

1  
00:00:00,000 --> 00:00:09,119  
[Music]

2  
00:00:06,000 --> 00:00:11,849  
welcome to the skeptic zone the podcast

3  
00:00:09,119 --> 00:00:13,899  
from Australia for science and reason

4  
00:00:11,849 --> 00:00:16,890  
[Music]

5  
00:00:13,900 --> 00:00:22,660  
[Applause]

6  
00:00:16,890 --> 00:00:25,338  
[Music]

7  
00:00:22,660 --> 00:00:28,399  
yes it's the skeptic zone podcast

8  
00:00:25,338 --> 00:00:31,339  
episode number 462 for the 27th of

9  
00:00:28,399 --> 00:00:33,969  
August 2017 richardsaunders here with

10  
00:00:31,339 --> 00:00:35,838  
you from a very sunny Sydney Australia

11  
00:00:33,969 --> 00:00:38,300  
but not too hot

12  
00:00:35,838 --> 00:00:40,789  
winters still here not for long I've

13  
00:00:38,299 --> 00:00:43,069  
noticed things are blooming the

14  
00:00:40,789 --> 00:00:46,219  
weather's getting warmer but for the

15  
00:00:43,070 --> 00:00:47,628  
moment it's it's very nice coming up on

16  
00:00:46,219 --> 00:00:50,719  
this week's show apart from the weather

17  
00:00:47,628 --> 00:00:53,408  
report a grain of salt with Iran say

18  
00:00:50,719 --> 00:00:56,780  
give Iran is gallivanting globe-trotting

19  
00:00:53,408 --> 00:01:00,109  
he was recently in North America where

20  
00:00:56,780 --> 00:01:02,929  
the lucky dog witnessed the total solar

21  
00:01:00,109 --> 00:01:04,728  
eclipse more about the Eclipse in a

22  
00:01:02,929 --> 00:01:08,359  
moment folks more about that in a moment

23  
00:01:04,728 --> 00:01:11,030  
and he caught up with a dear old friend

24  
00:01:08,359 --> 00:01:13,789  
of the skeptics our dr. pamela gaye the

25  
00:01:11,030 --> 00:01:17,210  
famous astronomer now pamela is the

26  
00:01:13,790 --> 00:01:20,030  
director of the technology and citizen

27  
00:01:17,209 --> 00:01:23,539  
science at the Astronomical Society of

28  
00:01:20,030 --> 00:01:26,239  
the Pacific that's quite a title and

29

00:01:23,540 --> 00:01:30,170  
iran chats to pamela about her work

30  
00:01:26,239 --> 00:01:31,869  
there and the outreach they do including

31  
00:01:30,170 --> 00:01:34,310  
mapping planets

32  
00:01:31,870 --> 00:01:36,590  
following that it's the raw skeptic

33  
00:01:34,310 --> 00:01:38,390  
report with heidi robertson exciting

34  
00:01:36,590 --> 00:01:40,460  
news for the Northern Rivers vaccination

35  
00:01:38,390 --> 00:01:43,549  
supporters a group as they have been

36  
00:01:40,459 --> 00:01:46,750  
nominated for the North Coast primary

37  
00:01:43,549 --> 00:01:50,240  
health networks 2017 Community Choice

38  
00:01:46,750 --> 00:01:53,569  
excellent award Heidi will tell us about

39  
00:01:50,239 --> 00:01:56,118  
this nomination and how you how you can

40  
00:01:53,569 --> 00:01:58,969  
vote further organization in that award

41  
00:01:56,118 --> 00:02:00,829  
links on the show notes and it's so nice

42  
00:01:58,969 --> 00:02:04,129  
to see that a group like that is getting

43  
00:02:00,829 --> 00:02:06,500

even more recognition then coming up

44

00:02:04,129 --> 00:02:09,649

after that it's brouhaha science from

45

00:02:06,500 --> 00:02:13,878

Australia science TV with SJ Yousuf Ali

46

00:02:09,649 --> 00:02:16,669

talking about algae what do you want to

47

00:02:13,878 --> 00:02:19,908

know about algae and how important it is

48

00:02:16,669 --> 00:02:21,229

and they think at the the Australia

49

00:02:19,908 --> 00:02:23,719

science TV they think it should be

50

00:02:21,229 --> 00:02:26,209

nominated for Australian of the Year hmm

51

00:02:23,719 --> 00:02:27,739

that's an interesting one then we bring

52

00:02:26,209 --> 00:02:30,139

you what's turning out to be a major

53

00:02:27,739 --> 00:02:35,020

story here in Australia about a

54

00:02:30,139 --> 00:02:39,640

Melbourne GP who has been investigate

55

00:02:35,020 --> 00:02:42,170

after he outed himself on a video at a

56

00:02:39,639 --> 00:02:46,489

screening of the movie VAX

57

00:02:42,169 --> 00:02:50,119

where he almost boasted about helping

58  
00:02:46,490 --> 00:02:53,300  
parents dodge a vaccination for their

59  
00:02:50,120 --> 00:03:00,500  
children and as I say later on in the

60  
00:02:53,300 --> 00:03:03,110  
report this vast movement silver linings

61  
00:03:00,500 --> 00:03:04,939  
there are many good things coming out

62  
00:03:03,110 --> 00:03:07,610  
about this awful movie being shown

63  
00:03:04,939 --> 00:03:10,389  
around Australia including the outing of

64  
00:03:07,610 --> 00:03:14,420  
anti vaccination doctors by themselves

65  
00:03:10,389 --> 00:03:16,789  
by themselves and what's the expression

66  
00:03:14,419 --> 00:03:21,500  
they only open their mouth to change

67  
00:03:16,789 --> 00:03:24,049  
feet oh boy a very interesting and

68  
00:03:21,500 --> 00:03:28,610  
revealing story and a continuing story

69  
00:03:24,050 --> 00:03:30,950  
about anti vaccination GPS went around

70  
00:03:28,610 --> 00:03:33,200  
off the show may not spooky action more

71  
00:03:30,949 --> 00:03:36,079  
from the recent Sydney Science Festival

72  
00:03:33,199 --> 00:03:38,719  
and once again Maynard runs around a

73  
00:03:36,080 --> 00:03:41,810  
scientific institution interviewing all

74  
00:03:38,719 --> 00:03:44,180  
sorts of scientists this time it's at

75  
00:03:41,810 --> 00:03:47,330  
the Australian Museum where Maynard and

76  
00:03:44,180 --> 00:03:50,120  
I were all of last week performing for

77  
00:03:47,330 --> 00:03:52,969  
the science festival as part of the

78  
00:03:50,120 --> 00:03:55,580  
school's events performing our mystery

79  
00:03:52,969 --> 00:03:57,169  
investigator show and there's a bit some

80  
00:03:55,580 --> 00:03:59,570  
clips some highlights from the mystery

81  
00:03:57,169 --> 00:04:01,849  
investigator show a bit later on but

82  
00:03:59,569 --> 00:04:03,859  
before that may not speaks to people

83  
00:04:01,849 --> 00:04:07,609  
from the Australian mathematical science

84  
00:04:03,860 --> 00:04:10,490  
Institute dr. Ann Massa from jenolan

85  
00:04:07,610 --> 00:04:12,680  
caves which is a wonderful cave system

86

00:04:10,490 --> 00:04:15,040  
west of Sydney then it's Thomas

87  
00:04:12,680 --> 00:04:18,650  
Jefferies from the joint academic

88  
00:04:15,039 --> 00:04:21,108  
microbiology seminars known as jams and

89  
00:04:18,649 --> 00:04:23,659  
then older from the wild life Sydney

90  
00:04:21,108 --> 00:04:25,490  
Seward Darling Harbour and she and her

91  
00:04:23,660 --> 00:04:28,490  
colleagues brought along lots of stick

92  
00:04:25,490 --> 00:04:30,259  
insects that was a lot of fun now just

93  
00:04:28,490 --> 00:04:31,490  
getting back to the solar eclipse if you

94  
00:04:30,259 --> 00:04:34,159  
remember last week on the show we

95  
00:04:31,490 --> 00:04:35,780  
chatted to Evan Bernstein from the

96  
00:04:34,160 --> 00:04:38,540  
skeptics guide to the universe who was

97  
00:04:35,779 --> 00:04:40,729  
very excited very excited about going to

98  
00:04:38,540 --> 00:04:43,370  
see that solar eclipse he did I'm

99  
00:04:40,730 --> 00:04:46,729  
delighted to report he made it and the

100  
00:04:43,370 --> 00:04:48,360

skies were clear for Evan and his

101

00:04:46,728 --> 00:04:51,169  
friends and family who were they

102

00:04:48,360 --> 00:04:57,150  
and here's a short clip that he made

103

00:04:51,170 --> 00:05:00,120  
during during the solar eclipse okay we

104

00:04:57,149 --> 00:05:03,620  
are about four minutes from totality and

105

00:05:00,120 --> 00:05:06,810  
the skies have gotten darker and

106

00:05:03,620 --> 00:05:11,819  
everybody is on pins and needles waiting

107

00:05:06,810 --> 00:05:13,230  
for the actual moment so stay tuned okay

108

00:05:11,819 --> 00:05:15,240  
two minutes out two minutes to go I'm

109

00:05:13,230 --> 00:05:17,009  
gonna let this thing run and hopefully

110

00:05:15,240 --> 00:05:33,629  
we'll see the shadow wash over us from

111

00:05:17,009 --> 00:05:37,069  
this direction we're facing west we are

112

00:05:33,629 --> 00:05:44,649  
in totality folks look Jupiter above us

113

00:05:37,069 --> 00:05:44,649  
[Music]

