> 00:06:44,500

It's a perfect hole.

114

00:06:44,500 --> 00:06:47,500

A perfect hole, but did it splinter?

115

00:06:47,500 --> 00:06:50,500

Oh, look at that!

116

00:06:53,500 --> 00:06:56,500

That is an excellent thing!

117

00:06:56,500 --> 00:06:58,500

That is awesome.

118

00:06:58,500 --> 00:06:59,500

Yeah.

119

00:06:59,500 --> 00:07:01,500

It's just a beautiful result.

120

00:07:01,500 --> 00:07:03,500

Okay, well, let's reset.

121

00:07:03,500 --> 00:07:05,500

With Adam and Jamie up and running,

122

00:07:05,500 --> 00:07:10,500

let's take time out to tackle a tale of tricky pirates and their eye patches.

123

00:07:18,500 --> 00:07:23,500

All right, you guys know the whole stereotypical pirate with the eye patch.

124

00:07:23,500 --> 00:07:25,500

Yeah, you do.

125

00:07:25,500 --> 00:07:29,500

Well, apparently it wasn't to cover up an eye that had been gouged out during battle.

126

00:07:29,500 --> 00:07:32,500

Well, the myth surrounding this one is actually really cool.

127

00:07:32,500 --> 00:07:35,500

I mean, the idea is that both of their eyes are perfectly fine,

128

00:07:35,500 --> 00:07:41,500

but kept one eye covered with an eye patch to keep that eye constantly night vision ready.

129

00:07:41,500 --> 00:07:45,500

So if you had to dip down below deck during the day,

130

00:07:45,500 --> 00:07:49,500

or fight a battle at night after having been inside reading maps.

131

00:07:49,500 --> 00:07:53,500

All right, so we're going to have to figure out a way to test this one.

132

00:07:53,500 --> 00:07:55,500

Aye aye, Captain.

133

00:07:55,500 --> 00:07:57,500

Aye aye.

134

00:07:57,500 --> 00:08:01,500

For all their army hearties and a vastie scurvy dogs,

135

00:08:01,500 --> 00:08:07,500

this myth would suggest pirates were no fools when it came to eyeball anatomy.

136

00:08:08,500 --> 00:08:13,500

According to pirate folklore, by wearing a patch over a perfectly good eye,

137

00:08:13,500 --> 00:08:17,500

a pirate could exit the glare of a ship's deck, shuffle the patch over,

138

00:08:17,500 --> 00:08:19,500

and enter the dark below,

139

00:08:19,500 --> 00:08:24,500

and the welded room below decks to fight a night time battle up top.

140

00:08:24,500 --> 00:08:26,500

We've got the eye patches. That part's easy.

141

00:08:26,500 --> 00:08:29,500

I think now the best thing we can do is go talk to an ophthalmologist

142

00:08:29,500 --> 00:08:32,500

and see if the myth has any merit to it before we start.

143

00:08:32,500 --> 00:08:35,500

Then we can figure out a way to test the night vision,

144

00:08:35,500 --> 00:08:38,500

maybe like a pirate themed obstacle course.

145

00:08:38,500 --> 00:08:41,500

Well, if we're building this obstacle course, we're not going to be able to test it.

146

00:08:41,500 --> 00:08:44,500

So we'll save this one for Jamie and Adam and let them test it out.

147

00:08:44,500 --> 00:08:47,500

We can make them wear pirate outfits. It'd be perfect.

148

00:08:50,500 --> 00:08:53,500

While Tori and Grant begin building an obstacle course,

149

00:08:53,500 --> 00:08:56,500

uniquely designed to test a pirate's night vision,

150

00:08:56,500 --> 00:09:00,500

you guys should maybe just stand back in case this thing falls.

151

00:09:01,500 --> 00:09:03,500

Carrie is off to see an ophthalm...

152

00:09:03,500 --> 00:09:04,500

An ophthalm...

153

00:09:04,500 --> 00:09:06,500

An eye doctor.

154

00:09:06,500 --> 00:09:08,500

To test out our pirate eye patch myth,

155

00:09:08,500 --> 00:09:11,500

I've come to UCSF to their Arthymology department,

156

00:09:11,500 --> 00:09:16,500

so I can see the science behind your eyes adjusting to the light and the dark.

157

00:09:16,500 --> 00:09:21,500

Now, the whole idea of this is that the eye patch isn't because you have only one eye,

158

00:09:21,500 --> 00:09:25,500

but it's supposed to keep night vision in one eye

159

00:09:25,500 --> 00:09:28,500

so that, you know, intruders coming onto your ship,

160

00:09:28,500 --> 00:09:31,500

you can quickly change eyes and still have that night vision

161

00:09:31,500 --> 00:09:33,500

and maybe have an advantage over them.

162

00:09:33,500 --> 00:09:35,500

So that sounds to me like a plausible myth,

163

00:09:35,500 --> 00:09:39,500

and the reason is that if you keep one eye covered with a dark patch,

164

00:09:39,500 --> 00:09:43,500

you can keep the nighttime vision cells from getting exposed to light

165

00:09:43,500 --> 00:09:46,500

and you can keep their sensitivity in darkness.

166

00:09:46,500 --> 00:09:51,500

And that works because the eye has two major sets of cells, cones and rods.

167

00:09:51,500 --> 00:09:58,500

The cone-shaped cells in the retina enable us to see fine detail and color in bright conditions.

168

00:09:58,500 --> 00:10:04,500

And the rod cells, which are super sensitive to low levels of light, help us see in the dark.

169

00:10:04,500 --> 00:10:07,500

But the catch is, after being in the light,

170

00:10:07,500 --> 00:10:12,500

it takes a while for the rod cells to get warmed up for night vision.

171

00:10:12,500 --> 00:10:14,500

So I'm wearing my pirate eye patch.

172

00:10:14,500 --> 00:10:17,500

That means I've got the rods active on that side

173

00:10:17,500 --> 00:10:19,500

and then the cones active on the eye that can see.

174

00:10:19,500 --> 00:10:22,500

That should work. That should be exactly what's happening.

175

00:10:22,500 --> 00:10:28,500

Okay, but this is Mythbusters, where we leave no theory untested.

176

00:10:28,500 --> 00:10:34,500

Basically, Carrie gets an eye patch and allows the covered eye plenty of time to adjust to the dark.

177

00:10:34,500 --> 00:10:39,500

Dr. Duncan then bleaches Carrie's other eye with bright light.

178

00:10:39,500 --> 00:10:42,500

This feels sort of dizzying.

179

00:10:42,500 --> 00:10:45,500

I kind of feel like I'm in that movie, Clop or Gorge.

180

00:10:45,500 --> 00:10:51,500

She then tests to see how long it is before Carrie can see low levels of light again.

181

00:10:51,500 --> 00:10:56,500

For a comparison, the test is repeated with the already dark, adjusted eye.

182

00:10:56,500 --> 00:11:00,500

So here's how you did with the unpatched eye that had all the light.

183

00:11:00,500 --> 00:11:05,500

It took about 25 minutes for you to see the dimmest level of light you could see

184

00:11:05,500 --> 00:11:10,500

or took about 25 minutes for your rods to recover from that bright light.

185

00:11:10,500 --> 00:11:13,500

Now, if we look at the eye that was patched the whole time...

186

00:11:13,500 --> 00:11:15,500

Wow, what a difference.

187

00:11:15,500 --> 00:11:22,500

Exactly. As soon as we turned off the light, you were immediately able to see as dim a level

188

00:11:22,500 --> 00:11:27,500

as you were able to see after about 25-30 minutes in the eye that had been exposed to the bright light.

189

00:11:27,500 --> 00:11:32,500

So the patch allowed you to have good sensitivity of your rods right away after the bright light.

190

00:11:33,500 --> 00:11:37,500

So it looks like Carrie has got the science behind the eye patch myth covered.

191

00:11:37,500 --> 00:11:42,500

And if she can find her way to the door, we can move things along.

192

00:11:42,500 --> 00:11:44,500

I can't see anything still.

193

00:11:45,500 --> 00:11:49,500

Adam and Jamie are testing the theory that in a pirate ship battle,

194

00:11:49,500 --> 00:11:53,500

it's not the directing for the cannonball to fear most,

195

00:11:53,500 --> 00:11:57,500

but the splintering wood caused by the shell piercing the ship.

196

00:11:58,500 --> 00:12:03,500

Our first test with the pine was actually pretty spectacular.

197

00:12:03,500 --> 00:12:06,500

The shrapnel created is quite nasty.

198

00:12:06,500 --> 00:12:12,500

It looks like this whole area would be a bloody mess if you happen to be standing right next to it.

199

00:12:14,500 --> 00:12:19,500

Wow. That is awesome.

200

00:12:20,500 --> 00:12:22,500

The splinter's a plenty,

201

00:12:22,500 --> 00:12:28,500

as it achieved the 600 feet per second ball speed required to simulate a genuine cannon.

202

00:12:28,500 --> 00:12:33,500

It's 273 miles per hour. It's slower than I was hoping.

203

00:12:34,500 --> 00:12:37,500

But it's still pretty darn fast for a 20-foot barrel.

204

00:12:38,500 --> 00:12:40,500

So the air cannon isn't quite up to speed,

205

00:12:40,500 --> 00:12:45,500

but at this stage they're just comparing the relative splintering qualities of the wood.

206

00:12:45,500 --> 00:12:51,500

And seeing as they are already achieving an impressive spray of shrapnel, they're going to move on.

207

00:12:51,500 --> 00:12:54,500

Next on the cannonball run, White Oak.

208

00:12:54,500 --> 00:12:57,500

Three, two, one.

209

00:13:04,500 --> 00:13:05,500

Oh.

210

00:13:08,500 --> 00:13:10,500

It looks like a bit of it's missing.

211

00:13:10,500 --> 00:13:13,500

A large chunk of white oak went walkabout,

212

00:13:13,500 --> 00:13:17,500

but the frag pattern on the foam panels is conclusive.

213

00:13:18,500 --> 00:13:20,500

That is brutal.

214

00:13:20,500 --> 00:13:22,500

That is the real deal.

215

00:13:22,500 --> 00:13:26,500

I mean, these things are almost obliterated.

216

00:13:27,500 --> 00:13:31,500

Well, it definitely made a lot of shrapnel, even more than the pine.

217

00:13:31,500 --> 00:13:34,500

Well, yeah, it made less pieces of shrapnel,

218

00:13:34,500 --> 00:13:39,500

but what it did was they were much bigger and looks like a lot more lethal.

219

00:13:40,500 --> 00:13:43,500

I was pulling the tape off of this to reset it, and can you guess?

220

00:13:43,500 --> 00:13:45,500

Some of it's stuck into the wood.

221

00:13:45,500 --> 00:13:47,500

Uh-huh. Right there.

222

00:13:47,500 --> 00:13:51,500

Yeah, they're larger, heavier pieces, and so, you know,

223

00:13:51,500 --> 00:13:55,500

that starts to make me think that this would be possible.

224

00:13:55,500 --> 00:13:59,500

You know, it'd be possible for somebody to be killed with a splinter like that in the right place.

225

00:13:59,500 --> 00:14:00,500

Yeah.

226

00:14:00,500 --> 00:14:04,500

And remembering that we're only at around, what was it?

227

00:14:04,500 --> 00:14:07,500

Yeah, we're at half the speed and half the size of a real cannon.

228

00:14:07,500 --> 00:14:09,500

That is awesome.

229

00:14:11,500 --> 00:14:16,500

So, if the two woods tested so far, White Oak clearly has the deadliest potential.

230

00:14:17,500 --> 00:14:20,500

The final test is Red Oak.

231

00:14:20,500 --> 00:14:24,500

In three, two, one.

232

00:14:27,500 --> 00:14:29,500

I love this.

233

00:14:31,500 --> 00:14:35,500

It's a bullseye every time, and the wood is flying.

234

00:14:37,500 --> 00:14:40,500

Yeah, it's more really, really, really big splinters.

235

00:14:40,500 --> 00:14:44,500

You know, I wasn't so sure about this myth when we started.

236

00:14:44,500 --> 00:14:47,500

I mean, like, what's more lethal than a cannon shot?

237

00:14:47,500 --> 00:14:52,500

But I'm looking at this, and I'm really thinking that there's some meat on the bones of this thing,

238

00:14:52,500 --> 00:14:57,500

that it really actually might be plausible, because these shards of White Oak

239

00:14:57,500 --> 00:15:02,500

were stuck into the plywood and pine boards that were our backstops.

240

00:15:02,500 --> 00:15:07,500

That takes a lot of energy to jam wood into wood like that.

241

00:15:08,500 --> 00:15:14,500

It's been a good day's science, and most self-respecting pirates would head home.

242

00:15:14,500 --> 00:15:17,500

But Adam has little self-respect.

243

00:15:17,500 --> 00:15:20,500

Now, let's fire into something really fun.

244

00:15:20,500 --> 00:15:22,500

What do you have in mind?

245

00:15:22,500 --> 00:15:28,500

Well, we have a big cast ballistic material head of Grant.

246

00:15:28,500 --> 00:15:30,500

Okay.

247

00:15:30,500 --> 00:15:32,500

Pirate Speak Lesson Number Two.

248

00:15:32,500 --> 00:15:37,500

A young likable pirate is affectionately called a scurvy dog.

249

00:15:37,500 --> 00:15:42,500

And Grant, the mythbusters version of a scurvy dog if ever there was one,

250

00:15:42,500 --> 00:15:45,500

has cast his own face in ballistics material.

251

00:15:46,500 --> 00:15:48,500

There's no scientific purpose to this at all.

252

00:15:48,500 --> 00:15:50,500

This is totally just for fun.

253

00:15:50,500 --> 00:15:55,500

We rarely finish with a little time extra, so we might as well use the equipment we've set up.

254

00:15:55,500 --> 00:15:59,500

Grant's face, test number one and only.

255

00:15:59,500 --> 00:16:01,500

Firing in.

256

00:16:01,500 --> 00:16:03,500

Three, two, one.

257

00:16:06,500 --> 00:16:11,500

It was a successful blast, but surprisingly, Grant looks uninjured.

258

00:16:11,500 --> 00:16:13,500

Something happened.

259

00:16:13,500 --> 00:16:15,500

It didn't go through his face.

260

00:16:15,500 --> 00:16:16,500

Are you sure?

261

00:16:16,500 --> 00:16:17,500

I'm positive.