114

00:05:49,199 --> 00:05:55,149  
just amazing

115  
00:05:51,918 --> 00:05:55,149  
and describe

116  
00:05:56,230 --> 00:05:59,600  
[Music]

117  
00:06:02,418 --> 00:06:07,859  
congratulations Evan I'm so thrilled and

118  
00:06:05,339 --> 00:06:10,019  
delighted for you and your friends and

119  
00:06:07,860 --> 00:06:12,540  
family and all the people all the people

120  
00:06:10,019 --> 00:06:15,449  
who saw the solar eclipse and I'm

121  
00:06:12,540 --> 00:06:18,860  
jealous I'm very jealous but now it's

122  
00:06:15,449 --> 00:06:25,250  
time for me to run downstairs open up a

123  
00:06:18,860 --> 00:06:28,949  
box of imported Indian curry yes

124  
00:06:25,250 --> 00:06:33,180  
imported if they come in these little

125  
00:06:28,949 --> 00:06:34,949  
boxes they're very cheap and you take

126  
00:06:33,180 --> 00:06:38,430  
them out of the box and then into sort

127  
00:06:34,949 --> 00:06:41,759  
of a foil pouch new undo that pour the

128  
00:06:38,430 --> 00:06:43,680  
contents into a bowl heat up some rice

129  
00:06:41,759 --> 00:06:47,159  
and mix it all together

130  
00:06:43,680 --> 00:06:50,009  
and it makes an excellent excellent

131  
00:06:47,160 --> 00:06:52,620  
lunch or dinner imported Indian curry

132  
00:06:50,009 --> 00:06:55,500  
and then you can add some spices if you

133  
00:06:52,620 --> 00:06:58,069  
wish or yogurt or things like that maybe

134  
00:06:55,500 --> 00:07:01,199  
make some papadums in the microwave

135  
00:06:58,069 --> 00:07:04,680  
sounds good to me while I'm enjoying all

136  
00:07:01,199 --> 00:07:17,868  
that I hope you enjoy the sceptic zone

137  
00:07:04,680 --> 00:07:17,869  
[Music]