262

00:16:17,500 --> 00:16:19,500

What if the back was head?

263

00:16:19,500 --> 00:16:20,500

There's no exit.

264

00:16:20,500 --> 00:16:22,500

There's no exit wound.

265

00:16:22,500 --> 00:16:24,500

I think it...

266

00:16:25,500 --> 00:16:27,500

I think it hit him.

267

00:16:27,500 --> 00:16:29,500

What's that? It went right through.

268

00:16:29,500 --> 00:16:30,500

No, that's...

269

00:16:30,500 --> 00:16:32,500

That right there.

270

00:16:32,500 --> 00:16:34,500

Wait, let me see.

271

00:16:34,500 --> 00:16:37,500

You think it went all the way through his face?

272

00:16:37,500 --> 00:16:39,500

That's... where else did it go?

273

00:16:39,500 --> 00:16:40,500

It hit the thing.

274

00:16:40,500 --> 00:16:42,500

Oh my God. You're right.

275

00:16:42,500 --> 00:16:43,500

You're totally right.

276

00:16:43,500 --> 00:16:45,500

This thing went all the way through his head.

277

00:16:50,500 --> 00:16:53,500

Oh, that's one of the most wrongly wrong things we've ever done.

278

00:17:00,500 --> 00:17:06,500

Are those eye patches really a clever method of moving from bright light into a dark ship?

279

00:17:06,500 --> 00:17:10,500

After a scientific fact-finding mission at the eye doctor,

280

00:17:10,500 --> 00:17:13,500

Carrie's confident this myth is looking good.

281

00:17:13,500 --> 00:17:17,500

I'm starting to feel like we might have a confirmed myth here.

282

00:17:17,500 --> 00:17:22,500

And back at the shop, the team gets set to test the practical applications.

283

00:17:22,500 --> 00:17:25,500

Hoi, matey. I see land ahead.

284

00:17:25,500 --> 00:17:29,500

So they're going to build a pirate ship jungle gym.

285

00:17:29,500 --> 00:17:31,500

We're going to make a cannon.

286

00:17:31,500 --> 00:17:36,500

Then ask eye patch-wearing Adam and Jamie to complete the course in the dark.

287

00:17:36,500 --> 00:17:38,500

Do you want to play rough?

288

00:17:38,500 --> 00:17:39,500

Okay.

289

00:17:39,500 --> 00:17:41,500

That's how I lot to my little friend.

290

00:17:44,500 --> 00:17:47,500

There'll be obstacles to dodge, cannonballs to avoid.

291

00:17:47,500 --> 00:17:48,500

Cannonball!

292

00:17:48,500 --> 00:17:52,500

Just your average day out pillaging and plundering, really.

293

00:17:52,500 --> 00:17:57,500

And what's a pirate story without a fair maiden in distress?

294

00:17:57,500 --> 00:17:59,500

What I'm going to do now is I'm going to take all these pictures,

295

00:17:59,500 --> 00:18:02,500

we're going to put them on the computer, and then we're going to print them out life-size.

296

00:18:02,500 --> 00:18:06,500

And I'm going to make these pop-ups that Grant is going to automatically control

297

00:18:06,500 --> 00:18:11,500

so that when they come by, if it's a bad pirate, they stab.

298

00:18:11,500 --> 00:18:14,500

And if it's the girl they're trying to rescue, they stab.

299

00:18:14,500 --> 00:18:17,500

They don't stab me. I'm the good one.

300

00:18:17,500 --> 00:18:21,500

So it's life-size pirate pop-ups on the poop deck.

301

00:18:21,500 --> 00:18:26,500

But any pirate worth his salt won't be satisfied with a good night's work

302

00:18:26,500 --> 00:18:28,500

until he's found the treasure chest.

303

00:18:28,500 --> 00:18:31,500

And what goes inside the chest, Carrie?

304

00:18:31,500 --> 00:18:34,500

Booty goes inside it!

305

00:18:34,500 --> 00:18:36,500

Carrie has secured her booty,

306

00:18:36,500 --> 00:18:39,500

her pneumatic pirates are ready to pop up,

307

00:18:39,500 --> 00:18:40,500

and the ship is in shape.

308

00:18:40,500 --> 00:18:42,500

So how about a demo?

309

00:18:42,500 --> 00:18:46,500

But remember, Adam and Jamie will have to do it in the dark.

310

00:18:47,500 --> 00:18:48,500

First pirate.

311

00:18:48,500 --> 00:18:50,500

That is the evil Grant pirate?

312

00:18:50,500 --> 00:18:55,500

This is evil Grant, and he's going to have to stab this one through the heart.

313

00:18:55,500 --> 00:18:58,500

And hopefully, not walk into that, walk under it.

314

00:18:58,500 --> 00:18:59,500

Okay, T-Coy.

315

00:18:59,500 --> 00:19:02,500

Then pops up the fair maiden that they do not stab.

316

00:19:02,500 --> 00:19:04,500

No stabbing of the maiden.

317

00:19:05,500 --> 00:19:07,500

Oh, that's brutal!

318

00:19:12,500 --> 00:19:14,500

Oh my God, that's going to be nuts!

319

00:19:14,500 --> 00:19:16,500

Okay, avoiding the cannon.

320

00:19:17,500 --> 00:19:19,500

Not knocking over the cannonballs.

321

00:19:19,500 --> 00:19:21,500

Pop up evil Tory pirates.

322

00:19:21,500 --> 00:19:23,500

Which they'll have to run through the heart.

323

00:19:23,500 --> 00:19:28,500

And after all that, they get to raid the treasure chest and raise the Jolly Roger.

324

00:19:28,500 --> 00:19:29,500

Hoist the flag.

325

00:19:29,500 --> 00:19:31,500

And just when they think they're done...

326

00:19:34,500 --> 00:19:35,500

They're caught!

327

00:19:35,500 --> 00:19:38,500

All they need now are the victims.

328

00:19:40,500 --> 00:19:45,500

It's time to sit back with a bottle of grog for a laundry legend.

329

00:19:45,500 --> 00:19:47,500

So guys, what's the myth?

330

00:19:47,500 --> 00:19:55,500

The myth is that in ye olde times, pirates used rum not only for inspiration, but also as a stain remover.

331

00:19:55,500 --> 00:20:04,500

Well, pirates don't strike me as the most fastidious lot, but I suppose if you had blood all over your shirt and then you had shore leave, you'd want to wash it off first.

332

00:20:04,500 --> 00:20:06,500

Because especially if you had a date.

333

00:20:07,500 --> 00:20:09,500

Pirates had dates?

334

00:20:11,500 --> 00:20:15,500

Pirates and rum go together like cannons and balls.

335

00:20:15,500 --> 00:20:22,500

But is it possible that they don't just drink grog, but use it to get those puffy pirate shirts wider than white?

336

00:20:23,500 --> 00:20:30,500

Well, obviously we're going to need some authentic pirate shirt material and we're going to need to stain it with some period accurate stains.

337

00:20:31,500 --> 00:20:32,500

Blood, sweat and tar.

338

00:20:32,500 --> 00:20:33,500

Perfect.

339

00:20:33,500 --> 00:20:36,500

We're also obviously going to need some sort of ye olde rum.

340

00:20:36,500 --> 00:20:39,500

Right, and I think we should have something to compare that to.

341

00:20:39,500 --> 00:20:42,500

So I think we should use some ye olde soap as well.

342

00:20:42,500 --> 00:20:50,500

I have a secret method that the pirates may have used as a laundry technique and we should compare all three of those to some modern detergent.

343

00:20:50,500 --> 00:20:51,500

So I'll do the staining.

344

00:20:52,500 --> 00:20:53,500

Well, I'll do the cleaning then.

345

00:20:54,500 --> 00:20:56,500

And I guess that leaves me to judge.

346

00:20:56,500 --> 00:20:57,500

Exactly.

347

00:20:57,500 --> 00:21:00,500

So it's time for Adam to get down and dirty.

348

00:21:01,500 --> 00:21:05,500

The plan for this test is to choose three most common stains that pirates would encounter.

349

00:21:05,500 --> 00:21:07,500

One would be of course blood.

350

00:21:07,500 --> 00:21:10,500

Another would be, of course, sweat.

351

00:21:10,500 --> 00:21:12,500

Pirates were not known for their bathing.

352

00:21:12,500 --> 00:21:17,500

And the third would be something you'd find on the ship, which would be pitch or tar.

353

00:21:17,500 --> 00:21:21,500

I'm going to make up some one foot square samples of this cloth.

354

00:21:21,500 --> 00:21:28,500

We're going to put those various stains on it and try and see whether or not Rome will actually take those stains out.

355

00:21:29,500 --> 00:21:33,500

The first authentic pirate stain is blood.

356

00:21:33,500 --> 00:21:35,500

And Adam knows just where to find some.

357

00:21:36,500 --> 00:21:39,500

We have it in the fridge because Jamie likes to have it every day for lunch.

358

00:21:41,500 --> 00:21:42,500

No.

359

00:21:44,500 --> 00:21:47,500

Has anyone taken my blood out of the fridge?

360

00:21:51,500 --> 00:21:56,500

Next, Adam takes Jamie's lunch and smears the pig's blood over four sample sheets.

361

00:21:59,500 --> 00:22:03,500

This is the plight of the pirate laundromat.

362

00:22:06,500 --> 00:22:09,500

Next up for our pirate shirts is pitch.

363

00:22:09,500 --> 00:22:13,500

Now blood and sweat are easy choices when it comes to pirate stain.

364

00:22:13,500 --> 00:22:19,500

We wanted to choose something like grime and we know that pitch was used on pirate boats and period boats at the time.

365

00:22:19,500 --> 00:22:23,500

We've used it on plenty of other episodes and it's very dirty stuff.

366

00:22:23,500 --> 00:22:26,500

So that's what we're going to put on our pirate shirts next.

367

00:22:28,500 --> 00:22:30,500

We have one stain to go.

368

00:22:30,500 --> 00:22:32,500

And I'm going to have to work for this one.

369

00:22:32,500 --> 00:22:36,500

Yep. Adam has a plan to sweat for science.

370

00:22:36,500 --> 00:22:38,500

I'm going to do three things.

371

00:22:38,500 --> 00:22:42,500

I'm going to get on Jamie's treadmill in my sweat lodge, formerly his mold room.

372

00:22:42,500 --> 00:22:47,500

And I'm going to put on the sweatiest of the sweaty things we have, which is our fire suit.

373

00:22:47,500 --> 00:22:49,500

That thing is damn hot inside.

374

00:22:49,500 --> 00:22:54,500

I should have no problem producing lots of the correct bodily fluid for this test.

375

00:22:54,500 --> 00:23:01,500

To harvest the bodily fluids, Adam arranges the shirt material for maximum moisture absorption.

376

00:23:01,500 --> 00:23:03,500

It's go time.

377

00:23:03,500 --> 00:23:07,500

Adam leaps onto the treadmill ready to stain up.

378

00:23:07,500 --> 00:23:15,500

But after 15 seconds on his very own wheel of death, he's gasping like an asthmatic hamster.

379

00:23:15,500 --> 00:23:18,500

That says it only burned 20 calories.

380

00:23:18,500 --> 00:23:20,500

What is that about?

381

00:23:20,500 --> 00:23:23,500

Why don't we fast forward to the end of the workout?

382

00:23:23,500 --> 00:23:27,500

After all, he wants to watch a grown man who's sweat stains.

383

00:23:28,500 --> 00:23:31,500

Now we've got three kinds of stains here.

384

00:23:31,500 --> 00:23:37,500

We've got blood, pitch and sweat.

385

00:23:37,500 --> 00:23:42,500

Or as pirates like to refer to it, Saturday night.

386

00:23:42,500 --> 00:23:46,500

There we go.

387

00:23:46,500 --> 00:23:48,500

But there's a problem.

388

00:23:48,500 --> 00:23:52,500

Adam's sweat doesn't stink or stain.

389

00:23:52,500 --> 00:23:54,500

My sweat stain isn't working out.

390

00:23:54,500 --> 00:23:58,500

It's not very visual and I guess it's all my clean livin'.

391

00:23:58,500 --> 00:24:01,500

I can't smell the thing at all.

392

00:24:01,500 --> 00:24:06,500

But I need a third stain to round out common pirate stains so I can try out these detergents.

393

00:24:06,500 --> 00:24:07,500

And I'm thinking oranges.

394

00:24:07,500 --> 00:24:12,500

They kept these on the ships to prevent scurvy and I guess for some kind of entertainment.

395

00:24:12,500 --> 00:24:17,500

So I'm just going to blow these down and scrunch them on some of this cloth.

396

00:24:17,500 --> 00:24:23,500

And we'll see if the detergents and our various tests will take this stain out.

397

00:24:25,500 --> 00:24:30,500

Carrie Grant and Tori have set sail on the eye patch myth.

398

00:24:30,500 --> 00:24:34,500

And they're ready to press gang Adam and Jamie into service.

399

00:24:34,500 --> 00:24:36,500

I lost these scurvy dogs!

400

00:24:36,500 --> 00:24:42,500

After Adam and Jamie have dressed for the occasion, the scurvy dogs give out their instructions.

401

00:24:42,500 --> 00:24:44,500

Okay, well you've got to wait out here 15 minutes.

402

00:24:44,500 --> 00:24:47,500

I know your eyes are relatively adjusted to the light.

403

00:24:47,500 --> 00:24:52,500

We just want to make sure that you're totally in daylight right now.

404

00:24:53,500 --> 00:24:55,500

Preferably stare at the clouds or something white.

405

00:24:55,500 --> 00:25:00,500

I know it's tough but it's the closest we can get to bleaching the rods.

406

00:25:00,500 --> 00:25:08,500

So while Grant, Carrie and Tori prepare the course, our newly minted pirates hang tough, letting their eyes adjust.

407

00:25:08,500 --> 00:25:15,500

I predict that I'll be dancing on Jamie's intestines in minutes!

408

00:25:16,500 --> 00:25:20,500

Before the intestine dancing begins,

409

00:25:20,500 --> 00:25:25,500

Pirate's Carrie and her translator Grant the Parrot have the rules.

410

00:25:25,500 --> 00:25:30,500

Now listen ye scallywags and listen well for you will only hear this but one time.

411

00:25:30,500 --> 00:25:33,500

Send only the evil pirates down to Davy Jones' locker.

412

00:25:33,500 --> 00:25:38,500

The evil pirates will have a target in the middle. You have to run it through with your cutlass.

413

00:25:38,500 --> 00:25:40,500

Don't harm the maiden.

414

00:25:40,500 --> 00:25:42,500

Don't harm the maiden.

415

00:25:42,500 --> 00:25:44,500

Don't knock over the cannonballs.

416

00:25:44,500 --> 00:25:48,500

Find the pirate chest, unlock it and hoist the Jolly Roger.

417

00:25:48,500 --> 00:25:53,500

There's going to be a treasure chest at the end on the ground with this lock.

418

00:25:53,500 --> 00:25:56,500

You unlock it with your key.

419

00:25:56,500 --> 00:25:58,500

Which each of you will get right now?

420

00:25:58,500 --> 00:26:02,500

Okay, inside of the chest is going to be this flag.

421

00:26:02,500 --> 00:26:04,500

Tie the flag on, place it up to the top.

422

00:26:04,500 --> 00:26:06,500

Right, let's go!

423

00:26:06,500 --> 00:26:10,500

The first seafarer aboard is Redbeard the Savage.

424

00:26:10,500 --> 00:26:15,500

He needs to instantly see in the dark with an eye that's been subjected to bright light

425

00:26:15,500 --> 00:26:18,500

while his dark adjusted eye remains patched.

426

00:26:18,500 --> 00:26:21,500

Alright, let's go get him!

427

00:26:21,500 --> 00:26:25,500

I can't see a bloody thing.

428

00:26:25,500 --> 00:26:28,500

Alright, now we release the pit bulls.

429

00:26:28,500 --> 00:26:31,500

Look at him, he looks like a blind pirate.

430

00:26:31,500 --> 00:26:33,500

Holy \*\*\*\*!

431

00:26:33,500 --> 00:26:37,500

By design it's a red-beard-like,

432

00:26:37,500 --> 00:26:41,500

by design it's pitch black in there.

433

00:26:41,500 --> 00:26:44,500

The light you can see on camera is infrared.

434

00:26:44,500 --> 00:26:48,500

To Adam it's as dark as the inside of a grog barrel.

435

00:26:48,500 --> 00:26:51,500

He seems very disoriented at the moment.

436

00:26:51,500 --> 00:26:56,500

Right from the get-go it's pretty obvious that Redbeard is having trouble finding his sea legs.

437

00:26:56,500 --> 00:27:00,500

When you go from bright light into the dark, you're as blind as a bat.

438

00:27:00,500 --> 00:27:02,500

Oh, he's going to hit his head!

439

00:27:02,500 --> 00:27:05,500

Oh, he's climbing over the sails of the sea.

440

00:27:05,500 --> 00:27:07,500

He's going the wrong way.

441

00:27:07,500 --> 00:27:09,500

The hardest possible route to take.

442

00:27:09,500 --> 00:27:11,500

Okay, he's coming up to carry.

443

00:27:11,500 --> 00:27:14,500

I looked at this guy.

444

00:27:14,500 --> 00:27:18,500

He's just getting with the bat.

445

00:27:18,500 --> 00:27:23,500

Adam has missed the first evil pirate and kicked some cannonballs.

446

00:27:23,500 --> 00:27:25,500

But when confronted by Evil Tori...

447

00:27:25,500 --> 00:27:27,500

Sword is a key.

448

00:27:31,500 --> 00:27:34,500

He can't decide who it is until he has a quick feel.

449

00:27:34,500 --> 00:27:37,500

There he goes!

450

00:27:37,500 --> 00:27:39,500

Good one!

451

00:27:39,500 --> 00:27:41,500

He killed one.

452

00:27:41,500 --> 00:27:46,500

After a fun-filled four minutes, Adam's eye is starting to adjust to the dark.

453

00:27:46,500 --> 00:27:49,500

He now knows his part from Starboard.

454

00:27:49,500 --> 00:27:51,500

Okay, he's opened the chest.

455

00:27:51,500 --> 00:27:52,500

Nice.

456

00:27:52,500 --> 00:27:55,500

Get the flag, turn around.

457

00:27:55,500 --> 00:27:58,500

And the final task is noticeably easier.

458

00:27:58,500 --> 00:28:01,500

Wait, there we go.

459

00:28:02,500 --> 00:28:05,500

Heist in the Jolly Roger Denon!

460

00:28:05,500 --> 00:28:07,500

Ah!

461

00:28:07,500 --> 00:28:11,500

Well, the net missed, but that was quite funny.

462

00:28:11,500 --> 00:28:15,500

Adam narrowly escapes capture and makes a quick exit overboard.

463

00:28:15,500 --> 00:28:17,500

Hey!

464

00:28:17,500 --> 00:28:19,500

Nice work!

465

00:28:19,500 --> 00:28:20,500

Well done!

466

00:28:20,500 --> 00:28:21,500

You look great.

467

00:28:21,500 --> 00:28:22,500

That was fantastic.

468

00:28:22,500 --> 00:28:23,500

You guys got to watch it?

469

00:28:23,500 --> 00:28:24,500

Yeah.

470

00:28:24,500 --> 00:28:26,500

I missed a pirate or two, didn't I?

471

00:28:26,500 --> 00:28:29,500

Yeah, you missed the one pirate in the beginning.

472

00:28:29,500 --> 00:28:30,500

I could not see it.

473

00:28:30,500 --> 00:28:32,500

I mean, literally, it's just black.

474

00:28:32,500 --> 00:28:35,500

I came across this thing that had a piece of paper in the middle.

475

00:28:35,500 --> 00:28:36,500

I figured that was a pirate.

476

00:28:36,500 --> 00:28:37,500

Yeah.

477

00:28:37,500 --> 00:28:42,500

Subjectively, Adam was in the dark, but Carrie was in the crow's nest keeping time.

478

00:28:42,500 --> 00:28:45,500

So, let's get the official results.

479

00:28:45,500 --> 00:28:47,500

I'm very, very impressed.

480

00:28:47,500 --> 00:28:51,500

He made it through all of that darkness of the obstacle course in five minutes and twenty seconds.

481

00:28:51,500 --> 00:28:53,500

He only got two time penalties.

482

00:28:53,500 --> 00:28:56,500

One, he didn't stick the first pirate,

483

00:28:56,500 --> 00:28:59,500

and two, he knocked over one of the cannon balls.

484

00:28:59,500 --> 00:29:03,500

So, in the end, five minutes, forty seconds, Adam's first test.

485

00:29:03,500 --> 00:29:07,500

Okay, it's time for Cap and Heinemann to board the ship,

486

00:29:07,500 --> 00:29:11,500

find the treasure chest, and hoist the Jolly Roger.

487

00:29:11,500 --> 00:29:15,500

And just like Redbeer, he's completely in the dark.

488

00:29:15,500 --> 00:29:17,500

They really are super blind.

489

00:29:17,500 --> 00:29:20,500

They really can't see anything.

490

00:29:20,500 --> 00:29:23,500

Oh, he's totally disoriented.

491

00:29:23,500 --> 00:29:24,500

Maybe?

492

00:29:24,500 --> 00:29:26,500

Maybe he'll steer the ship.

493

00:29:26,500 --> 00:29:31,500

It's taken a while, but Jamie finally raises the pirate stand.

494

00:29:31,500 --> 00:29:35,500

Caught with the net!

495

00:29:35,500 --> 00:29:42,500

The big question now is what difference will it make when our myth-busting pirates switch eyes?

496

00:29:42,500 --> 00:29:44,500

Yeah!

497

00:29:46,500 --> 00:29:51,500

Adam has been shedding blood, juggling oranges, and painting with pitch

498

00:29:51,500 --> 00:29:56,500

to attempt to solve the myth that pirates used rum as a stain remover.

499

00:29:56,500 --> 00:30:00,500

The flight of the pirate laundromat.

500

00:30:00,500 --> 00:30:08,500

But before the cleanup with Grog, Adam is looking into his alternative maritime method of doing the laundry.

501

00:30:08,500 --> 00:30:13,500

I remember hearing years ago that on ye olde ships,

502

00:30:13,500 --> 00:30:21,500

they would save the pirate's urine, or the shipmate's urine, in a barrel.

503

00:30:21,500 --> 00:30:27,500

And when urine stays around and is exposed to the air, it evaporates into ammonia,

504

00:30:27,500 --> 00:30:31,500

and that ammonia is then used for washing everyone's laundry.

505

00:30:31,500 --> 00:30:38,500

It sounds improbable, but after a quick research break, Adam confirms the story and the details.

506

00:30:38,500 --> 00:30:40,500

A history of washing website.

507

00:30:40,500 --> 00:30:42,500

I love the web.

508

00:30:42,500 --> 00:30:48,500

The key factoid here is that over time, the urea in urine will break down to ammonia,

509

00:30:48,500 --> 00:30:53,500

and ammonia is a common alkaline used in household cleaning products.

510

00:30:53,500 --> 00:30:58,500

So Adam is ready to cook up an authentic recipe for washing with whee.

511

00:30:58,500 --> 00:31:17,500

What I am trying to do here is reduce some urine or whee whee to a more raw essence of a whee whee.

512

00:31:17,500 --> 00:31:24,500

The recipe for using urine as a cleaning agent like the pirates might have, calls for stale urine.

513

00:31:24,500 --> 00:31:29,500

I do not have a stale urine, but I have a hot plate.

514

00:31:29,500 --> 00:31:39,500

So I heat it for a while, boil the water out, I get more stale urine, or whee whee.

515

00:31:39,500 --> 00:31:48,500

Notice that it is a much darker color, and this time I have only 300 milliliters.

516

00:31:48,500 --> 00:31:56,500

I have reduced it by half, removing mostly water, leaving the essential chemicals for washing.

517

00:31:56,500 --> 00:31:59,500

And for the washing, it's time to tag team Jamie.

518

00:31:59,500 --> 00:32:06,500

I've got three ye olde cleaners and one modern cleaner to try out on each of these sets of samples.

519

00:32:06,500 --> 00:32:10,500

I've got ye olde soap, made in the way ye olde soap was made.

520

00:32:10,500 --> 00:32:15,500

I've got ye olde rum, which is the crux of our myth that they used rum as a cleaning agent.

521

00:32:15,500 --> 00:32:24,500

I have some stale whee, which is broken down mostly to ammonia, which was also used as a bleaching agent on pirate ships.

522

00:32:24,500 --> 00:32:26,500

And I have modern detergent.

523

00:32:26,500 --> 00:32:32,500

Your task is to try each one of these out on all three of these samples.

524

00:32:35,500 --> 00:32:38,500

I'm glad we're near the ventilation booth.

525

00:32:39,500 --> 00:32:45,500

To fortify himself for the job, Cap and Heidemann has a swig of grog and puts on the rubber gloves.

526

00:32:45,500 --> 00:32:48,500

Okay, first off is the pee.

527

00:32:48,500 --> 00:32:51,500

He then goes to work on the blood stain.

528

00:32:51,500 --> 00:32:57,500

Blood stain is pretty tough for any kind of detergent, even modern ones, and especially once it's set.

529

00:32:57,500 --> 00:33:03,500

If you had done this one, the blood was fresh.

530

00:33:03,500 --> 00:33:05,500

It might be a lot different.

531

00:33:05,500 --> 00:33:14,500

So far it is acting clearly as a solvent for the stain because it's spreading it out, but it's not removing it.

532

00:33:14,500 --> 00:33:20,500

Next, Jamie uses the urine to tackle the tar and citrustanes.

533

00:33:20,500 --> 00:33:30,500

He then repeats the process with the authentic 17th century soap, modern detergent containing the powerful stain remover, hydrogen peroxide.

534

00:33:30,500 --> 00:33:33,500

And last, but not least, the rum.

535

00:33:33,500 --> 00:33:38,500

But straight away, Jamie spotted a fundamental flaw in the myth.

536

00:33:38,500 --> 00:33:44,500

I would think that any self-respecting pirate would rather drink it than use it to clean a stain out.

537

00:33:44,500 --> 00:33:49,500

So that's all three stains scrubbed with all four cleaning products.

538

00:33:49,500 --> 00:33:55,500

And it's soon apparent that the only thing coming out in the wash is a negative conclusion to this myth.

539

00:33:55,500 --> 00:34:01,500

It seems the solvent and stain-removing properties of the alcoholic rum are limited.

540

00:34:01,500 --> 00:34:10,500

If you're red and carry, we have washed each of these four piles, one in rum, one in ye olde soap, one in stale urine, and one in modern detergent.

541

00:34:10,500 --> 00:34:15,500

And you're to look at all four of these and tell me which one you think got the cleanest, which one's the second cleanest, etc.

542

00:34:15,500 --> 00:34:20,500

Okay, light red. That one's pretty good. A little yellowish. That looks bad.

543

00:34:20,500 --> 00:34:22,500

Nobody got the tar out.

544

00:34:22,500 --> 00:34:26,500

That's this is redder. The tar's a little better.

545

00:34:26,500 --> 00:34:32,500

Okay, tar. The tar is bad on that one, but blood's really good on that one.

546

00:34:32,500 --> 00:34:36,500

And, okay, whatever this one is, is the worst.

547

00:34:36,500 --> 00:34:45,500

Okay, I would say that this one's the best for blood. That one's the best for tar.

548

00:34:45,500 --> 00:34:51,500

All right, so the worst one was ye olde rum.

549

00:34:51,500 --> 00:34:53,500

Oh, busted.

550

00:34:53,500 --> 00:34:57,500

Your best one for blood was stale urine.

551

00:34:57,500 --> 00:35:01,500

And the best one for the tar was detergent, the modern detergent.

552

00:35:01,500 --> 00:35:04,500

Yeah, those are the two best that soap didn't really work well at all.

553

00:35:04,500 --> 00:35:09,500

Well, I think that pretty much definitively busts this rum as a cleaning agent. Totally busted.

554

00:35:09,500 --> 00:35:10,500

Yeah, it's busted.

555

00:35:10,500 --> 00:35:12,500

I agree, busted.

556

00:35:13,500 --> 00:35:23,500

Adam and Jamie have completed the pirate jungle gym with their unpatched eyes.

557

00:35:23,500 --> 00:35:29,500

With hilarious flailing in the dark results.

558

00:35:29,500 --> 00:35:38,500

Now to the heart of the myth, will the candy use of an eye patch and an already dark, adjusted eye give our amateur pirates an advantage?