138  
00:07:20,649 --> 00:07:31,370  
let's all take this with a grain of salt

139  
00:07:23,600 --> 00:07:33,580  
is around second I am at the moonrise

140  
00:07:31,370 --> 00:07:35,810  
hotel we're actually sitting at a gym

141  
00:07:33,579 --> 00:07:40,189  
because that's the place that's why it's

142  
00:07:35,810 --> 00:07:42,949  
quiet it's it's true we're stepping away

143

00:07:40,189 --> 00:07:46,668  
from all of the revelry and all of the

144  
00:07:42,949 --> 00:07:48,439  
celebration after a day of watching the

145  
00:07:46,668 --> 00:07:50,418  
moon get in the way of our view of the

146  
00:07:48,439 --> 00:07:52,490  
Sun and the voice that you're hearing

147  
00:07:50,418 --> 00:07:57,560  
and most of you probably recognize is

148  
00:07:52,490 --> 00:07:59,300  
that Pamela gay Oh much better although

149  
00:07:57,560 --> 00:08:01,819  
you can probably tell by my voice that

150  
00:07:59,300 --> 00:08:06,500  
you know I've gone through through

151  
00:08:01,819 --> 00:08:10,069  
something but we just had an eclipse

152  
00:08:06,500 --> 00:08:14,478  
weekend and then some it was wonderful

153  
00:08:10,069 --> 00:08:15,620  
by all accounts you tell us about your

154  
00:08:14,478 --> 00:08:18,668  
experience with the Eclipse what

155  
00:08:15,620 --> 00:08:22,340  
happened to you so this entire adventure

156  
00:08:18,668 --> 00:08:26,060  
started on Friday morning when we all

157  
00:08:22,339 --> 00:08:30,409

began to converge on this beautiful moon

158

00:08:26,060 --> 00:08:32,028

Apollo themed hotel in st. Louis

159

00:08:30,410 --> 00:08:34,570

Missouri in the middle of the United

160

00:08:32,028 --> 00:08:37,429

States group of us went on an amazingly

161

00:08:34,570 --> 00:08:39,140

sometimes harrowing bike ride in which I

162

00:08:37,429 --> 00:08:42,439

got lost and we went down a highway at

163

00:08:39,139 --> 00:08:46,519

one point because this is what I do we

164

00:08:42,440 --> 00:08:49,640

had two days of science and arts and

165

00:08:46,519 --> 00:08:53,600

science related music and then this

166

00:08:49,639 --> 00:08:56,509

morning before the Sun was fully up we

167

00:08:53,600 --> 00:08:58,940

boarded cars we boarded buses and we

168

00:08:56,509 --> 00:09:03,110

drove about a hundred and sixty

169

00:08:58,940 --> 00:09:06,680

kilometers to Carbondale Illinois which

170

00:09:03,110 --> 00:09:08,570

is near the point of maximum totality

171

00:09:06,679 --> 00:09:11,469

here in the United States we had roughly

172  
00:09:08,570 --> 00:09:14,450  
two minutes and 40 seconds of totality

173  
00:09:11,470 --> 00:09:16,430  
during which I expect I experienced two

174  
00:09:14,450 --> 00:09:18,200  
minutes and 40 seconds of a little tiny

175  
00:09:16,429 --> 00:09:20,870  
very annoying cloud being directly

176  
00:09:18,200 --> 00:09:22,100  
between me and Jim Cantore of The

177  
00:09:20,870 --> 00:09:24,019  
Weather Channel

178  
00:09:22,100 --> 00:09:26,060  
as people all around us were able to see

179  
00:09:24,019 --> 00:09:28,730  
a few seconds here a few minutes there

180  
00:09:26,059 --> 00:09:31,518  
well yeah you know we were in two buses

181  
00:09:28,730 --> 00:09:35,269  
and my the bus I was on was the other

182  
00:09:31,519 --> 00:09:38,360  
bus that went into a an area just

183  
00:09:35,269 --> 00:09:40,100  
outside Carbondale and we had we saw the

184  
00:09:38,360 --> 00:09:43,370  
whole thing I know I know

185  
00:09:40,100 --> 00:09:46,339  
it's the the running joke all weekend

186  
00:09:43,370 --> 00:09:49,429  
has been I was going to abandon the

187  
00:09:46,339 --> 00:09:52,040  
entire team because my two prior

188  
00:09:49,429 --> 00:09:56,149  
attempts to see a solar eclipse included

189  
00:09:52,039 --> 00:09:57,860  
getting rained upon and when we all went

190  
00:09:56,149 --> 00:09:59,929  
to the Yucatan Peninsula the day the

191  
00:09:57,860 --> 00:10:03,470  
Mayan calendar ended we actually did

192  
00:09:59,929 --> 00:10:06,649  
almost die on a Mexican ferry i I know

193  
00:10:03,470 --> 00:10:08,990  
that somebody has to be that tail end of

194  
00:10:06,649 --> 00:10:12,620  
the Gaussian distribution of faiths and

195  
00:10:08,990 --> 00:10:15,318  
it seems to be my destiny or at least my

196  
00:10:12,620 --> 00:10:17,600  
statistically improbable reality to

197  
00:10:15,318 --> 00:10:20,059  
always be that tail end of the Gaussian

198  
00:10:17,600 --> 00:10:22,819  
distribution so I joked all weekend I

199  
00:10:20,059 --> 00:10:24,469  
was going to abandon all of you go hang

200

00:10:22,818 --> 00:10:26,568  
out with the Weather Channel and there'd

201  
00:10:24,470 --> 00:10:28,069  
be a little tiny cloud over only my head

202  
00:10:26,568 --> 00:10:30,828  
and you'd all have a fabulous experience

203  
00:10:28,068 --> 00:10:32,028  
and it sort of happened it totally

204  
00:10:30,828 --> 00:10:35,239  
happened there was this little tiny

205  
00:10:32,028 --> 00:10:37,129  
Peninsula of cloud that like only

206  
00:10:35,240 --> 00:10:40,129  
affected me and Jim Cantore and our

207  
00:10:37,129 --> 00:10:43,129  
camera crew hmm yeah you'll have to

208  
00:10:40,129 --> 00:10:45,289  
continue trying it's worth it I I'm

209  
00:10:43,129 --> 00:10:47,208  
going to and I'm going to make sure that

210  
00:10:45,289 --> 00:10:50,659  
I always stay far away from people I

211  
00:10:47,208 --> 00:10:54,438  
care about so um let's move move on from

212  
00:10:50,659 --> 00:10:56,919  
the Eclipse can you tell me a little bit

213  
00:10:54,438 --> 00:10:59,088  
about what you do now I mean you

214  
00:10:56,919 --> 00:11:01,099

listeners to astronomy cast will know

215

00:10:59,089 --> 00:11:02,600

that your title has changed it has you

216

00:11:01,100 --> 00:11:04,310

no longer the university of southern

217

00:11:02,600 --> 00:11:07,459

Illinois Edwardsville is that correct

218

00:11:04,309 --> 00:11:09,679

it's true so back in January I was hired

219

00:11:07,458 --> 00:11:12,559

by the Astronomical Society of the

220

00:11:09,679 --> 00:11:14,479

Pacific and you may be thinking wait she

221

00:11:12,559 --> 00:11:16,309

lives in Illinois doesn't she and that

222

00:11:14,480 --> 00:11:18,860

sure doesn't touch an ocean no no it

223

00:11:16,309 --> 00:11:21,679

touches the Mississippi River but it's

224

00:11:18,860 --> 00:11:24,230

an international organization and just

225

00:11:21,679 --> 00:11:26,299

as Australia is a Pacific nation the

226

00:11:24,230 --> 00:11:29,778

United States is a Pacific nation and

227

00:11:26,299 --> 00:11:32,419

this international organization well

228

00:11:29,778 --> 00:11:34,759

Illinois still part of the US and

229  
00:11:32,419 --> 00:11:37,039  
so now I'm the director of technology

230  
00:11:34,759 --> 00:11:39,679  
and citizen science at the Astronomical

231  
00:11:37,039 --> 00:11:42,370  
Society of the Pacific and I'm working

232  
00:11:39,679 --> 00:11:44,539  
to take this more than hundred-year-old

233  
00:11:42,370 --> 00:11:48,470  
organization that was founded right

234  
00:11:44,539 --> 00:11:50,448  
after an eclipse from people that were

235  
00:11:48,470 --> 00:11:53,149  
taking through the first scientific data

236  
00:11:50,448 --> 00:11:54,859  
ever of an eclipse and helping them move

237  
00:11:53,149 --> 00:11:57,409  
from the photographic air into the

238  
00:11:54,860 --> 00:11:59,810  
digital era that's fantastic and but you

239  
00:11:57,409 --> 00:12:01,219  
still so the director of cosmic ways I'm

240  