559

00:35:38,500 --> 00:35:40,500

They're about to find out.

560

00:35:40,500 --> 00:35:43,500

Jamie and Adam are sitting outside. They have the patches on.

561

00:35:43,500 --> 00:35:45,500

So their eyes are adjusted to the dark.

562

00:35:45,500 --> 00:35:50,500

They're going to come in, switch the patch to the other eye, and then go through the course.

563

00:35:50,500 --> 00:35:57,500

To prevent Adam and Jamie clocking a faster time because of familiarity with the course, the obstacles have been switched about.

564

00:35:57,500 --> 00:35:59,500

Adam's excited.

565

00:35:59,500 --> 00:36:06,500

I'm so pumped. I can't wait to switch this eye patch. Yeah.

566

00:36:06,500 --> 00:36:13,500

The myth suggests Adam should do this test a lot quicker than his five minutes of fumbling and stumbling with his light exposed eyes.

567

00:36:13,500 --> 00:36:15,500

He swaps the patch.

568

00:36:15,500 --> 00:36:20,500

Now the eye adjusted to dark is uncovered and in he goes.

569

00:36:20,500 --> 00:36:22,500

Good night and dead.

570

00:36:22,500 --> 00:36:25,500

At its immediately obvious, the switch has worked.

571

00:36:25,500 --> 00:36:27,500

Wait, is that a pirate?

572

00:36:27,500 --> 00:36:29,500

Wait, is that a pirate?

573

00:36:29,500 --> 00:36:31,500

Oh, it's a lie.

574

00:36:31,500 --> 00:36:33,500

Yeah.

575

00:36:34,500 --> 00:36:41,500

Before the team in the crow's nest can say, walk the plank you landlubber, red beard is almost done.

576

00:36:41,500 --> 00:36:44,500

Looking at one minute, 12 seconds.

577

00:36:44,500 --> 00:36:47,500

He's already killed his time.

578

00:36:47,500 --> 00:36:49,500

There's my jolly Roger.

579

00:36:49,500 --> 00:36:51,500

Here's my flag.

580

00:36:51,500 --> 00:36:55,500

Oh my God. I can't believe the difference.

581

00:36:55,500 --> 00:36:58,500

And there we go.

582

00:36:58,500 --> 00:37:00,500

Oh, the net fell over me.

583

00:37:00,500 --> 00:37:02,500

Oh.

584

00:37:02,500 --> 00:37:05,500

That was like a night and dead.

585

00:37:05,500 --> 00:37:07,500

That was incredible.

586

00:37:07,500 --> 00:37:09,500

The difference. Is it unbelievable?

587

00:37:09,500 --> 00:37:13,500

The difference is amazing. I really didn't expect, I can't see.

588

00:37:13,500 --> 00:37:16,500

I really didn't expect the difference to be as great as it was.

589

00:37:16,500 --> 00:37:21,500

But I mean, whereas before, it was just like reaching out in blackness.

590

00:37:21,500 --> 00:37:25,500

The first time, the second time, it was like, oh, there's a part. There's a part. There's a part.

591

00:37:26,500 --> 00:37:32,500

And the reason Adam found it so easy, he'd been wearing the patch for over a half an hour,

592

00:37:32,500 --> 00:37:37,500

and the rod cells in the covered eye were warmed up and ready for nocturnal action.

593

00:37:37,500 --> 00:37:39,500

And the numbers back that up.

594

00:37:39,500 --> 00:37:47,500

He did the course in one minute, 55 seconds, which is actually three minutes and 45 seconds faster

595

00:37:47,500 --> 00:37:50,500

than his first test without the night vision.

596

00:37:50,500 --> 00:37:57,500

So, significant amount of savings in time, and what's more, 100% accuracy.

597

00:37:59,500 --> 00:38:03,500

While Redbeard rests up after a hard night's pillaging,

598

00:38:03,500 --> 00:38:09,500

Cap and Heidemann launches into the fray, swapping his eye patch so he can use his dark, adjusted eye.

599

00:38:09,500 --> 00:38:11,500

How's that?

600

00:38:11,500 --> 00:38:14,500

This is like totally different.

601

00:38:14,500 --> 00:38:20,500

No flailing in the dark this time. He's more than twice as fast and twice as accurate.

602

00:38:23,500 --> 00:38:25,500

That's amazing.

603

00:38:25,500 --> 00:38:29,500

That was, I never would have believed that.

604

00:38:29,500 --> 00:38:34,500

You know, it would have taken me, I guess, a half an hour or something like that,

605

00:38:34,500 --> 00:38:39,500

just sitting there in the dark to get what I just did with switching the patch.

606

00:38:39,500 --> 00:38:41,500

That's excellent. That's just what we wanted to hear.

607

00:38:41,500 --> 00:38:46,500

The myth clearly has bright prospects, but they're going to run it one more time

608

00:38:46,500 --> 00:38:50,500

with their light-adjusted eye, and Carrie has a trick up her sleeve.

609

00:38:50,500 --> 00:38:57,500

We've left the course exactly the same as when they went through it with the adjusted night vision eye.

610

00:38:57,500 --> 00:39:02,500

This way, we can totally empirically prove that if they can get through this course

611

00:39:02,500 --> 00:39:08,500

and it takes them twice the time or any more time than it took them with their adjusted eye,

612

00:39:08,500 --> 00:39:10,500

we've definitely proved this myth.

613

00:39:10,500 --> 00:39:12,500

Go get them, killer.

614

00:39:12,500 --> 00:39:13,500

Ready?

615

00:39:13,500 --> 00:39:14,500

Ready.

616

00:39:14,500 --> 00:39:17,500

Let's pillage!

617

00:39:18,500 --> 00:39:20,500

I don't know if that's legal in California.

618

00:39:21,500 --> 00:39:25,500

Once again, it's obvious that the dark adjustment is a massive advantage,

619

00:39:25,500 --> 00:39:28,500

as Adam struggles to plot a course.

620

00:39:28,500 --> 00:39:31,500

This was truly an excellent control.

621

00:39:31,500 --> 00:39:37,500

I mean, it's difficult to tease the science out of this myth because it's such a subjective thing.

622

00:39:37,500 --> 00:39:42,500

However, I had to say there's nothing subjective about the fact that it was much easier

623

00:39:42,500 --> 00:39:46,500

with the eye that had been covered than with the eye that was exposed to daylight.

624

00:39:46,500 --> 00:39:52,500

And that third test proved it hands down, so that's awesome. We have nailed this one.

625

00:39:52,500 --> 00:39:56,500

Well, I think Jamie and Adam are pretty convinced that the results of the eye patch myth...

626

00:39:56,500 --> 00:39:59,500

Yeah, we ran them once with their eyes adjusted to daylight.

627

00:39:59,500 --> 00:40:01,500

They stumbled around the course like idiots.

628

00:40:01,500 --> 00:40:04,500

And when they had their eyes adjusted for the dark by using the patch,

629

00:40:04,500 --> 00:40:06,500

they were able to breeze through that course.

630

00:40:06,500 --> 00:40:10,500

And as one last final control, we sent them through that obstacle course

631

00:40:10,500 --> 00:40:16,500

one last time with their daylight vision, taking out the variable of them knowing the course,

632

00:40:16,500 --> 00:40:19,500

and they still messed it up just as bad as the first time they went through.

633

00:40:19,500 --> 00:40:22,500

Well, I have to say, this myth is plausible.

634

00:40:22,500 --> 00:40:24,500

I've seen plausible in here.

635

00:40:24,500 --> 00:40:25,500

I remember!

636

00:40:25,500 --> 00:40:26,500

Plazable?

637

00:40:26,500 --> 00:40:27,500

You're right!

638

00:40:27,500 --> 00:40:28,500

Plazable!

639

00:40:37,500 --> 00:40:38,500

Alright.

640

00:40:38,500 --> 00:40:40,500

So this pirate myth comes mostly from Hollywood,

641

00:40:40,500 --> 00:40:42,500

and this is where the pirate is in the crow's nest.

642

00:40:42,500 --> 00:40:44,500

He needs to get down to the deck of the ship.

643

00:40:44,500 --> 00:40:48,500

To get down quickly, he stabs his knife into the sail and rides it down safely.

644

00:40:50,500 --> 00:40:56,500

Douglas Fairbanks, that senior, not junior, demonstrates the perfect swashbuckling technique.

645

00:40:56,500 --> 00:41:00,500

Knife in and down you go in a controlled slide,

646

00:41:00,500 --> 00:41:03,500

landing smoothly on the deck ready to fight the enemy.

647

00:41:03,500 --> 00:41:07,500

Alright, knife sail, let's define the myth.

648

00:41:07,500 --> 00:41:12,500

I think you should ride the sail all the way down to the bottom without falling out.

649

00:41:12,500 --> 00:41:17,500

And once you reach the deck, you should have so little injury that you can jump up and continue fighting.

650

00:41:17,500 --> 00:41:20,500

Alright, so I guess the next step is we go talk to some experts,

651

00:41:20,500 --> 00:41:24,500

find out what kind of knives and what kind of sails that these pirates would have been using.

652

00:41:24,500 --> 00:41:26,500

I think that's a perfect place to start.

653

00:41:26,500 --> 00:41:27,500

Great.

654

00:41:27,500 --> 00:41:28,500

No!

655

00:41:28,500 --> 00:41:29,500

Mutant.

656

00:41:30,500 --> 00:41:34,500

That's the plan, but this myth is in need of nautical knowledge.

657

00:41:34,500 --> 00:41:40,500

And for that, our landlubbers board the remodeled 1880s clipper, the Balclutha.

658

00:41:40,500 --> 00:41:44,500

And Chris Janini is the man at the pointy end of the questions.

659

00:41:44,500 --> 00:41:48,500

Okay, Chris, so the myth that we're looking into right now is like in the pirate movies

660

00:41:48,500 --> 00:41:53,500

where the pirate takes his sword, stabs it into the sail, and then rides it all the way down.

661

00:41:53,500 --> 00:41:54,500

Have you ever seen that?

662

00:41:54,500 --> 00:41:55,500

I think it's possible.

663

00:41:55,500 --> 00:41:59,500

I've heard of that, and hopefully the sailmaker is not at the bottom of that sail

664

00:41:59,500 --> 00:42:02,500

because he wouldn't make it past the deck.

665

00:42:02,500 --> 00:42:06,500

Sailmaker be damned, there's a myth that needs exploring.

666

00:42:06,500 --> 00:42:12,500

It's time to get practical and see how easy it is to slice a sail with a knife.

667

00:42:12,500 --> 00:42:13,500

Snack.

668

00:42:13,500 --> 00:42:14,500

Oh, there we go.

669

00:42:14,500 --> 00:42:15,500

Okay.

670

00:42:15,500 --> 00:42:17,500

Like a hot knife through butter.

671

00:42:17,500 --> 00:42:18,500

But there's a catch.

672

00:42:18,500 --> 00:42:19,500

There's always a catch.

673

00:42:19,500 --> 00:42:20,500

There's always a catch.

674

00:42:20,500 --> 00:42:22,500

See these reef bands?

675

00:42:22,500 --> 00:42:23,500

Yeah.

676

00:42:23,500 --> 00:42:26,500

There's going to be one or two or maybe up to four depending on the sail you're trying

677

00:42:26,500 --> 00:42:27,500

to come down with your knife.

678

00:42:27,500 --> 00:42:28,500

Horizontally.

679

00:42:28,500 --> 00:42:29,500

They're coming down.

680

00:42:29,500 --> 00:42:30,500

This is the top of the sail this way.

681

00:42:30,500 --> 00:42:31,500

Okay.

682

00:42:31,500 --> 00:42:32,500

So you would hit this.

683

00:42:32,500 --> 00:42:35,500

Then you come down and then you have to go through the reef band.

684

00:42:35,500 --> 00:42:36,500

Yeah, you're going to get stuck on the reef band.

685

00:42:36,500 --> 00:42:37,500

You're going to get stuck on that.

686

00:42:37,500 --> 00:42:40,500

And there might be two, there might be four of those.

687

00:42:40,500 --> 00:42:45,500

And you're talking about the thickness of the canvas plus the folded over edge.

688

00:42:45,500 --> 00:42:49,500

So that's, you're going to have a little bit of a bit of a rough edge.

689

00:42:49,500 --> 00:42:52,500

You're going to have twice the thickness, three times the thickness of that canvas.

690

00:42:52,500 --> 00:42:56,500

So now you're talking three pennies thick of canvas.

691

00:42:56,500 --> 00:42:59,500

It's about like thin plywood.

692

00:42:59,500 --> 00:43:01,500

You know, like eighth inch plywood.

693

00:43:01,500 --> 00:43:02,500

It might decelerate you though.

694

00:43:02,500 --> 00:43:03,500

It would slow you down.

695

00:43:03,500 --> 00:43:05,500

But it might break your hand.

696

00:43:05,500 --> 00:43:09,500

If you're coming down that fast and you hit one of these seams, it's going to pop the

697

00:43:09,500 --> 00:43:11,500

knife right out of your hand.

698

00:43:11,500 --> 00:43:15,500

Ah, so sails be more than just a flap of canvas.

699

00:43:15,500 --> 00:43:22,500

Ye olde reef bands make this myth more of a challenge.

700

00:43:22,500 --> 00:43:27,500

Salty sea dogs Adam and Jamie are looking into the myth that the splinters from a cannonball

701

00:43:27,500 --> 00:43:34,500

piercing the ship's hull would cause more deaths than the cannonball itself.

702

00:43:34,500 --> 00:43:35,500

Avast!

703

00:43:35,500 --> 00:43:37,500

What does Avast mean?

704

00:43:37,500 --> 00:43:39,500

Sounds like a cue for...

705

00:43:39,500 --> 00:43:42,500

Pirate's Speak Lesson Number Three.

706

00:43:42,500 --> 00:43:46,500

Avast comes from the Dutch translation of hold fast.

707

00:43:46,500 --> 00:43:50,500

But it can also be used as a greeting as in a vast ye olde sea dog.

708

00:43:50,500 --> 00:43:54,500

Where ye at with this myth?

709

00:43:54,500 --> 00:44:01,500

Tests with a small scale cannonball on authentic pirate ship wood produced spectacular splintering.

710

00:44:01,500 --> 00:44:04,500

With White Oak, the deadliest of all.

711

00:44:04,500 --> 00:44:06,500

So it's on to stage two.

712

00:44:06,500 --> 00:44:13,500

But with the researchers unable to track down a real cannon, the guys scale up their air cannon.

713

00:44:13,500 --> 00:44:16,500

This is a plumber's paradise.

714

00:44:16,500 --> 00:44:22,500

But can a bigger air cannon actually produce the same explosive power as a real cannon?

715

00:44:22,500 --> 00:44:24,500

It's going to expand slower than gunpowder.

716

00:44:24,500 --> 00:44:26,500

There's nothing we can do about that.

717

00:44:26,500 --> 00:44:30,500

But even though those speeds are lower, I still think we're looking at a valid test here.

718

00:44:30,500 --> 00:44:33,500

Because we're looking at the impact of metal and wood.

719

00:44:33,500 --> 00:44:38,500

And we're looking at the relative difference between the lethality of that metal cannonball

720

00:44:38,500 --> 00:44:41,500

and the splinters of wood that come off the impact.

721

00:44:41,500 --> 00:44:45,500

Bigger air, bigger air cannon, bigger cannonball.

722

00:44:45,500 --> 00:44:49,500

This is without a doubt the biggest air cannon I've ever built.

723

00:44:49,500 --> 00:44:54,500

It's nothing but raw, awesome power, safely implemented.

724

00:44:56,500 --> 00:44:59,500

I am satisfied and filthy.

725

00:44:59,500 --> 00:45:01,500

Two of my favorite states.

726

00:45:01,500 --> 00:45:04,500

So let's recap the inventory for this myth.

727

00:45:04,500 --> 00:45:07,500

Six pounders, check.

728

00:45:07,500 --> 00:45:10,500

The Maxi Air Cannon, double check.

729

00:45:10,500 --> 00:45:13,500

Authentic 16th century pirate ship.

730

00:45:13,500 --> 00:45:16,500

Captain, we have a problem.

731

00:45:16,500 --> 00:45:19,500

There's none here.

732

00:45:19,500 --> 00:45:21,500

Or here.

733

00:45:21,500 --> 00:45:23,500

Or even here.

734

00:45:23,500 --> 00:45:28,500

But Adam, being the resourceful chap that he is, has a plan to build his own.

735

00:45:28,500 --> 00:45:31,500

So I've come to Svensson's boat works in the Alameda Marina

736

00:45:31,500 --> 00:45:36,500

because hopefully they have an expert who can tell me about what kind of dimensions they were,

737

00:45:36,500 --> 00:45:39,500

how thick the wood was, how they were constructed.

738

00:45:39,500 --> 00:45:44,500

Adam knows pirate ships have horizontal outer planking,

739

00:45:44,500 --> 00:45:49,500

supported by vertical ribbing or staunchens, and thinner inner planking.

740

00:45:50,500 --> 00:45:53,500

For the correct dimensions of these intricate parts,

741

00:45:53,500 --> 00:45:57,500

he seeks the wise counsel of Master Shipwright John Phillips.

742

00:45:58,500 --> 00:46:01,500

So I'd like to be as accurate as possible with my test,

743

00:46:01,500 --> 00:46:05,500

and I think I'd like to duplicate both the inner and the outer planking.

744

00:46:05,500 --> 00:46:10,500

And so I'd like to get an idea from you what thicknesses of the inner and outer I should be looking at

745

00:46:10,500 --> 00:46:12,500

and also how far apart they are.

746

00:46:12,500 --> 00:46:17,500

Certainly depending upon the origin of the vessel and the size of the vessel,

747

00:46:17,500 --> 00:46:23,500

this stanchion or frame would probably be at least as wide in this dimension

748

00:46:23,500 --> 00:46:25,500

as it is thick in this dimension.

749

00:46:25,500 --> 00:46:29,500

So say 6 by 6, and those could easily be less than a foot apart.

750

00:46:29,500 --> 00:46:30,500

Oh, okay.

751

00:46:30,500 --> 00:46:35,500

And the planking could be 2, could be 3 inch thick,

752

00:46:35,500 --> 00:46:38,500

and maybe the inner planking would be 2 inch thick.

753

00:46:38,500 --> 00:46:42,500

So you've got 3, 6, and 2.

754

00:46:42,500 --> 00:46:43,500

Alright.

755

00:46:43,500 --> 00:46:46,500

With the numbers hastily scribbled on the back of his hand,

756

00:46:46,500 --> 00:46:49,500

Adam heads back to the shop to get busy.

757

00:46:49,500 --> 00:46:51,500

Oh, look, it's beautiful.

758

00:46:51,500 --> 00:46:53,500

That's pirate ship right there.

759

00:46:56,500 --> 00:46:59,500

Adam, haven't you forgotten something?

760

00:46:59,500 --> 00:47:02,500

It doesn't look like much, but it will be a pirate ship soon.

761

00:47:02,500 --> 00:47:04,500

Stand by.

762

00:47:04,500 --> 00:47:07,500

Don't you need another 100 or so tons more wood?

763

00:47:07,500 --> 00:47:09,500

Well, these are the uprights.

764

00:47:09,500 --> 00:47:14,500

These represent the upright beams that describe the cross section of the ship.

765

00:47:14,500 --> 00:47:17,500

I'm only going to do a small section of this pirate ship.

766

00:47:17,500 --> 00:47:18,500

That's all I've got time for.

767

00:47:18,500 --> 00:47:23,500

So this is going to be up around the railing of the deck, about 4 feet down.

768

00:47:23,500 --> 00:47:28,500

In fact, on a real ship of the period, these things would be placed about this far apart.

769

00:47:28,500 --> 00:47:32,500

I'm only going to place 2 of these this far apart, because that's what we're shooting between.

770

00:47:32,500 --> 00:47:34,500

The other 2 I'll place a little farther apart,

771

00:47:34,500 --> 00:47:38,500

because they're just to hold up the rest of the wood slats that make up my pirate ship.

772

00:47:38,500 --> 00:47:42,500

And that gap in the center, right here in the center,

773

00:47:42,500 --> 00:47:44,500

that's where I'm going to be firing.

774

00:47:44,500 --> 00:47:48,500

That's where I'll have real wood, and behind it I'll have the real pirates.

775

00:47:53,500 --> 00:47:58,500

Can ye trusty dagger in a sail slow down a plummeting pirate?

776

00:47:58,500 --> 00:48:03,500

That's the question Carrie, Grant and Tori are attempting to answer.

777

00:48:03,500 --> 00:48:06,500

So far, they've boarded the good ship Balcluza,

778

00:48:06,500 --> 00:48:08,500

and plundered her for knowledge,

779

00:48:08,500 --> 00:48:11,500

and this myth won't be plain sailing.

780

00:48:13,500 --> 00:48:16,500

So as it turns out, it's not so easy to do this.

781

00:48:16,500 --> 00:48:20,500

There are variations in the thickness of the sail, sharpness of the blade,

782

00:48:20,500 --> 00:48:23,500

and the angle at which you hold the blade can make a huge difference.

783

00:48:23,500 --> 00:48:28,500

Alright, so maybe before we go risking our lives and trying to ride down a sail with a knife,

784

00:48:28,500 --> 00:48:30,500

we should do some more tests so we can get some better data.

785

00:48:30,500 --> 00:48:35,500

So let's set up a test where we can use a period knife and cut through a period sail,

786

00:48:35,500 --> 00:48:38,500

but maybe make the knife static and run the cloth past it,

787

00:48:38,500 --> 00:48:40,500

that way we can take out the human element.

788

00:48:40,500 --> 00:48:45,500

We can test the different sharpnesses of blades and find out what the optimum sharpness is

789

00:48:45,500 --> 00:48:47,500

so that you get down the sail safely.

790

00:48:47,500 --> 00:48:48,500

It's a simple build.

791

00:48:48,500 --> 00:48:54,500

The knife will be locked off, and a run of thick canvas pulled past it using a dead weight dron.

792

00:48:54,500 --> 00:48:59,500

A good knife should have little trouble, but which knife would a pirate use?

793

00:48:59,500 --> 00:49:05,500

There's an old pirate saying, keep your blade sharp, you're packing plentiful.

794

00:49:05,500 --> 00:49:08,500

I hate this stuff. Why do people pack with this stuff?

795

00:49:08,500 --> 00:49:10,500

So these are cutlasses?

796

00:49:10,500 --> 00:49:11,500

I believe they are.

797

00:49:11,500 --> 00:49:12,500

Are they covered?

798

00:49:12,500 --> 00:49:14,500

I don't know.

799

00:49:14,500 --> 00:49:15,500

Wow.

800

00:49:17,500 --> 00:49:18,500

Whoa.

801

00:49:18,500 --> 00:49:19,500

Whoa.

802

00:49:19,500 --> 00:49:20,500

Whoa.

803

00:49:20,500 --> 00:49:21,500

Oh.

804

00:49:21,500 --> 00:49:22,500

Oh.

805

00:49:22,500 --> 00:49:26,500

It's a nasty, iry-a-scarby dog.

806

00:49:29,500 --> 00:49:34,500

Three knives have been delivered to test the thrust and parry of this sail-sliding myth.

807

00:49:34,500 --> 00:49:35,500

A cutlass?

808

00:49:35,500 --> 00:49:36,500

Too long.

809

00:49:36,500 --> 00:49:38,500

A Gurkha dagger?

810

00:49:38,500 --> 00:49:41,500

Not too many pirates in Landlock Nepal.

811

00:49:41,500 --> 00:49:45,500

So it's this stabbing knife, known as the Mangosh.

812

00:49:45,500 --> 00:49:52,500

It's not only an authentic period piece, it's the same type used by our swashbuckling Hollywood hero.

813

00:49:54,500 --> 00:50:00,500

All right, so you know, with this whole myth, it's really important to see how much speed the knife is going to slow you down.

814

00:50:00,500 --> 00:50:04,500

If you're going too fast and you hit the deck of the ship, you're going to break your ankles.

815

00:50:04,500 --> 00:50:05,500

That's not good.

816

00:50:05,500 --> 00:50:11,500

So what we're going to do right now is we're going to see how fast the knife is actually slowing the sail down.

817

00:50:11,500 --> 00:50:16,500

Remember, the pirate has to land safely on the deck after his knife-assisted fall,

818

00:50:16,500 --> 00:50:23,500

and these two tests, with a dull and sharp knife, should indicate the relative speeds of each drop.

819

00:50:23,500 --> 00:50:25,500

All right, here we go.

820

00:50:25,500 --> 00:50:27,500

Three, two, one.

821

00:50:29,500 --> 00:50:30,500

Cool.

822

00:50:30,500 --> 00:50:31,500

We got a good test.

823

00:50:31,500 --> 00:50:32,500

Nice.

824

00:50:32,500 --> 00:50:35,500

A blunt knife at the altered angle sliced just fine.

825

00:50:35,500 --> 00:50:38,500

Now for a comparison with the sharper blade.

826

00:50:39,500 --> 00:50:46,500

A quick once over on the grinder, and we'll see if fastidious pirates have a better chance of pulling off this myth.

827

00:50:46,500 --> 00:50:49,500

Test two, sharp blade, Mangosh.

828

00:50:49,500 --> 00:50:52,500

In three, two, one.

829

00:50:54,500 --> 00:50:55,500

Nice.

830

00:50:55,500 --> 00:50:56,500

A lot faster.

831

00:50:56,500 --> 00:50:57,500

Beauty.

832

00:50:57,500 --> 00:51:04,500

The last test comparing the sharp Mangosh knife to the dull one, definitely the sharp one is a lot faster.

833

00:51:04,500 --> 00:51:10,500

So I wouldn't want to be relying on that to get me down a sail safely,

834

00:51:10,500 --> 00:51:16,500

because you just shoot all the way down and probably end up pretty hurt at the bottom.

835

00:51:17,500 --> 00:51:23,500

So the sharper the knife, the faster the fall, and the faster the fall, the heavier the landing.

836

00:51:23,500 --> 00:51:27,500

Now it's time to find out if our fall guy could hang on to the knife.

837

00:51:28,500 --> 00:51:30,500

Dude, that's a hot combo.

838

00:51:30,500 --> 00:51:34,500

The well-dressed pirate is definitely going to be wearing that this fall.

839

00:51:34,500 --> 00:51:36,500

Okay, I'm ready for battle.

840

00:51:36,500 --> 00:51:38,500

That doesn't look dorky at all.

841

00:51:38,500 --> 00:51:39,500

Dorky.

842

00:51:39,500 --> 00:51:41,500

Now there's a pirate name.

843

00:51:41,500 --> 00:51:45,500

The locked off dull and sharp blades both cut through the cloth easily.

844

00:51:46,500 --> 00:51:50,500

But could a person, even a dorky one, hold the blade?

845

00:51:50,500 --> 00:51:52,500

Dory's sharp blade, Mangosh test.

846

00:51:52,500 --> 00:51:55,500

And three, two, one.

847

00:51:59,500 --> 00:52:01,500

I don't know why you guys are so worried.

848

00:52:01,500 --> 00:52:02,500

That didn't look hard.

849

00:52:02,500 --> 00:52:04,500

It didn't look hard at all, because it wasn't.

850

00:52:05,500 --> 00:52:09,500

Looks like there's some hope for this myth. This might be a good way to get down from your sail.

851

00:52:09,500 --> 00:52:15,500

Okay, so now we know with a 200 pound counterweight, a period knife will cut through number four sail fabric.

852

00:52:16,500 --> 00:52:19,500

And dull knife goes slower, sharp knife goes faster.

853

00:52:19,500 --> 00:52:23,500

And we also know that a human can hold onto a knife and cut through a sail.

854

00:52:24,500 --> 00:52:33,500

Okay, so I think next we need to ramp it up and see if a 200 pound weight attached to a falling knife will actually cut the sail.

855

00:52:34,500 --> 00:52:38,500

I think Buster's just about that weight, and probably the man for the job.

856

00:52:40,500 --> 00:52:43,500

Buster is about to enter the pirate business.

857

00:52:44,500 --> 00:52:45,500

That's beautiful.

858

00:52:46,500 --> 00:52:52,500

The following is a paid commercial program brought to you by the Piratical Industry Laboratories.

859

00:52:52,500 --> 00:52:56,500

Pirates, if you're like me, you love the life.

860

00:52:56,500 --> 00:53:00,500

The pillaging, the freedom, but you hate the cannons.

861

00:53:00,500 --> 00:53:06,500

The cannons, the loading, the charging, the dropping of the balls on your foot.