00:11:59,809 --> 00:12:03,229  
still the director of cosmic West

241  
00:12:01,220 --> 00:12:05,839  
technically principal investigators the

242  
00:12:03,230 --> 00:12:08,269  
phrase that nASA uses on our paperwork

243  
00:12:05,839 --> 00:12:10,010  
I'm the person that hurts the paperwork

244  
00:12:08,269 --> 00:12:10,549  
to make sure the citizen science gets

245  
00:12:10,009 --> 00:12:12,740  
done

246  
00:12:10,549 --> 00:12:14,028  
yeah well this that has been something

247  
00:12:12,740 --> 00:12:14,810  
that you've been focused on for many

248  
00:12:14,028 --> 00:12:16,759  
years now

249  
00:12:14,809 --> 00:12:19,778  
I mean you visited Australia several

250  
00:12:16,759 --> 00:12:21,919  
times and some of some of the reason

251  
00:12:19,778 --> 00:12:26,448  
some of the reasons that you visited

252  
00:12:21,919 --> 00:12:30,379  
were to raise funds for so we launched

253  
00:12:26,448 --> 00:12:32,448  
back in January of 2012 and at that

254  
00:12:30,379 --> 00:12:35,059  
point in time we were funded off of two

255  
00:12:32,448 --> 00:12:37,009  
separate NASA grants we had a series of

256  
00:12:35,059 --> 00:12:39,528  
different mission contracts we had some

257

00:12:37,009 --> 00:12:42,019  
corporate sponsors but over the years

258  
00:12:39,528 --> 00:12:44,778  
the amount of funding available for

259  
00:12:42,019 --> 00:12:47,299  
people to do the kind of science in

260  
00:12:44,778 --> 00:12:49,070  
science education that I work on has

261  
00:12:47,299 --> 00:12:51,009  
fluctuated we went through a period

262  
00:12:49,070 --> 00:12:54,220  
called sequestration where they

263  
00:12:51,009 --> 00:12:57,799  
radically changed everyone's budgets and

264  
00:12:54,220 --> 00:13:00,560  
it was the donations of people like

265  
00:12:57,799 --> 00:13:02,929  
those out in our audience and it was

266  
00:13:00,559 --> 00:13:06,139  
because of the help of people like you

267  
00:13:02,929 --> 00:13:09,979  
and Richard that we were able to reach

268  
00:13:06,139 --> 00:13:12,409  
out and say can you help us bridge from

269  
00:13:09,980 --> 00:13:16,370  
today to tomorrow and that tomorrow came

270  
00:13:12,409 --> 00:13:18,019  
and today we're once again NASA funded

271  
00:13:16,370 --> 00:13:20,179

project I'm not speaking for NASA right

272

00:13:18,019 --> 00:13:21,919

now right now I'm speaking is regular

273

00:13:20,179 --> 00:13:26,659

human being working for the Astronomical

274

00:13:21,919 --> 00:13:29,929

Society of the Pacific but we were able

275

00:13:26,659 --> 00:13:31,789

to carry on and get to this today where

276

00:13:29,929 --> 00:13:34,009

we're working to generate new citizen

277

00:13:31,789 --> 00:13:35,419

science projects and hopefully if we're

278

00:13:34,009 --> 00:13:37,939

going to be launching a brand-new

279

00:13:35,419 --> 00:13:40,818

project in the not-too-distant future to

280

00:13:37,940 --> 00:13:41,560

get help labeling astronaut photos this

281

00:13:40,818 --> 00:13:43,179

is the next

282

00:13:41,559 --> 00:13:45,939

big thing we're gonna be looking to do

283

00:13:43,179 --> 00:13:49,329

because there's a whole lot of science

284

00:13:45,940 --> 00:13:52,180

in these pictures that are forest fires

285

00:13:49,330 --> 00:13:54,250

a flooding of farmer's fields and all

286  
00:13:52,179 --> 00:13:55,659  
their different states and shapes across

287  
00:13:54,250 --> 00:13:58,269  
the world sorry so these are photos

288  
00:13:55,659 --> 00:13:59,528  
taken by astronauts from space yes so

289  
00:13:58,269 --> 00:14:03,250  
the astronauts in the International

290  
00:13:59,528 --> 00:14:07,120  
Space Station have taken more than one

291  
00:14:03,250 --> 00:14:08,799  
and a half million photos and we know

292  
00:14:07,120 --> 00:14:10,330  
where the space station was when they

293  
00:14:08,799 --> 00:14:12,399  
took the photos and we know what camera

294  
00:14:10,330 --> 00:14:15,730  
and lens they were using but these

295  
00:14:12,399 --> 00:14:18,159  
photos aren't labeled so to make them

296  
00:14:15,730 --> 00:14:20,800  
usable for science we need to get the

297  
00:14:18,159 --> 00:14:24,490  
help of anyone out there who just wants

298  
00:14:20,799 --> 00:14:26,979  
to explore our world from an eagle-eyed

299  
00:14:24,490 --> 00:14:31,330  
view if that eagle was flying 300 miles

300  
00:14:26,980 --> 00:14:33,700  
up with the zoom lens that's amazing so

301  
00:14:31,330 --> 00:14:35,379  
when is this launching we're we're still

302  
00:14:33,700 --> 00:14:36,790  
waiting for a final approval to come

303  
00:14:35,379 --> 00:14:38,350  
from NASA headquarters again I'm not

304  
00:14:36,789 --> 00:14:40,299  
speaking for NASA today just to make

305  
00:14:38,350 --> 00:14:42,790  
that clear we're still waiting for word

306  
00:14:40,299 --> 00:14:45,729  
from NASA headquarters and now that the

307  
00:14:42,789 --> 00:14:47,679  
Eclipse is behind us we're hoping to be

308  
00:14:45,730 --> 00:14:50,529  
able to turn this around fairly quickly

309  
00:14:47,679 --> 00:14:53,109  
and get all of our software certified

310  
00:14:50,529 --> 00:14:55,088  
because well this is the kind of launch

311  
00:14:53,110 --> 00:14:57,690  
that we want it to be just as nominal as

312  
00:14:55,089 --> 00:15:00,610  
any spacecraft launch is it going to be

313  
00:14:57,690 --> 00:15:02,530  
similar to things like Galaxy Zoo where

314

00:15:00,610 --> 00:15:04,240  
you basically have the photos online and

315  
00:15:02,529 --> 00:15:06,309  
people are expected to provide the

316  
00:15:04,240 --> 00:15:08,320  
information online and then you kind of

317  
00:15:06,309 --> 00:15:09,699  
average out the results or see if

318  
00:15:08,320 --> 00:15:11,410  
everybody says the same thing that's

319  
00:15:09,700 --> 00:15:13,300  
exactly what we're doing so it's gonna

320  
00:15:11,409 --> 00:15:16,329  
be a multi-step process where we start

321  
00:15:13,299 --> 00:15:18,429  
out by asking is this a picture of outer

322  
00:15:16,330 --> 00:15:20,830  
space or looking down at the surface of

323  
00:15:18,429 --> 00:15:23,529  
the planet and depending on how you

324  
00:15:20,830 --> 00:15:26,560  
answer it then asks so do you see things

325  
00:15:23,529 --> 00:15:29,110  
like farms and oceans and coastlines or

326  
00:15:26,559 --> 00:15:31,479  
do you see the moon and stars and we're

327  
00:15:29,110 --> 00:15:33,039  
gonna work on narrowing it down and for

328  
00:15:31,480 --> 00:15:35,170

those photos that are looking straight

329

00:15:33,039 --> 00:15:37,329

down at the earth or maybe at a slightly

330

00:15:35,169 --> 00:15:39,189

oblique angle we're gonna ask people to

331

00:15:37,330 --> 00:15:41,970

try and Center the photos up on Google

332

00:15:39,190 --> 00:15:44,800

Maps so that we can get the actual

333

00:15:41,970 --> 00:15:46,778

latitude and longitude of what it is

334

00:15:44,799 --> 00:15:48,579

that people are able to see in these

335

00:15:46,778 --> 00:15:50,860

images and they can really be used for

336

00:15:48,580 --> 00:15:53,710

science that way that's fantastic but

337

00:15:50,860 --> 00:15:56,169

what projects we have ongoing

338

00:15:53,710 --> 00:15:58,330

so currently we have mercury mappers

339

00:15:56,169 --> 00:16:01,000

Mars mappers which is about to get new

340

00:15:58,330 --> 00:16:03,879

data in the coming months we have moon

341

00:16:01,000 --> 00:16:07,028

mappers we are working to finish off

342

00:16:03,879 --> 00:16:09,039

Vesta so that we can bring series on and

343  
00:16:07,028 --> 00:16:10,838  
we have great new things planned for the

344  
00:16:09,039 --> 00:16:13,208  
future including what we're going to be

345  
00:16:10,839 --> 00:16:15,610  
working with the acai Rose Rex team to

346  
00:16:13,208 --> 00:16:18,699  
look at the asteroid Bennu so it's new

347  
00:16:15,610 --> 00:16:20,169  
things on a regular basis just keep

348  
00:16:18,700 --> 00:16:22,480  
helping us do science because there's

349  
00:16:20,169 --> 00:16:27,549  
more data than people so we need all the

350  
00:16:22,480 --> 00:16:31,450  
people that's very exciting so this you

351  
00:16:27,549 --> 00:16:34,809  
organized this Eclipse escape because

352  
00:16:31,450 --> 00:16:36,129  
that was through astronomy cast yes is

353  
00:16:34,809 --> 00:16:39,429  
there anything else that you're planning

354  
00:16:36,129 --> 00:16:41,528  
through a story guys so right now we're

355  
00:16:39,429 --> 00:16:44,049  
looking ahead and trying to figure out

356  
00:16:41,528 --> 00:16:48,039  
what it is we want to do next and what

357  
00:16:44,049 --> 00:16:49,359  
I'm hoping to do is in 2019 because 2018

358  
00:16:48,039 --> 00:16:51,370  
we have an International Astronomical

359  
00:16:49,360 --> 00:16:52,839  
Union meeting and that might eat a

360  
00:16:51,370 --> 00:16:55,179  
little bit of my summer by which I mean

361  
00:16:52,839 --> 00:16:57,490  
at least two weeks so we're looking

362  
00:16:55,179 --> 00:17:01,149  
ahead to 2019 so that we can wrap this

363  
00:16:57,490 --> 00:17:03,070  
up and plan well for the future and go

364  
00:17:01,149 --> 00:17:05,799  
sit around a campfire on top of a

365  
00:17:03,070 --> 00:17:07,689  
supervolcano in Yellowstone and look at

366  
00:17:05,799 --> 00:17:10,240  
the stars and roast marshmallows because

367  
00:17:07,689 --> 00:17:12,220  
sounds great that's that's kind of what

368  
00:17:10,240 --> 00:17:14,140  
I'm thinking feels right to do next

369  
00:17:12,220 --> 00:17:16,088  
okay very good I hope I'll be able to

370  
00:17:14,140 --> 00:17:17,829  
join you then I hope so too it's really

371

00:17:16,088 --> 00:17:26,198  
been a pleasure thank you thanks very

372  
00:17:17,828 --> 00:17:28,058  
much Pamela thank you hi this is Ben

373  
00:17:26,199 --> 00:17:29,980  
Radford and this is Pascual Romero from

374  
00:17:28,058 --> 00:17:32,170  
the squaring the strange podcast every

375  
00:17:29,980 --> 00:17:34,720  
week my co-host and I cast a skeptical

376  
00:17:32,170 --> 00:17:36,940  
eye on a different topic monsters ghosts

377  
00:17:34,720 --> 00:17:39,130  
demons mysteries and even current events

378  
00:17:36,940 --> 00:17:41,170  
are dissected and discussed with a fun

379  
00:17:39,130 --> 00:17:42,700  
unscripted and skeptical take that

380  
00:17:41,170 --> 00:17:45,279  
you're sure to enjoy fine this is

381  
00:17:42,700 --> 00:17:48,539  
squirting strange calm iTunes or on your

382  
00:17:45,279 --> 00:17:48,539  
favorite podcast platform

383  
00:17:59,390 --> 00:18:14,340  
it's the raw skeptic report with ID

384  
00:18:03,359 --> 00:18:16,229  
Robertson hello everyone as part of the

385  
00:18:14,339 --> 00:18:18,990

Northern Rivers vaccination supporters

386

00:18:16,230 --> 00:18:21,990

group I can say that we are pretty

387

00:18:18,990 --> 00:18:24,420

chuffed that our group has recently been

388

00:18:21,990 --> 00:18:26,130

nominated for an excellence award from

389

00:18:24,420 --> 00:18:29,130

the North Coast primary health care

390

00:18:26,130 --> 00:18:31,710

network we have now heard that we are

391

00:18:29,130 --> 00:18:35,190

one of four finalists for the Community

392

00:18:31,710 --> 00:18:37,740

Choice Award the public can look at the

393

00:18:35,190 --> 00:18:41,009

four videos each two minutes in duration

394

00:18:37,740 --> 00:18:44,640

and decide which organization or group

395

00:18:41,009 --> 00:18:46,980

will get their vote we will put the link

396

00:18:44,640 --> 00:18:50,850

to the videos in this week's show notes

397

00:18:46,980 --> 00:18:54,480

at skeptic zone TV as well as on the

398

00:18:50,849 --> 00:18:56,279

skeptic zone Facebook page as skeptic

399

00:18:54,480 --> 00:18:58,470

zone listeners it would be great to have

400  
00:18:56,279 --> 00:19:01,950  
your support should you think we might

401  
00:18:58,470 --> 00:19:04,650  
be deserving of the award it is allowed

402  
00:19:01,950 --> 00:19:08,400  
for the public to vote every day once a

403  
00:19:04,650 --> 00:19:10,259  
day if they like here is the audio of

404  
00:19:08,400 --> 00:19:12,980  
the short video we made for the public

405  
00:19:10,259 --> 00:19:12,980  
to vote on

406  
00:19:13,589 --> 00:19:18,209  
we were introduced by social media as

407  
00:19:16,259 --> 00:19:20,519  
all concerned people within our

408  
00:19:18,210 --> 00:19:22,200  
community really worried about news that

409  
00:19:20,519 --> 00:19:25,470  
had come out that our vaccination rates

410  
00:19:22,200 --> 00:19:27,720  
were so low we got together and we

411  
00:19:25,470 --> 00:19:29,930  
thought we needed to do something about

412  
00:19:27,720 --> 00:19:29,930  
it

413  
00:19:32,230 --> 00:19:36,759  
we all live in this region so we know

414  
00:19:35,019 --> 00:19:38,798  
what the cultural narrative is we know

415  
00:19:36,759 --> 00:19:41,908  
how much misinformation there is and we

416  
00:19:38,798 --> 00:19:45,009  
know how scared people are of vaccines

417  
00:19:41,909 --> 00:19:48,360  
we also know that parents just want to

418  
00:19:45,009 --> 00:19:50,589  
make the safest decisions for their kids

419  
00:19:48,359 --> 00:19:52,000  
fears become so much bigger when you

420  
00:19:50,589 --> 00:19:54,428  
don't talk about them or if you don't

421  
00:19:52,000 --> 00:19:56,169  
have anybody to speak to about them when

422  
00:19:54,429 --> 00:19:57,909  
you're fearful of immunizations you

423  
00:19:56,169 --> 00:20:00,700  
think that the worst-case scenario

424  
00:19:57,909 --> 00:20:01,720  
is every case so you think that the

425  
00:20:00,700 --> 00:20:04,389  
worst thing that could possibly happen

426  
00:20:01,720 --> 00:20:06,250  
is going to happen to your child who you

427  
00:20:04,388 --> 00:20:08,619  
love and you want to protect and it's

428

00:20:06,250 --> 00:20:09,940  
not reality but it becomes reality in

429  
00:20:08,619 --> 00:20:12,089  
your mind because that's what you fear

430  
00:20:09,940 --> 00:20:12,090  
the most

431  
00:20:12,259 --> 00:20:17,000  
what we did is that we've developed some

432  
00:20:15,170 --> 00:20:18,950  
tools we've developed some resources

433  
00:20:17,000 --> 00:20:21,140  
we've written a website we've developed

434  
00:20:18,950 --> 00:20:23,900  
all sorts of memes and infographics that

435  
00:20:21,140 --> 00:20:25,840  
have provided our members with the tools

436  
00:20:23,900 --> 00:20:29,150  
to then go on and have peer-to-peer

437  
00:20:25,839 --> 00:20:31,309  
conversations our concert we call a

438  
00:20:29,150 --> 00:20:33,590  
thousand cups of tea because literally

439  
00:20:31,309 --> 00:20:35,629  
it takes sitting around a table having a

440  
00:20:33,589 --> 00:20:37,909  
thousand cups of tea listening to

441  
00:20:35,630 --> 00:20:43,520  
people's concerns and addressing each

442  
00:20:37,910 --> 00:20:46,550

one at a time it often takes time to

443

00:20:43,519 --> 00:20:49,089

explain things in a way that someone

444

00:20:46,549 --> 00:20:52,849

understands or in a culturally safe way

445

00:20:49,089 --> 00:20:55,579