862

00:53:06,500 --> 00:53:12,500

Well, we've developed an entirely new product, the Blowhard 3000.

863

00:53:12,500 --> 00:53:19,500

Firing a six pound ball at 300 miles per hour on compressed air alone.

864

00:53:19,500 --> 00:53:23,500

It's guaranteed to solve all your piratical needs.

865

00:53:23,500 --> 00:53:35,500

Our exclusively developed manifold at the Piratical Industries Labs allows you to use only compressed air generated by rowing slaves to propel your cannonballs at your enemy.

866

00:53:35,500 --> 00:53:40,500

No more black powder, no more smoke making your voice sound like this.

867

00:53:40,500 --> 00:53:42,500

Slaves not included.

868

00:53:42,500 --> 00:53:47,500

The Blowhard 3000. The next evolution in pirate technology.

869

00:53:48,500 --> 00:53:50,500

We will now resume normal programming.

870

00:53:51,500 --> 00:54:01,500

Buccaneer Buster's Adam and Jamie have built an air cannon to test the myth that splinters kill more people than cannonballs in your average pirate broadside.

871

00:54:01,500 --> 00:54:04,500

This is what every modern pirate's using.

872

00:54:05,500 --> 00:54:10,500

An authentic cannon muzzle velocity is 900 feet per second.

873

00:54:10,500 --> 00:54:17,500

In the absence of an authentic cannon, the Blowhard 3000 needs to get as close to that as possible.

874

00:54:17,500 --> 00:54:24,500

What we're doing is a final pressure test. We're topping up these tanks with a very high pressure gas that gets us up into the zone we need.

875

00:54:24,500 --> 00:54:29,500

When they put me in a home where I can't hurt myself, this is what undoubtedly they'll make me wear.

876

00:54:29,500 --> 00:54:35,500

The team looks confident, but no one knows if the Blowhard 3000 will blow hard enough.

877

00:54:35,500 --> 00:54:40,500

This test without a cannonball will confirm the high pressure system is working.

878

00:54:40,500 --> 00:54:47,500

Okay, firing in three, two, one.

879

00:54:55,500 --> 00:54:58,500

That's a beautiful test. I feel really, really good about this steel.

880

00:54:58,500 --> 00:54:59,500

Okay.

881

00:55:00,500 --> 00:55:11,500

A perfect high pressure test fire means it's time to take this myth out of the workshop and onto the firing range for some serious mythbuster style fireworks.

882

00:55:12,500 --> 00:55:21,500

Once again, we find ourselves on the Alameda Naval Base runway, which is a beautiful mile and a half long runway.

883

00:55:21,500 --> 00:55:24,500

Ours alone, nice and safe.

884

00:55:24,500 --> 00:55:27,500

I'm sorry Adam, did you say nice and safe?

885

00:55:27,500 --> 00:55:29,500

Yeah.

886

00:55:30,500 --> 00:55:37,500

That's what we're firing. Six and a half pound or three kilogram steel cannonball.

887

00:55:38,500 --> 00:55:45,500

To achieve the velocity that we would get out of a real cannon, we'd have to reach in the neighborhood of 1200 feet per second.

888

00:55:45,500 --> 00:55:47,500

Now we know this rig is not going to do this.

889

00:55:47,500 --> 00:55:57,500

The theoretical max speed that we'll get out of this rig if we were to just totally go for it is about in the neighborhood of 700 feet per second, which is still pretty fast.

890

00:55:57,500 --> 00:56:00,500

In fact, it's a huge amount of force.

891

00:56:00,500 --> 00:56:05,500

Huge if it works. And this test, the first with a cannonball, we'll find out.

892

00:56:05,500 --> 00:56:10,500

Adam decides that visualizing a positive result will help.

893

00:56:10,500 --> 00:56:14,500

It's going to build up pressure in here. It's going to come out this browser.

894

00:56:17,500 --> 00:56:22,500

This is if you could actually follow it in real time.

895

00:56:28,500 --> 00:56:34,500

And Stan's going to pour out of here and we're going to cackle a lot. That's pretty much what's going to happen.

896

00:56:35,500 --> 00:56:37,500

We are arming the cannon.

897

00:56:38,500 --> 00:56:45,500

Air cannon test fire in three, two, one.

898

00:56:47,500 --> 00:56:50,500

And cue the cackle.

899

00:56:53,500 --> 00:56:55,500

That was cool.

900

00:56:55,500 --> 00:56:58,500

Cool indeed. But do we have the speed we need?

901

00:56:58,500 --> 00:57:05,500

It's 2000 frames per second. So I'm traveling one foot every four frames. That's a foot in every two milliseconds.

902

00:57:05,500 --> 00:57:15,500

That's 500 feet per second. That is...340 miles per hour. That is respectable.

903

00:57:17,500 --> 00:57:22,500

And it's as good as it's going to get. So, time to move on.

904

00:57:22,500 --> 00:57:28,500

The next step will be to find out how many people a single cannonball can kill directly.

905

00:57:28,500 --> 00:57:33,500

That way, when they test with wooden shrapnel damage, they have a comparison.

906

00:57:33,500 --> 00:57:39,500

Now that the cannon is working, the first test is to find out how much damage it would do to humans.

907

00:57:39,500 --> 00:57:43,500

So we're going to break out our human analogs, fire the cannon at them.

908

00:57:43,500 --> 00:57:48,500

Human analogs? Can we check the truck again?

909

00:57:48,500 --> 00:57:52,500

We've got the side of the boat made to genuine pirate ship dimensions.

910

00:57:52,500 --> 00:57:56,500

But did anyone pack a human analog?

911

00:57:56,500 --> 00:57:59,500

Explain it again, Adam, please, in simple terms.

912

00:57:59,500 --> 00:58:03,500

We're going to shoot at the boat from about point blank range, so it'll be here. The pigs will be here.

913

00:58:04,500 --> 00:58:07,500

Hold on. Did Adam say pigs?

914

00:58:08,500 --> 00:58:11,500

These are 450 pound pigs.

915

00:58:11,500 --> 00:58:17,500

Pigs are used to the world over as nearly perfect analogs for humans.

916

00:58:17,500 --> 00:58:21,500

They have similar amounts of body fat, similar skeletal structures.

917

00:58:21,500 --> 00:58:28,500

While they look quite different, they act very much the same under a lot of conditions, including getting hit with a cannonball.

918

00:58:29,500 --> 00:58:35,500

Rest assured, our scientifically accurate poor sign pirates were humanely slaughtered.

919

00:58:36,500 --> 00:58:41,500

But instead of being destined for the supermarket, they've been selected for a higher purpose.

920

00:58:42,500 --> 00:58:45,500

Wake up! Time for science!

921

00:58:46,500 --> 00:58:50,500

The myth is that more people died from splinters than from actual cannonballs.

922

00:58:50,500 --> 00:58:57,500

And if we want to test it as more than just a numerical anomaly, we want to know how many people a single cannonball could kill.

923

00:58:58,500 --> 00:59:02,500

So we've lined four of them up in front of the barrel, and we're going to see how many sustain.

924

00:59:02,500 --> 00:59:05,500

But we consider to be a lethal amount of damage from the single shot.

925

00:59:11,500 --> 00:59:16,500

Tackling a tall ship tail from Tinseltown is Carrie Grant and Tori.

926

00:59:16,500 --> 00:59:21,500

They're asking, can you slide down from a top mast by slicing the sail?

927

00:59:21,500 --> 00:59:27,500

So far, they've selected their knife, tested its sail shearing abilities through plain canvas,

928

00:59:28,500 --> 00:59:31,500

and they know our fall guy can hang onto the blade.

929

00:59:33,500 --> 00:59:35,500

Alright, what are we doing?

930

00:59:35,500 --> 00:59:45,500

What we're doing, Tori, is taking this test to the next level by introducing full length sails with cross seams, known on the high seas as reef bands.

931

00:59:45,500 --> 00:59:50,500

This definitely changes what the knife's going to do when it goes down the sail.

932

00:59:50,500 --> 00:59:53,500

When you hit these reef bands, it could just like throw you out.

933

00:59:54,500 --> 00:59:57,500

So the knife has to be sharp enough to get through these thick seams.

934

00:59:57,500 --> 01:00:04,500

But as the guys found out in the earlier tests, too sharp, and the slide down the sail becomes a free fall.

935

01:00:04,500 --> 01:00:09,500

So we're all ready to go. Buster's ready, he's got his hands that are going to hold the knife at any angle.

936

01:00:09,500 --> 01:00:11,500

Hopefully he'll hold onto the knife.

937

01:00:11,500 --> 01:00:16,500

We have our sail hanging from the ceiling, and it's at a height that would be roughly to what a pirate ship would be.

938

01:00:16,500 --> 01:00:20,500

So that way we could see when he lands on the deck what kind of injuries he's going to sustain.

939

01:00:20,500 --> 01:00:26,500

So all we have to do now is hoist him up to the quick release, stick his knife in the sail, and let him go.

940

01:00:26,500 --> 01:00:34,500

Pride normally goes before a fall, but on Mythbusters, Grant jumps in for some mathematical injury calculation.

941

01:00:34,500 --> 01:00:42,500

So I'm marking out our sail in one foot increments, and what we're going to do is use the high speed camera to film Buster as he rides the knife down.

942

01:00:42,500 --> 01:00:45,500

Counting the number of frames, that'll give us velocity.

943

01:00:45,500 --> 01:00:50,500

What we know is 25 feet per second is the threshold of minor injury.

944

01:00:50,500 --> 01:00:56,500

So if you're a pirate landing on a deck, you'll probably be able to get up and walk away and fight out the pirates.

945

01:00:56,500 --> 01:01:03,500

50 feet per second is the threshold of major injury, which means possibly it'll be fatal.

946

01:01:03,500 --> 01:01:12,500

So because the Myth is about our hero being able to walk away, we're looking for a speed below 25 feet per second.

947

01:01:13,500 --> 01:01:16,500

Buster's first ride will be with a sharpen blade.

948

01:01:16,500 --> 01:01:22,500

Full scale Buster test, two reef bands, sharp knife in three, two, one.

949

01:01:26,500 --> 01:01:29,500

I don't think that worked very well. What do you think?

950

01:01:29,500 --> 01:01:33,500

I don't think I want to use a sharp knife. Dang! He hit hard.

951

01:01:33,500 --> 01:01:37,500

Look at that. It sliced right through him. It didn't even pause at the reef bands.

952

01:01:37,500 --> 01:01:41,500

Be sharp, too fast, too bad for Buster.

953

01:01:41,500 --> 01:01:44,500

And the numbers from the high speed confirm it.

954

01:01:44,500 --> 01:01:49,500

At over 25 feet per second, Buster would definitely have been busted up.

955

01:01:49,500 --> 01:01:55,500

So I think we probably ought to think about maybe dulling the knife a little bit.

956

01:01:55,500 --> 01:01:56,500

Yeah.

957

01:01:56,500 --> 01:02:00,500

Yep, the solution is to blunt the blade and try to slow the fall.

958

01:02:00,500 --> 01:02:02,500

Call it, Carrie.

959

01:02:02,500 --> 01:02:08,500

Full weight of Buster on the man-gush blade, which is dull with the reef bands on the sail.

960

01:02:08,500 --> 01:02:11,500

Alright, here we go in three, two, one.

961

01:02:14,500 --> 01:02:15,500

Ah!

962

01:02:15,500 --> 01:02:18,500

I did a two-dull.

963

01:02:18,500 --> 01:02:26,500

What Carrie's trying to say is Buster's dull knife hit a snag and he fell from grace with a resounding thud.

964

01:02:27,500 --> 01:02:31,500

The solution is a knife that's sharp enough to cut the reef bands,

965

01:02:31,500 --> 01:02:36,500

yet dull enough to slow our fall guy's fall to a safe speed.

966

01:02:38,500 --> 01:02:40,500

But who's going to wield the knife?

967

01:02:40,500 --> 01:02:47,500

It's obvious that Buster's a bit of a stiff, and our mythical swashbuckler knows how to absorb a fall.

968

01:02:47,500 --> 01:02:50,500

Something Buster never picked up at stunt school.

969

01:02:51,500 --> 01:02:56,500

So for the best chance of success, we need to inject some humanity into this myth.

970

01:02:56,500 --> 01:03:05,500

Well, let's find a safe way to do this, and then one of us, and by us, I mean you, can go up and try this out.

971

01:03:05,500 --> 01:03:06,500

Twist my arm.

972

01:03:06,500 --> 01:03:07,500

Alright.

973

01:03:10,500 --> 01:03:12,500

Pirates speak lesson number four.

974

01:03:12,500 --> 01:03:16,500

A good pirate should start all sentences with the words,

975

01:03:16,500 --> 01:03:23,500

Thar B, as in, Thar B, Adam and Jamie, or Thar B, Adam and Jamie with a very large cannon.

976

01:03:23,500 --> 01:03:31,500

Or even better, Thar B, Adam and Jamie with a very large cannon pointing straight at four pigs dressed as pirates.

977

01:03:31,500 --> 01:03:38,500

The myth states more pirates died from splintering wood than from a direct hit by a cannonball.

978

01:03:38,500 --> 01:03:42,500

Workshop tests with a mini-canon seem to confirm the theory.

979

01:03:43,500 --> 01:03:50,500

But in full-scale tests, the mythbusters first want to see just how many people a cannonball could kill.

980

01:03:50,500 --> 01:03:56,500

They figured it was more humane to use pigs bound for the supermarket than real pirates.

981

01:03:56,500 --> 01:04:01,500

Next, we're going to fire the air cannon at the pigs, at the pirates, I'm sorry.

982

01:04:01,500 --> 01:04:06,500

My guess is that we're going to make it all the way through them, because we're going to bump up the pressure a little bit,

983

01:04:06,500 --> 01:04:13,500

off of the nitrogen tank, and pigs versus sandbags, I'd say the pigs lose.

984

01:04:13,500 --> 01:04:20,500

This is how much damage can a cannonball do to some pirates.

985

01:04:20,500 --> 01:04:26,500

Firing in three, two, one.

986

01:04:27,500 --> 01:04:37,500

That is so wrong!

987

01:04:37,500 --> 01:04:44,500

Wrong, maybe, but did any of our pirate substitutes survive the broadside?

988

01:04:44,500 --> 01:04:45,500

He's dead.

989

01:04:45,500 --> 01:04:47,500

Yeah, I'd say so.