helping people find good sources of

446

00:20:52,849 --> 00:20:59,029

information it's been a really important

447

00:20:55,579 --> 00:21:01,699

part people are listening to what we say

448

00:20:59,029 --> 00:21:04,190

and even if they're not changing their

449

00:21:01,700 --> 00:21:06,380

minds straight away it does at least

450

00:21:04,190 --> 00:21:10,029

open the dialogue and get people

451

00:21:06,380 --> 00:21:10,030

interested and get people talking

452

00:21:10,440 --> 00:21:16,379

I can kind of sympathize with people who

453

00:21:13,558 --> 00:21:18,658

has attempted but I can also let them

454

00:21:16,378 --> 00:21:21,480

know that the other side of the fence is

455

00:21:18,659 --> 00:21:22,830

extremely scary two of my children have

456

00:21:21,480 --> 00:21:24,690

had whooping cough you know my

457  
00:21:22,829 --> 00:21:27,359  
daughter's left off her life long lung

458  
00:21:24,690 --> 00:21:29,820  
disease from whooping cough not getting

459  
00:21:27,359 --> 00:21:32,308  
the vaccines is so much worse than any

460  
00:21:29,819 --> 00:21:35,409  
reaction that can happen if if a

461  
00:21:32,308 --> 00:21:39,230  
reaction is to happen with the vaccines

462  
00:21:35,410 --> 00:21:42,890  
we remain a grassroots unfunded group of

463  
00:21:39,230 --> 00:21:46,160  
local volunteers we have no affiliations

464  
00:21:42,890 --> 00:21:48,620  
or sponsors and our only formal

465  
00:21:46,160 --> 00:21:51,830  
collaboration is as part of the vaccine

466  
00:21:48,619 --> 00:21:53,239  
safety net meaning that our website has

467  
00:21:51,829 --> 00:21:55,250  
been ratified by the World Health

468  
00:21:53,240 --> 00:21:57,109  
Organization as an up-to-date and

469  
00:21:55,250 --> 00:22:00,190  
reliable source of information for

470  
00:21:57,109 --> 00:22:03,079  
vaccines and vaccine preventable disease

471  
00:22:00,190 --> 00:22:04,940  
I'll keep you updated on how we went in

472  
00:22:03,079 --> 00:22:22,819  
the voting the winner will be announced

473  
00:22:04,940 --> 00:22:25,160  
in September and now direct from the

474  
00:22:22,819 --> 00:22:28,549  
cafe and Australia's Science Channel

475  
00:22:25,160 --> 00:22:31,460  
it's brouhaha science in less time than

476  
00:22:28,549 --> 00:22:38,779  
it takes to order a coffee with such

477  
00:22:31,460 --> 00:22:40,819  
j-su folly sorry Serena Williams Kayne

478  
00:22:38,779 --> 00:22:45,019  
and Elon Musk there's a new contender

479  
00:22:40,819 --> 00:22:46,779  
for greatest of all time algae algae is

480  
00:22:45,019 --> 00:22:48,019  
responsible for all life on the planet

481  
00:22:46,779 --> 00:22:49,879  
yep

482  
00:22:48,019 --> 00:22:51,619  
what kind of just looks like sludge is

483  
00:22:49,880 --> 00:22:53,840  
the reason we're here this morning

484  
00:22:51,619 --> 00:22:56,629  
Australian scientists released a study

485

00:22:53,839 --> 00:22:59,269  
showing that about 650 million years ago

486  
00:22:56,630 --> 00:23:01,310  
there was an algae explosion both in the

487  
00:22:59,269 --> 00:23:03,920  
number of different types and the sheer

488  
00:23:01,309 --> 00:23:05,690  
amounts of it out of this explosion more

489  
00:23:03,920 --> 00:23:07,640  
complex life began forming

490  
00:23:05,690 --> 00:23:10,340  
leading to everything we see around us

491  
00:23:07,640 --> 00:23:13,190  
today the evidence they found suggest

492  
00:23:10,339 --> 00:23:15,919  
this happen in Central Australia algae

493  
00:23:13,190 --> 00:23:19,850  
is Australian sorry well you can thank

494  
00:23:15,920 --> 00:23:21,529  
us later along with giving us life algae

495  
00:23:19,849 --> 00:23:24,139  
could also be the thing that saves us

496  
00:23:21,529 --> 00:23:26,690  
around the world scientists are using it

497  
00:23:24,140 --> 00:23:29,300  
to produce new clean fuels and create

498  
00:23:26,690 --> 00:23:31,850  
new food source it might even help clean

499  
00:23:29,299 --> 00:23:35,500

the end so today we're launching a new

500

00:23:31,849 --> 00:23:38,539

campaign algae for 2018 Australia via

501

00:23:35,500 --> 00:23:40,190

forget your retired sports stars for an

502

00:23:38,539 --> 00:23:42,559

Australian that has contributed more to

503

00:23:40,190 --> 00:23:43,940

our way of life algae really is the

504

00:23:42,559 --> 00:23:45,619

greatest of all time

505

00:23:43,940 --> 00:23:51,799

it's time it gets the recognition it

506

00:23:45,619 --> 00:24:18,109

deserves for more brouhaha and

507

00:23:51,799 --> 00:24:21,309

Australian science visit w-w-w the last

508

00:24:18,109 --> 00:24:23,839

month or so we've been talking about the

509

00:24:21,309 --> 00:24:25,909

anti-vaccination movie vac stat - at

510

00:24:23,839 --> 00:24:28,669

Australia and subsequently of course

511

00:24:25,910 --> 00:24:32,060

Polly Tommy one of the producers was

512

00:24:28,670 --> 00:24:34,580

denied re-entry to Australia for at

513

00:24:32,059 --> 00:24:38,119

least three years when she left for New

514  
00:24:34,579 --> 00:24:40,579  
Zealand you can of course catch up on

515  
00:24:38,119 --> 00:24:41,479  
those reports over the last few weeks of

516  
00:24:40,579 --> 00:24:45,470  
the sceptic zone

517  
00:24:41,480 --> 00:24:49,460  
well it seems vac stay is the gift that

518  
00:24:45,470 --> 00:24:52,309  
just keeps on giving during one of these

519  
00:24:49,460 --> 00:24:55,250  
screenings of vac stin Melbourne during

520  
00:24:52,309 --> 00:24:57,740  
the Q&A and on the stage taking

521  
00:24:55,250 --> 00:24:59,390  
questions was Polly Tommy and Meryl Dory

522  
00:24:57,740 --> 00:25:02,539  
the former president of the Australian

523  
00:24:59,390 --> 00:25:05,360  
vaccination skeptics Network one of the

524  
00:25:02,539 --> 00:25:09,049  
the people lined up to ask questions or

525  
00:25:05,359 --> 00:25:11,769  
give statements was a Melbourne doctor

526  
00:25:09,049 --> 00:25:17,000  
by the name of dr. John peace

527  
00:25:11,769 --> 00:25:20,960  
P ie SS II who happily told the the

528  
00:25:17,000 --> 00:25:23,059  
crowd of his efforts to keep people from

529  
00:25:20,960 --> 00:25:25,970  
being immunized to keep children from

530  
00:25:23,059 --> 00:25:30,139  
being immunized and we take up the story

531  
00:25:25,970 --> 00:25:33,710  
reported on The Guardian The Guardian

532  
00:25:30,140 --> 00:25:37,040  
com an article published on the 24th of

533  
00:25:33,710 --> 00:25:40,340  
August by Melissa daily which says in

534  
00:25:37,039 --> 00:25:42,319  
part doctor investigated that were

535  
00:25:40,339 --> 00:25:46,459  
helping vaccinating children to avoid

536  
00:25:42,319 --> 00:25:48,769  
the no jab no play laws a Melbourne

537  
00:25:46,460 --> 00:25:51,529  
doctor who promotes quote natural

538  
00:25:48,769 --> 00:25:53,599  
healing in quit and helps parents to

539  
00:25:51,529 --> 00:25:55,250  
avoid compulsory vaccination for their

540  
00:25:53,599 --> 00:25:57,230  
children is reportedly being

541  
00:25:55,250 --> 00:25:59,390  
investigated by Australia's

542

00:25:57,230 --> 00:26:03,558  
watchdog the Australian health

543  
00:25:59,390 --> 00:26:05,630  
practitioner regulation agency AHPRA is

544  
00:26:03,558 --> 00:26:08,480  
reportedly investigating doctor john

545  
00:26:05,630 --> 00:26:10,669  
pease who boasted at a meeting of anti

546  
00:26:08,480 --> 00:26:13,130  
vaccinators that he can help parents

547  
00:26:10,669 --> 00:26:16,580  
jump through the hoops and get their

548  
00:26:13,130 --> 00:26:20,480  