990

01:04:47,500 --> 01:04:50,500

Alright, here's your second pig.

991

01:04:51,500 --> 01:04:54,500

Well, I can see it over here, he's dead.

992

01:04:54,500 --> 01:04:59,500

Your third pig, well, he's dead.

993

01:04:59,500 --> 01:05:01,500

Oh, it's a pig.

994

01:05:01,500 --> 01:05:03,500

Totally dead.

995

01:05:05,500 --> 01:05:07,500

Let's set up for the next test.

996

01:05:07,500 --> 01:05:09,500

That's stunning, that's four for four.

997

01:05:09,500 --> 01:05:11,500

I went through them like butter.

998

01:05:11,500 --> 01:05:13,500

Or lard.

999

01:05:14,500 --> 01:05:21,500

We killed four little pirates, and didn't even knock their hats off, practically.

1000

01:05:21,500 --> 01:05:23,500

Well, maybe one of them.

1001

01:05:23,500 --> 01:05:26,500

That means we're getting this cannonball going really pretty quickly.

1002

01:05:26,500 --> 01:05:31,500

So the benchmark for death by a single cannonball is at least four.

1003

01:05:31,500 --> 01:05:34,500

It's crunch time for the Cannonball Splinter Myth.

1004

01:05:34,500 --> 01:05:42,500

Next we're going to fire through our mocked up pirate ship and see whether it's more lethal to get hit by the splinters than a cannonball.

1005

01:05:42,500 --> 01:05:47,500

Pirate ships being in short supply, Adam has built his own slightly modified version.

1006

01:05:47,500 --> 01:05:52,500

It doesn't look like it, but I have a fascia that looks like a pirate ship.

1007

01:05:52,500 --> 01:05:56,500

And then I have here three solid inches of white oak.

1008

01:05:56,500 --> 01:06:02,500

That is accurate to the outside cladding on a period ship that a pirate might have commandeered.

1009

01:06:02,500 --> 01:06:05,500

Then there's a six by six inch stauncheon.

1010

01:06:05,500 --> 01:06:10,500

These are the ribs that run all the way down the boat, describing its hull shape.

1011

01:06:10,500 --> 01:06:13,500

And on the inside it's clad with pine.

1012

01:06:13,500 --> 01:06:18,500

These two pieces are what this cannonball is going through that will generate the splinters,

1013

01:06:18,500 --> 01:06:24,500

and they are accurate to the type of materials that a period cannonball would have encountered in a ship during battle.

1014

01:06:24,500 --> 01:06:29,500

So for this myth to be true, we're looking for a huge volume of splinters to come out of the backside

1015

01:06:29,500 --> 01:06:32,500

and spray the whole area, which could kill a lot of people.

1016

01:06:32,500 --> 01:06:39,500

And it's actually more plausible than a bunch of people lining up in a row right behind a cannonball when it hits.

1017

01:06:39,500 --> 01:06:45,500

Air cannon into the pirate ship in three, two, one.

1018

01:06:49,500 --> 01:06:51,500

I hope it made it.

1019

01:06:51,500 --> 01:06:54,500

Well, it didn't come bouncing out.

1020

01:06:54,500 --> 01:06:56,500

Let's go check it out.

1021

01:06:58,500 --> 01:07:02,500

The air cannon once again hits her mark, but what's the damage report?

1022

01:07:02,500 --> 01:07:04,500

Whoa!

1023

01:07:04,500 --> 01:07:07,500

It did! It made it through!

1024

01:07:07,500 --> 01:07:09,500

Yeah! Excellent!

1025

01:07:10,500 --> 01:07:12,500

Oh my God.

1026

01:07:12,500 --> 01:07:15,500

I see a horror show and I definitely see splinters here.

1027

01:07:15,500 --> 01:07:17,500

I don't see any penetration of the pigs at all.

1028

01:07:17,500 --> 01:07:20,500

I don't see any of them sticking out of the pigs here.

1029

01:07:20,500 --> 01:07:26,500

Plenty of splinters, but unlike the small scale test, there's no suggestion the shrapnel was lethal.

1030

01:07:26,500 --> 01:07:33,500

Yeah, I don't know what else to say. I mean, it drilled a neat hole right through it.

1031

01:07:33,500 --> 01:07:39,500

If I was standing right here, I'd count my lucky stars that the cannonball missed me,

1032

01:07:39,500 --> 01:07:43,500

but I'd be pulling splinters out of my thighs.

1033

01:07:43,500 --> 01:07:45,500

I mean, that would suck.

1034

01:07:45,500 --> 01:07:51,500

And sure enough, back then, you know, a big splinter going through your leg could be a lethal injury

1035

01:07:51,500 --> 01:07:56,500

when you're talking about infection in the microorganisms that are living off the wood of the boat and stuff like that.

1036

01:07:56,500 --> 01:08:01,500

But this is like two people who are slightly injured or seriously injured.

1037

01:08:01,500 --> 01:08:06,500

Not, you know, ten, the cannonball can travel all the way through.

1038

01:08:06,500 --> 01:08:11,500

Yeah, I think the scenario we were looking for was where there's such an explosion

1039

01:08:11,500 --> 01:08:17,500

that it accelerates these particles of wood so fast that everybody in the area just gets sprayed and dies.

1040

01:08:17,500 --> 01:08:21,500

Kind of like a shotgun or more like a grenade blast.

1041

01:08:21,500 --> 01:08:23,500

And I'm not seeing that happen with this stuff.

1042

01:08:25,500 --> 01:08:27,500

I think the high-speed footage tells the whole story

1043

01:08:27,500 --> 01:08:32,500

because it's showing a massive quantity of splinters going out of the backside of this boat hull.

1044

01:08:32,500 --> 01:08:38,500

The problem is that none of it's hitting the pigs with enough strength, enough mass, enough velocity or whatever

1045

01:08:38,500 --> 01:08:40,500

to actually stick into the pigs.

1046

01:08:41,500 --> 01:08:46,500

With no pigs stuck with deadly splinters, this myth is on shaky ground.

1047

01:08:46,500 --> 01:08:49,500

But Adam and Jamie are reluctant to call it busting.

1048

01:08:49,500 --> 01:08:52,500

Remember, the air cannon isn't quite up to speed.

1049

01:08:52,500 --> 01:08:58,500

With a muzzle velocity of around 400 miles per hour, it doesn't match up to the real thing.

1050

01:08:58,500 --> 01:09:02,500

We've got to figure out a way of getting things to go really fast.

1051

01:09:02,500 --> 01:09:09,500

Unable to accept defeat, the pressure is back on to find a genuine cannon and put this myth to rest.

1052

01:09:12,500 --> 01:09:18,500

When using a knife to slide down sails, it's not the fall that'll kill you, it's the sudden stop.

1053

01:09:18,500 --> 01:09:21,500

And busters sucks at landing.

1054

01:09:22,500 --> 01:09:25,500

This myth needs a dummy that can act like a person.

1055

01:09:25,500 --> 01:09:27,500

I mean, I wouldn't want to do it.

1056

01:09:27,500 --> 01:09:28,500

Not it.

1057

01:09:28,500 --> 01:09:33,500

Seeing as Torey's the class clown, we're taking this myth to the circus.

1058

01:09:33,500 --> 01:09:36,500

You know, high trapeze, nets, all that safety stuff.

1059

01:09:36,500 --> 01:09:40,500

Uh, Carrie, Torey's about to attempt a life-threatening stunt.

1060

01:09:40,500 --> 01:09:41,500

That's crazy.

1061

01:09:41,500 --> 01:09:45,500

Carrie, you're just not taking this seriously, are you?

1062

01:09:45,500 --> 01:09:50,500

Before this myth turns into a circus, thank you, Carrie, that's quite enough.

1063

01:09:50,500 --> 01:09:56,500

Torey gets the lowdown on his knife-wielding fall from trapeze trainer Eric Braun.

1064

01:09:56,500 --> 01:10:03,500

The net is good to handle someone my size hitting the net from above the frame.

1065

01:10:03,500 --> 01:10:05,500

So no matter what, we're going to be safe.

1066

01:10:05,500 --> 01:10:07,500

No matter what, you won't hit the ground.

1067

01:10:07,500 --> 01:10:09,500

But not, no, no, no.

1068

01:10:09,500 --> 01:10:11,500

I said no matter what, we're going to be safe.

1069

01:10:11,500 --> 01:10:16,500

The biggest risk of injury is one part of your body hitting another part of your body.

1070

01:10:16,500 --> 01:10:19,500

The most common instance of that is your knee hitting your nose.

1071

01:10:19,500 --> 01:10:20,500

Oh!

1072

01:10:20,500 --> 01:10:22,500

Okay, it's happened before.

1073

01:10:22,500 --> 01:10:24,500

My sister broke her nose in like 14 places.

1074

01:10:24,500 --> 01:10:25,500

Cool.

1075

01:10:25,500 --> 01:10:27,500

You know, with her knees hitting her face in the trampoline.

1076

01:10:27,500 --> 01:10:29,500

I'll try to avoid that if I can.

1077

01:10:29,500 --> 01:10:34,500

When Buster tried this trick, it looked more damaging than a knee to a nose.

1078

01:10:34,500 --> 01:10:45,500

And with the sail set to the same Buster-busting height, Torey is banking on his partially sharpened knife to slow his fall and cut through the refs.

1079

01:10:46,500 --> 01:10:49,500

Alright, so what I'm about to do is climb up to the top of the sail.

1080

01:10:49,500 --> 01:10:53,500

We're going to do a free fall test without the knife just to get a control on my speed.

1081

01:10:53,500 --> 01:10:58,500

I'm a little nervous because I'm not really sure how I'm going to land.

1082

01:10:58,500 --> 01:11:01,500

I just don't want to smash my face into my knees.

1083

01:11:01,500 --> 01:11:05,500

If I can avoid that, I'll be cool.

1084

01:11:05,500 --> 01:11:15,500

This first drop will be a knife-less test run.

1085

01:11:15,500 --> 01:11:19,500

Then we'll stick the knife in and slide this myth home.

1086

01:11:19,500 --> 01:11:24,500

Full-scale Torey test. This one's the control free fall.

1087

01:11:24,500 --> 01:11:26,500

Three, two, one.

1088

01:11:26,500 --> 01:11:30,500

That was great!

1089

01:11:30,500 --> 01:11:31,500

Are you okay?

1090

01:11:31,500 --> 01:11:32,500

Yeah.

1091

01:11:32,500 --> 01:11:36,500

How much of that was free fall and how much of that was you stopping him?

1092

01:11:36,500 --> 01:11:40,500

Well, it felt like a lot of it was free fall.

1093

01:11:40,500 --> 01:11:47,500

Totally good fall. You were right next to the sail the whole time. You had your pretend knife in it and I mean, it couldn't have been any better.

1094

01:11:50,500 --> 01:11:56,500

At Falling Down, Torey's done good. But would he have survived the fall to fight another day?

1095

01:11:56,500 --> 01:12:00,500

Actually, it's not bad. I mean, he is just falling straight down. He's not freaking out or anything.

1096

01:12:00,500 --> 01:12:02,500

That's really good form.

1097

01:12:02,500 --> 01:12:04,500

Pirates don't freak out.

1098

01:12:04,500 --> 01:12:07,500

Well, you might. Pirates don't.

1099

01:12:07,500 --> 01:12:13,500

Okay, here's the good news. The good news is that your velocity at the very end is 25 feet per second.

1100

01:12:13,500 --> 01:12:18,500

It's a little bit slower than physics predicts, but I think it's still...

1101

01:12:18,500 --> 01:12:19,500

It's really close to a free fall.

1102

01:12:19,500 --> 01:12:26,500

Yeah, and what that means is if the net weren't there, you would be breaking both legs in very bad shape.

1103

01:12:26,500 --> 01:12:28,500

Good thing for the net.

1104

01:12:28,500 --> 01:12:38,500

So free fall equals broken legs. The question is, will thrusting a knife into the sail slow down Pirat Torey enough to prove this myth?

1105

01:12:38,500 --> 01:12:46,500

My biggest concern now is holding onto the knife. Could a pirate hold onto the knife, cutting through the sail, hitting those reef bands and not letting go.

1106

01:12:46,500 --> 01:12:49,500

That's what I need to concentrate on right now.

1107

01:12:49,500 --> 01:12:52,500

Sorry, you want to put the safety on?

1108

01:12:52,500 --> 01:12:54,500

Oh.

1109

01:12:54,500 --> 01:12:56,500

Okay.

1110

01:12:57,500 --> 01:12:59,500

Here you go, sorry.

1111

01:12:59,500 --> 01:13:08,500

Safely secured, Torey takes to the rigged. His knife of choice, the not too dull, not too sharp, mangosch.

1112

01:13:08,500 --> 01:13:15,500

Full scale pirate sail test. Torey, free fall with the knife, sharp.

1113

01:13:15,500 --> 01:13:17,500

Okay, Colin, when you're ready.

1114

01:13:17,500 --> 01:13:21,500

Here we go. In three, two, one.

1115

01:13:22,500 --> 01:13:25,500

Oh, whoa, whoa, whoa, whoa.

1116

01:13:25,500 --> 01:13:26,500

Are you okay?

1117

01:13:26,500 --> 01:13:27,500

Yeah, okay.

1118

01:13:27,500 --> 01:13:34,500

Whoa, that was crazy. As soon as I hit that reef band, the knife just popped right out.

1119

01:13:37,500 --> 01:13:44,500

So the reef bands threw him off, but if the knife was any sharper, he'd have fallen too fast to walk away uninjured.

1120

01:13:44,500 --> 01:13:47,500

But Torey ain't given up yet.

1121

01:13:47,500 --> 01:13:55,500

What I'd like to do is try it one more time, just move over a little bit on the sail, now that I know what it feels like and just see if I can keep that angle.

1122

01:13:55,500 --> 01:13:59,500

Because the first few feet of fall, it felt like I was being slowed down by the knife.

1123

01:13:59,500 --> 01:14:03,500

So Tenacious Torey gets one final attempt.

1124

01:14:03,500 --> 01:14:06,500

Here we go, in three, two, one.

1125

01:14:08,500 --> 01:14:10,500

Dang.

1126

01:14:10,500 --> 01:14:13,500

But the result was exactly the same.

1127

01:14:13,500 --> 01:14:18,500

It seems that a knife dull enough to get you down at a safe speed won't slice through the reef band.

1128

01:14:18,500 --> 01:14:24,500

So you hung onto the knife, but it was just that force that popped you out.

1129

01:14:24,500 --> 01:14:28,500

Yeah, that just popped me out. So it wasn't like it popped the knife out of my hand.

1130

01:14:28,500 --> 01:14:32,500

It just pushed the knife up, and then I fell out of the sail.

1131

01:14:32,500 --> 01:14:40,500

Well, that's a huge difference between you and Buster, is the fact that he had the death grip and everything was tightened and there was no way his wrist was going to go back.

1132

01:14:40,500 --> 01:14:42,500

That is a normal human reaction.

1133

01:14:42,500 --> 01:14:45,500

So Torey, ready to call this one?

1134

01:14:45,500 --> 01:14:47,500

Cutting a knife through the sail, it's just way too hard.

1135

01:14:47,500 --> 01:14:53,500

I mean, as soon as I hit that reef band, the angle of my knife changed and my knife popped out, I fell.

1136

01:14:53,500 --> 01:15:00,500

We had a full live person doing this with a sharp knife in a life-size sail with reef bands.

1137

01:15:00,500 --> 01:15:02,500

You couldn't really get more realistic than that.

1138

01:15:02,500 --> 01:15:04,500

I'm a little disappointed.

1139

01:15:04,500 --> 01:15:05,500

I know.

1140

01:15:07,500 --> 01:15:11,500

I just don't think the human wrist is strong enough to hold that angle.

1141

01:15:11,500 --> 01:15:17,500

Plus, in a historically accurate sail, you'd have to get to not one, but two reef bands.

1142

01:15:17,500 --> 01:15:25,500

And each of those has a variation of sail material of one to three layers to two layers, back to three, and then to one.

1143

01:15:25,500 --> 01:15:34,500

Well, and not only that, I mean, in a real-life situation, you're going to have to have your knife just sharp enough to make it through the reef bands, but just dull enough to decelerate you.

1144

01:15:34,500 --> 01:15:36,500

I mean, when is that really going to happen?

1145

01:15:36,500 --> 01:15:37,500

Only in the movies.

1146

01:15:37,500 --> 01:15:39,500

I think this one's busted.

1147

01:15:39,500 --> 01:15:40,500

I think this one's triple busted.

1148

01:15:40,500 --> 01:15:41,500

Busted.

1149

01:15:41,500 --> 01:15:42,500

Busted.

1150

01:15:49,500 --> 01:15:53,500

It's a maritime myth of explosive proportions.

1151

01:15:53,500 --> 01:16:01,500

Supposedly, when the broadside strike, more shipmates die from the flying splinters than the cannonballs themselves.

1152

01:16:02,500 --> 01:16:06,500

Tests with the giant air cannon suggest it's a bust.

1153

01:16:06,500 --> 01:16:11,500

But without an accurate muzzle velocity, our dynamic duo are reluctant to call it.

1154

01:16:13,500 --> 01:16:14,500

I don't know, man.

1155

01:16:14,500 --> 01:16:15,500

I'm looking at this strabnel.

1156

01:16:15,500 --> 01:16:17,500

I'm really pleased with our rig.

1157

01:16:17,500 --> 01:16:19,500

I think we can call this one busted.

1158

01:16:19,500 --> 01:16:20,500

I don't know.

1159

01:16:20,500 --> 01:16:27,500

I mean, a real cannon will fire a cannonball at twice the velocity of what we've got our air cannon to do.

1160

01:16:27,500 --> 01:16:31,500

And that translates to maybe about ten times the actual power.

1161

01:16:31,500 --> 01:16:35,500

Right, but it did go through all the wood we had set up, plus our pigs.

1162

01:16:35,500 --> 01:16:37,500

It did everything that we wanted it to do.

1163

01:16:37,500 --> 01:16:42,500

Well, I have actually got access to a real cannon that fires a real cannonball.

1164

01:16:42,500 --> 01:16:44,500

You want to go for it?

1165

01:16:44,500 --> 01:16:46,500

Oh, yeah.

1166

01:16:46,500 --> 01:16:47,500

Let's do it.

1167

01:16:47,500 --> 01:16:51,500

Let's take all this back to the side and try it again.

1168

01:16:52,500 --> 01:16:55,500

Actually, Adam, we're playing with real guns this time.

1169

01:16:55,500 --> 01:16:58,500

And there's only one place they let us do that.

1170

01:16:58,500 --> 01:17:02,500

The Alameda County Sheriff's Facility Bomb Range.

1171

01:17:02,500 --> 01:17:08,500

And joining us to save the day is not so dirty, Harry, and his big gun.

1172

01:17:08,500 --> 01:17:09,500

This is old Moses.

1173

01:17:09,500 --> 01:17:11,500

Is that the trailer or the gun?

1174

01:17:11,500 --> 01:17:12,500

The gun.

1175

01:17:12,500 --> 01:17:15,500

He speaks with a great voice and lays down the law.

1176

01:17:15,500 --> 01:17:17,500

Oh, my lord.

1177

01:17:17,500 --> 01:17:18,500

Wow!

1178

01:17:22,500 --> 01:17:27,500

It's a fully functional 1841 Mexican and Civil War replica.

1179

01:17:27,500 --> 01:17:31,500

Not exactly pirate material, but a cannon's a cannon, right?

1180

01:17:32,500 --> 01:17:37,500

This is one of those cases where I'm sure the results are going to be controversial,

1181

01:17:37,500 --> 01:17:41,500

but no one can accuse us of not being thorough.

1182

01:17:41,500 --> 01:17:46,500

And if there are any pirates out there who dispute this, I'd love to talk to them.

1183

01:17:46,500 --> 01:17:50,500

The cannon that we're about to use is a piece of what is known as field artillery.

1184

01:17:50,500 --> 01:17:54,500

Now, this is the kind of thing that would go out on the open battlefield in the Civil War

1185

01:17:54,500 --> 01:17:55,500

and that kind of thing.

1186

01:17:55,500 --> 01:17:59,500

We're talking about pirate cannons, but it's the same.

1187

01:17:59,500 --> 01:18:01,500

The ball size is the same.

1188

01:18:01,500 --> 01:18:03,500

It's the same as what we used in the air cannon.

1189

01:18:03,500 --> 01:18:07,500

It's a proper size that you would actually find on a pirate ship.

1190

01:18:07,500 --> 01:18:10,500

So the effect on impact is the same.

1191

01:18:10,500 --> 01:18:16,500

This first shot into the water barrels for safety will give the team the muzzle velocity.

1192

01:18:16,500 --> 01:18:22,500

And if old Moses hits 1,300 feet per second, we know we're dealing with the real thing.

1193

01:18:22,500 --> 01:18:26,500

Let's see if this is big enough to hold a pound and a quarter.

1194

01:18:27,500 --> 01:18:32,500

Harry will use a pound and a quarter of black powder to lodge a six pound shot.

1195

01:18:32,500 --> 01:18:36,500

Okay, not too hard.

1196

01:18:39,500 --> 01:18:41,500

Okay, action front, time to load.

1197

01:18:41,500 --> 01:18:43,500

Charge.

1198

01:18:43,500 --> 01:18:49,500

In the heat of battle, a crack cannon team match speed and efficiency with precision.

1199

01:18:49,500 --> 01:18:52,500

The correctly sized cannon balls help too.

1200

01:18:52,500 --> 01:18:53,500

What's going on?

1201

01:18:53,500 --> 01:18:55,500

It's too big.

1202

01:18:55,500 --> 01:18:56,500

No.

1203

01:18:56,500 --> 01:19:01,500

These are fresh ordered shots just for this gun and they're cast too large.

1204

01:19:05,500 --> 01:19:11,500

Well, we have one of our little unexpected problems, something we could have never foreseen or put on a list.

1205

01:19:11,500 --> 01:19:17,500

And it's that our cannon balls are too big for the barrel of our cannon.

1206

01:19:17,500 --> 01:19:24,500

What I'm using right now is an ice it pirate to the angle grinder.

1207

01:19:26,500 --> 01:19:30,500

The ball is ground down by an eighth of an inch.

1208

01:19:35,500 --> 01:19:38,500

Well, that's not a pirate thing. That's a tumbleweed.

1209

01:19:38,500 --> 01:19:39,500

On you go.

1210

01:19:43,500 --> 01:19:50,500

Wild West distractions dealt with the team load up and old Moses is ready for action.

1211

01:19:50,500 --> 01:19:55,500

Clear front. Fireing in three, two, one.

1212

01:20:07,500 --> 01:20:10,500

Old Moses certainly didn't hold back.

1213

01:20:13,500 --> 01:20:17,500

A successful firing, but where's the cannon ball?

1214

01:20:17,500 --> 01:20:18,500

It's not there.

1215

01:20:18,500 --> 01:20:19,500

It's uh-uh.

1216

01:20:19,500 --> 01:20:20,500

Did it skip?

1217

01:20:20,500 --> 01:20:22,500

If it skipped, it went over the hill.

1218

01:20:22,500 --> 01:20:27,500

That's one cannon ball missing in action and there's something else missing.

1219

01:20:27,500 --> 01:20:39,500

We were completely unable to determine the muzzle velocity on that test because for some reason at the moment of detonation our high speed cameras power supply failed.

1220

01:20:41,500 --> 01:20:45,500

So we got a new power supply and we're going to do the same shot again.

1221

01:20:45,500 --> 01:20:50,500

We have to know what the muzzle velocity is. We want to be able to compare it to the previous test.

1222

01:20:50,500 --> 01:20:55,500

A little ricochet reinforcement and it's time for shot number two.

1223

01:20:55,500 --> 01:20:56,500

Prime.

1224

01:20:57,500 --> 01:20:58,500

Clear front.

1225

01:20:59,500 --> 01:21:02,500

Firing in three, two, one.

1226

01:21:08,500 --> 01:21:10,500

We got that cannon ball.

1227

01:21:10,500 --> 01:21:11,500

We stopped the cannon ball.

1228

01:21:12,500 --> 01:21:14,500

It's like, nice shot.

1229

01:21:16,500 --> 01:21:20,500

No bouncing balls this time. The hill took the full force.

1230

01:21:22,500 --> 01:21:23,500

It's deeper than that.

1231

01:21:27,500 --> 01:21:33,500

So what we got there is a muzzle velocity of 1,430 feet per second.

1232

01:21:33,500 --> 01:21:42,500

Guaranteed because I can see when the cannon ball exits the barrel and I can see when it hits the garbage can and I know the garbage can is exactly 10 feet from the barrel.

1233

01:21:43,500 --> 01:21:51,500

That muzzle velocity makes this blast seven and a half times more powerful than the one we produced with our air cannon.

1234

01:21:51,500 --> 01:22:00,500

The only question that remains for us is does that increase in power translate to an increase in deadliness for our wooden shrapnel?

1235

01:22:00,500 --> 01:22:06,500

Many air cannons and maxi air cannons have drawn a blank on scattered splinters,

1236

01:22:06,500 --> 01:22:10,500

but old Moses has the mustard to truly lay down the law for this myth.

1237

01:22:10,500 --> 01:22:14,500

Adam's authentic pirate ship prototype is lowered into place.

1238

01:22:14,500 --> 01:22:16,500

Cue the pigs.

1239

01:22:17,500 --> 01:22:23,500

This is our pirate crew and for this myth to be true they have to have a bunch of splinters stuck in them really quite deep.

1240

01:22:25,500 --> 01:22:30,500

Get your pirate face on. We're about to shoot some cannons.

1241

01:22:31,500 --> 01:22:33,500

I'm drooling.

1242

01:22:33,500 --> 01:22:36,500

Drooling? You ain't seen nothing yet.

1243

01:22:36,500 --> 01:22:40,500

Firing in three, two, one.

1244

01:22:43,500 --> 01:22:45,500

Looks from here like it put a clean hole in the oak.

1245

01:22:45,500 --> 01:22:48,500

I definitely put a clean hole in the oak.

1246

01:22:48,500 --> 01:22:50,500

A nice small one.

1247

01:22:52,500 --> 01:22:56,500

Getting through the wood is not the issue. It's the deadly splinters we want.

1248

01:22:56,500 --> 01:22:58,500

What do we see?

1249

01:22:59,500 --> 01:23:04,500

I see even less kind of splinterage than I saw before.

1250

01:23:04,500 --> 01:23:10,500

I mean, the splinters are clearly all over the place, but I don't see hardly a single one stuck in the pigs.

1251

01:23:10,500 --> 01:23:12,500

Oh, there's one. Wait a second.

1252

01:23:12,500 --> 01:23:14,500

Uh-oh.

1253

01:23:14,500 --> 01:23:22,500

Well, that went in about a half an inch and that's the most serious thing that we've seen all told, but it's still not lethal.

1254

01:23:23,500 --> 01:23:28,500

The increased muscle velocity definitely had a lot more power behind it.

1255

01:23:28,500 --> 01:23:35,500

It pushed this whole thing over. It caused a lot more trauma to our pirate boat than it did on the Test Without Air cannon.

1256

01:23:35,500 --> 01:23:44,500

Old Moses here had considerably more kick than our air cannon and it threw a lot of splinters all over the place, but the result is the same.

1257

01:23:44,500 --> 01:23:47,500

From what I'm seeing, they just don't have a whole lot of mass.

1258

01:23:47,500 --> 01:23:52,500

They just kind of like flip off things. They bounce. They don't really penetrate.

1259

01:23:52,500 --> 01:23:56,500

Based on this, the only thing that we can say about this myth is that it's busted.

1260

01:23:56,500 --> 01:23:59,500

The shrapnel is not as lethal as the cannonball.

1261

01:23:59,500 --> 01:24:05,500

Well, let's give our pirates a good final resting place and call this one busted.

1262

01:24:05,500 --> 01:24:07,500

Can you stop doing that?

1263

01:24:07,500 --> 01:24:09,500

Now I can because we're done.

1264

01:24:12,500 --> 01:24:15,500

Maybe we need to try a bigger cannon. What do you think?

1265

01:24:17,500 --> 01:24:24,500

Well, that's it. I think I'm retiring the pirate voice. I can't come up with any more pirate ideas.

1266

01:24:24,500 --> 01:24:27,500

Well, maybe you can't, but I bet the fans have some.

1267

01:24:27,500 --> 01:24:32,500

Indeed. And that's why we're going to devote an entire episode just to fan suggestions.