children exempt from victoria's quote no

549  
00:26:16,579 --> 00:26:24,079  
jab no pay and quote legislation pieces

550  
00:26:20,480 --> 00:26:27,349  
medical registration with AHPRA shows he

551  
00:26:24,079 --> 00:26:30,349  
has previously been ordered to undertake

552  
00:26:27,349 --> 00:26:33,079  
further education on Thursday Victoria's

553  
00:26:30,349 --> 00:26:36,019  
Acting Health Minister John Foley told

554  
00:26:33,079 --> 00:26:38,750  
Radio 3 aw in Melbourne that it was

555  
00:26:36,019 --> 00:26:41,029  
quote not good enough and quote piece

556  
00:26:38,750 --> 00:26:43,220

was still being investigated after

557

00:26:41,029 --> 00:26:47,079

concerns about his anti vaccination

558

00:26:43,220 --> 00:26:49,460

comments were raised in August 2016

559

00:26:47,079 --> 00:26:51,259

quote by failing to vaccinate their

560

00:26:49,460 --> 00:26:53,779

children parents are putting their kids

561

00:26:51,259 --> 00:26:56,289

and others in our community at risk of

562

00:26:53,779 --> 00:27:00,440

terrible diseases or death end quote

563

00:26:56,289 --> 00:27:02,569

Foley said in a video from an anti

564

00:27:00,440 --> 00:27:05,058

vaccination event held in August this

565

00:27:02,569 --> 00:27:08,210

year published by The Herald Sun paste

566

00:27:05,058 --> 00:27:11,539

explains how he tries to beat compulsory

567

00:27:08,210 --> 00:27:14,090

vaccination quote now I'm a doctor who

568

00:27:11,539 --> 00:27:16,460

has been working hard for 18 months to

569

00:27:14,089 --> 00:27:19,609

try and help parents get exemption from

570

00:27:16,460 --> 00:27:22,970

vaccinated pain for vaccinated play with

571  
00:27:19,609 --> 00:27:25,719  
mixed success you need a doctor's letter

572  
00:27:22,970 --> 00:27:28,039  
of contry indication in the right form

573  
00:27:25,720 --> 00:27:30,500  
provided the doctor has the

574  
00:27:28,039 --> 00:27:32,539  
qualifications required for Novak's no

575  
00:27:30,500 --> 00:27:35,900  
pay or is a registered medical

576  
00:27:32,539 --> 00:27:38,839  
practitioner for no facts no plate in

577  
00:27:35,900 --> 00:27:40,940  
quote he said the health department told

578  
00:27:38,839 --> 00:27:44,629  
the Guardian Australia it has referred

579  
00:27:40,940 --> 00:27:47,480  
one anti vaccination doctor to AHPRA but

580  
00:27:44,630 --> 00:27:51,260  
could not reveal further details due to

581  
00:27:47,480 --> 00:27:54,860  
confidentiality laws here are some clips

582  
00:27:51,259 --> 00:27:58,190  
gathered from the media and this story

583  
00:27:54,859 --> 00:28:00,039  
has made just about every TV news here

584  
00:27:58,190 --> 00:28:02,150  
in Australia and I've noticed

585  
00:28:00,039 --> 00:28:05,658  
internationally - it's been reported

586  
00:28:02,150 --> 00:28:09,019  
quite widely but here are some clips of

587  
00:28:05,659 --> 00:28:10,610  
the relevant people speaking about this

588  
00:28:09,019 --> 00:28:12,710  
recent event

589  
00:28:10,609 --> 00:28:14,898  
good evening a rebel anti-vaxxer has

590  
00:28:12,710 --> 00:28:16,730  
spoken out after being exposed as one of

591  
00:28:14,898 --> 00:28:19,189  
a group of Melbourne gp's under

592  
00:28:16,730 --> 00:28:21,079  
investigation it comes after a video was

593  
00:28:19,190 --> 00:28:22,399  
made public in which it was claimed

594  
00:28:21,079 --> 00:28:24,139  
doctors have helped hundreds of families

595  
00:28:22,398 --> 00:28:28,009  
avoid vaccines

596  
00:28:24,140 --> 00:28:29,830  
Andy Kearney has the story a doctor in

597  
00:28:28,009 --> 00:28:32,390  
the spotlight and under investigation

598  
00:28:29,829 --> 00:28:34,278  
are you worried about the investigation

599

00:28:32,390 --> 00:28:35,840  
well of course I'm not very comfortable

600  
00:28:34,278 --> 00:28:38,990  
we were having my life taken over by it

601  
00:28:35,839 --> 00:28:40,519  
but you see you know I'm I am quite

602  
00:28:38,990 --> 00:28:42,769  
convinced that there are many many

603  
00:28:40,519 --> 00:28:45,259  
children being damaged in our society by

604  
00:28:42,769 --> 00:28:47,659  
unsafe vaccines Melbourne doctor john

605  
00:28:45,259 --> 00:28:50,480  
pease faces accusations he's helping

606  
00:28:47,659 --> 00:28:52,970  
families dodge compulsory vaccinations

607  
00:28:50,480 --> 00:28:56,450  
it's believed another two gp's are also

608  
00:28:52,970 --> 00:28:59,240  
being investigated by authorities Nathan

609  
00:28:56,450 --> 00:29:02,450  
Templeton has more Nathan a number of

610  
00:28:59,240 --> 00:29:04,548  
GPS are under investigation good morning

611  
00:29:02,450 --> 00:29:06,830  
Larry and Kylie yes this explosive video

612  
00:29:04,548 --> 00:29:09,408  
that's just emerged was taken earlier

613  
00:29:06,829 --> 00:29:12,079

this month now there was a screening of

614

00:29:09,409 --> 00:29:14,570

the controversial documentary fact and

615

00:29:12,079 --> 00:29:17,569

this footage shows the Q&A that was held

616

00:29:14,569 --> 00:29:19,970

afterwards and in it - GPS dr. John

617

00:29:17,569 --> 00:29:22,009

Pease and dr. narrative James can be

618

00:29:19,970 --> 00:29:24,829

heard telling the crowd how over the

619

00:29:22,009 --> 00:29:28,730

past 18 months or so they have helped up

620

00:29:24,829 --> 00:29:31,699

to 600 families avoid having their

621

00:29:28,730 --> 00:29:34,579

children vaccinated dr. Pease also goes

622

00:29:31,700 --> 00:29:37,250

into great detail about how doctors can

623

00:29:34,579 --> 00:29:39,798

find loopholes so that anti-vaxxer

624

00:29:37,250 --> 00:29:43,308

marie's can get exemptions from those

625

00:29:39,798 --> 00:29:45,859

compulsory immunizations he also speaks

626

00:29:43,308 --> 00:29:47,960

out against the no jab no play

627

00:29:45,859 --> 00:29:50,388

regulations now there has been an

628  
00:29:47,960 --> 00:29:52,278  
investigation underway for some time at

629  
00:29:50,388 --> 00:29:54,229  
least three gPS

630  
00:29:52,278 --> 00:29:56,148  
are being looked into but now that this

631  
00:29:54,230 --> 00:29:58,240  
video has come out and it's made

632  
00:29:56,148 --> 00:30:01,099  
front-page news you would expect that

633  
00:29:58,240 --> 00:30:03,679  
investigation to really ramp up now

634  
00:30:01,099 --> 00:30:05,148  
Larry and Chloe a Melbourne GP who

635  
00:30:03,679 --> 00:30:07,159  
claims to have helped hundreds of

636  
00:30:05,148 --> 00:30:09,469  
parents dodge vaccinations for their

637  
00:30:07,159 --> 00:30:11,750  
children has spoken out arguing he's

638  
00:30:09,470 --> 00:30:14,028  
done nothing illegal but doctors have

639  
00:30:11,750 --> 00:30:16,638  
slammed john pease saying he's spreading

640  
00:30:14,028 --> 00:30:19,788  
dangerous misinformation Dougal BT with

641  
00:30:16,638 --> 00:30:22,038  
the story a qualified general

642  
00:30:19,788 --> 00:30:23,960  
practitioner - an advocate for the rogue

643  
00:30:22,038 --> 00:30:26,150  
anti-vaccination movement

644  
00:30:23,960 --> 00:30:27,920  
I am quite convinced that there are many

645  
00:30:26,150 --> 00:30:30,650  
many children being damaged in our

646  
00:30:27,920 --> 00:30:32,509  
society by unsafe vaccines dr. John

647  
00:30:30,650 --> 00:30:34,580  
piece along with naturopath colleague

648  
00:30:32,509 --> 00:30:36,920  
narrator James were filmed earlier this

649  
00:30:34,579 --> 00:30:40,240  
month claiming to help Melbourne parents

650  
00:30:36,920 --> 00:30:43,298  
avoid immunizations for their children

651  
00:30:40,240 --> 00:30:43,298  
[Music]

652  
00:30:46,869 --> 00:30:51,829  
but the doctor who's being investigated

653  
00:30:49,309 --> 00:30:53,869  
says he's done nothing wrong so it's

654  
00:30:51,829 --> 00:30:56,179  
totally legal but they don't like it

655  
00:30:53,869 --> 00:30:58,099  
because they don't want anyone to be

656

00:30:56,180 --> 00:30:59,960  
allowed not to vaccinate without penalty

657  
00:30:58,099 --> 00:31:02,419  
he's group accused of spreading

658  
00:30:59,960 --> 00:31:04,640  
dangerous propaganda if you have a child

659  
00:31:02,420 --> 00:31:07,070  
that's been you know brain damaged by

660  
00:31:04,640 --> 00:31:08,720  
vaccines do you want to vaccinate their

661  
00:31:07,069 --> 00:31:10,549  
child further of course not

662  
00:31:08,720 --> 00:31:14,569  
the government says the medical research

663  
00:31:10,549 --> 00:31:16,730  
is clear vaccination saves lives other

664  
00:31:14,569 --> 00:31:18,980  
doctors have hit out calling for him to

665  
00:31:16,730 --> 00:31:20,210  
be barred from practice I think it's

666  
00:31:18,980 --> 00:31:21,529  
extraordinary that he can hold his

667  
00:31:20,210 --> 00:31:23,720  
medical registration in the same

668  
00:31:21,529 --> 00:31:25,910  
organisation that I do surgeon John

669  
00:31:23,720 --> 00:31:28,910  
Cunningham says concerned parents are

670  
00:31:25,910 --> 00:31:30,860

being misled they've been given the fear

671

00:31:28,910 --> 00:31:33,440

campaign and they're being sucked up

672

00:31:30,859 --> 00:31:38,689

into the cult think of the anti-vaxxers

673

00:31:33,440 --> 00:31:40,850

it's all about supporting an anti

674

00:31:38,690 --> 00:31:42,799

vaccination stance but authorities say

675

00:31:40,849 --> 00:31:47,089

he and the others have to be held to

676

00:31:42,799 --> 00:31:48,710

account dr. John piece is accused of

677

00:31:47,089 --> 00:31:51,919

assisting family as opposed to

678

00:31:48,710 --> 00:31:54,950

compulsory child vaccinations I've been

679

00:31:51,920 --> 00:31:58,519

approached by hundreds of parents who

680

00:31:54,950 --> 00:32:00,440

want to get exemption from the penalties

681

00:31:58,519 --> 00:32:02,450

for not vaccinating he's one of three

682

00:32:00,440 --> 00:32:04,370

Melbourne doctors at the centre of an

683

00:32:02,450 --> 00:32:05,900

investigation by the Victorian Health

684

00:32:04,369 --> 00:32:08,809

Department and the Australian health

685  
00:32:05,900 --> 00:32:10,490  
practitioner regulation agency I've been

686  
00:32:08,809 --> 00:32:13,009  
going according to the law the letters

687  
00:32:10,490 --> 00:32:15,440  
that I write according to the

688  
00:32:13,009 --> 00:32:18,769  
requirements of the the legislation they

689  
00:32:15,440 --> 00:32:21,830  
are totally legal I am astonished that

690  
00:32:18,769 --> 00:32:26,450  
there are any people who have been

691  
00:32:21,829 --> 00:32:31,189  
through medical degrees who would deign

692  
00:32:26,450 --> 00:32:33,440  
to stoop to the level of supporting the

693  
00:32:31,190 --> 00:32:35,720  
anti-vaccination movement the film VAX

694  
00:32:33,440 --> 00:32:37,700  
has been causing controversy by linking

695  
00:32:35,720 --> 00:32:39,528  
the measles mumps rubella vaccine

696  
00:32:37,700 --> 00:32:43,159  
autism which has been medically

697  
00:32:39,528 --> 00:32:45,440  
discredited it is so important that

698  
00:32:43,159 --> 00:32:49,669  
everyone in the and those clips thanks

699  
00:32:45,440 --> 00:32:52,730  
to the 10 Network the Seven Network The

700  
00:32:49,669 --> 00:32:56,509  
Nine Network and the ABC here in

701  
00:32:52,730 --> 00:32:59,870  
Australia now what I find interesting

702  
00:32:56,509 --> 00:33:03,648  
about this whole story is that during

703  
00:32:59,869 --> 00:33:08,479  
the the VAX screening and afterwards

704  
00:33:03,648 --> 00:33:11,298  
during the QA people felt embolden one

705  
00:33:08,480 --> 00:33:14,659  
might say they felt the ability to be

706  
00:33:11,298 --> 00:33:16,429  
able to vent to like minded people but

707  
00:33:14,659 --> 00:33:19,159  
of course it was all video and this

708  
00:33:16,429 --> 00:33:21,429  
video ended up online and so they're

709  
00:33:19,159 --> 00:33:25,370  
really damning themselves now with their

710  
00:33:21,429 --> 00:33:27,350  
out of their own mouths so yes there is

711  
00:33:25,369 --> 00:33:29,168  
the silver lining to this awful movie

712  
00:33:27,349 --> 00:33:33,589  
VAX being shown up and down the country

713

00:33:29,169 --> 00:33:41,179  
these these anti vaccination doctors are

714  
00:33:33,589 --> 00:33:42,980  
simply outing themselves since recording

715  
00:33:41,179 --> 00:33:45,320  
that story a couple of days ago there

716  
00:33:42,980 --> 00:33:47,929  
have been further updates and again we

717  
00:33:45,319 --> 00:33:50,298  
look to the Guardian The Guardian calm

718  
00:33:47,929 --> 00:33:53,330  
with an update to this story published

719  
00:33:50,298 --> 00:33:55,429  
on Saturday the 26th of August Melbourne

720  
00:33:53,329 --> 00:33:59,148  
GP accused of helping parents avoid

721  
00:33:55,429 --> 00:34:00,429  
vaccinations reprimanded thirteen years

722  
00:33:59,148 --> 00:34:03,379  
ago

723  
00:34:00,429 --> 00:34:07,659  
medical practitioners Board of Victoria

724  
00:34:03,380 --> 00:34:10,849  
ordered dr. John peace be counseled in

725  
00:34:07,659 --> 00:34:12,950  
2004 for failing to quote make

726  
00:34:10,849 --> 00:34:16,639  
appropriate investigations of patient's

727  
00:34:12,949 --> 00:34:18,529

symptoms and quote a Melbourne doctor

728

00:34:16,639 --> 00:34:21,169

under investigation for helping parents

729

00:34:18,530 --> 00:34:24,169

evade compulsory vaccinations was

730

00:34:21,168 --> 00:34:26,960

reprimanded a decade ago for failing to

731

00:34:24,168 --> 00:34:29,179

properly treat patients with potentially

732

00:34:26,960 --> 00:34:32,720

life-threatening illnesses like cancer

733

00:34:29,179 --> 00:34:34,818

and depression the story goes on by

734

00:34:32,719 --> 00:34:38,148

Friday the Medical Board of Australia

735

00:34:34,818 --> 00:34:40,909

told piece that it intended to revoke

736

00:34:38,148 --> 00:34:43,519

his medical registration piece a

737

00:34:40,909 --> 00:34:45,619

supporter of alternative medicine has a

738

00:34:43,519 --> 00:34:48,918

right of reply before that occurs

739

00:34:45,619 --> 00:34:51,329

including an opportunity to outline why

740

00:34:48,918 --> 00:34:54,389

his license should not be revoked

741

00:34:51,329 --> 00:34:57,750

the time period usually allowed for a

742  
00:34:54,389 --> 00:35:00,389  
reply is one week but a report uncovered

743  
00:34:57,750 --> 00:35:03,719  
by Guardian Australia shows that

744  
00:35:00,389 --> 00:35:07,440  
concerns about peace were raised as far

745  
00:35:03,719 --> 00:35:09,869  
back as 2001 when Medicare Australia

746  
00:35:07,440 --> 00:35:12,630  
reported him because he charged Medicare

747  
00:35:09,869 --> 00:35:16,079  
for long and prolonged consultations and

748  
00:35:12,630 --> 00:35:19,410  
because he made an abnormally high

749  
00:35:16,079 --> 00:35:24,559  
number of pathology requests during the

750  
00:35:19,409 --> 00:35:27,659  
year 2000 he rendered 2137 services for

751  
00:35:24,559 --> 00:35:31,230  
707 patients and the total Medicare

752  
00:35:27,659 --> 00:35:34,440  
benefit of eighty seven thousand five

753  
00:35:31,230 --> 00:35:37,019  
hundred and seventy dollars that year in

754  
00:35:34,440 --> 00:35:39,179  
July 2003 a professional review

755  
00:35:37,019 --> 00:35:42,719  
committee investigating the allegations

756  
00:35:39,179 --> 00:35:45,359  
found that peices conduct during 2000

757  
00:35:42,719 --> 00:35:48,539  
quote caused a significant threat to the

758  
00:35:45,360 --> 00:35:51,599  
life or health of his patients it was

759  
00:35:48,539 --> 00:35:53,550  
concerned that dr. Pierce failed to make

760  
00:35:51,599 --> 00:35:56,429  
appropriate investigations of patients

761  
00:35:53,550 --> 00:36:00,200  
symptoms of possibly serious conditions

762  
00:35:56,429 --> 00:36:03,239  
such as cancer meningitis depression and

763  
00:36:00,199 --> 00:36:06,029  
anemia in quote a report from the

764  
00:36:03,239 --> 00:36:08,879  
professional services review scheme said

765  
00:36:06,030 --> 00:36:10,860  
this information was referred to the

766  
00:36:08,880 --> 00:36:14,700  
medical practitioners Board of Victoria

767  
00:36:10,860 --> 00:36:18,510  
which in August 2004 ordered that piece

768  
00:36:14,699 --> 00:36:21,869  
be reprimanded counseled repay medical

769  
00:36:18,510 --> 00:36:25,080  
benefits totaling 18,000 179 dollars and

770

00:36:21,869 --> 00:36:27,329  
be disqualified for 18 months from

771  
00:36:25,079 --> 00:36:30,779  
providing certain GP services to

772  
00:36:27,329 --> 00:36:32,759  
patients and the the story goes on with

773  
00:36:30,780 --> 00:36:35,730  
more details and I'll certainly link to

774  
00:36:32,760 --> 00:36:39,210  
this in the show notes and very much

775  
00:36:35,730 --> 00:36:41,670  
related to this story was the activities

776  
00:36:39,210 --> 00:36:43,559  
of Polly Tommie here in Australia uel

777  
00:36:41,670 --> 00:36:45,329  
had mentioned before has been banned

778  
00:36:43,559 --> 00:36:50,940  
from coming back to Australia for three

779  
00:36:45,329 --> 00:36:52,289  
years and in an online rant video online

780  
00:36:50,940 --> 00:36:56,130  
rant published it

781  
00:36:52,289 --> 00:36:59,579  
we are vast Facebook page Polly Tommy

782  
00:36:56,130 --> 00:37:02,880  
briefly mentions this situation I look

783  
00:36:59,579 --> 00:37:04,380  
at Australia and it's laughable what is

784  
00:37:02,880 --> 00:37:05,460

happening over there they're taking that

785

00:37:04,380 --> 00:37:08,400

poor doctor they try

786

00:37:05,460 --> 00:37:11,130

take that poor doctor down now that's

787

00:37:08,400 --> 00:37:13,050

not surprising I guess but what's what's

788

00:37:11,130 --> 00:37:15,390

also interesting about this online rant

789

00:37:13,050 --> 00:37:18,810

which goes for about five or six or

790

00:37:15,389 --> 00:37:21,029

seven minutes or so is that it really

791

00:37:18,809 --> 00:37:25,469

does show that these people are so

792

00:37:21,030 --> 00:37:27,720

wrapped up in their world of conspiracy

793

00:37:25,469 --> 00:37:34,049

theories have a listen to this short

794

00:37:27,719 --> 00:37:35,879

excerpt so far we are so far up here and

795

00:37:34,050 --> 00:37:37,440

you guys are so far down here and I get

796

00:37:35,880 --> 00:37:39,059

you're panicking I get that you're

797

00:37:37,440 --> 00:37:40,980

sending up every troll that you can I'm

798

00:37:39,059 --> 00:37:43,139

seeing I'm seeing people coming out of

799  
00:37:40,980 --> 00:37:44,940  
the woodwork now that with that 20 years

800  
00:37:43,139 --> 00:37:47,789  
ago and they vanish and I'll all back

801  
00:37:44,940 --> 00:37:51,480  
out again so you clearly have had some

802  
00:37:47,789 --> 00:37:53,699  
kind of emergency alert email get back

803  
00:37:51,480 --> 00:37:55,800  
out get into the game we're losing

804  
00:37:53,699 --> 00:37:58,469  
they're winning we have to stop it now

805  
00:37:55,800 --> 00:37:59,580  
and no one's getting a bonus no holiday

806  
00:37:58,469 --> 00:38:02,219  
for you next year

807  
00:37:59,579 --> 00:38:03,539  
no Christmas bonus so here she is

808  
00:38:02,219 --> 00:38:06,809  
implying that there's some sort of

809  
00:38:03,539 --> 00:38:10,670  
overarching central control sending out

810  
00:38:06,809 --> 00:38:13,349  
emails to doctors and trolls apparently

811  
00:38:10,670 --> 00:38:17,220  
and then she implies of course that if

812  
00:38:13,349 --> 00:38:19,890  
the doctors aren't vaccinating or towing

813  
00:38:17,219 --> 00:38:21,088  
the pharmaceutical big pharma line or

814  
00:38:19,889 --> 00:38:23,750  
something like this then they're not

815  
00:38:21,088 --> 00:38:26,009  
going to get money in the form of

816  
00:38:23,750 --> 00:38:29,099  
bonuses or their holidays or something

817  
00:38:26,010 --> 00:38:33,480  
like this it's it's it's again it's it's

818  
00:38:29,099 --> 00:38:35,700  
this Illuminati conspiracy theory evil

819  
00:38:33,480 --> 00:38:38,699  
Big Pharma controlling everything frame

820  
00:38:35,699 --> 00:38:43,230  
of mind that dictates so much of their

821  
00:38:38,699 --> 00:38:45,210  
actions and finally if there was any

822  
00:38:43,230 --> 00:38:48,539  
doubt which there shouldn't be by now

823  
00:38:45,210 --> 00:38:52,320  
that these people are vehemently anti

824  
00:38:48,539 --> 00:38:54,389  
vaccination and not pro-choice as the

825  
00:38:52,320 --> 00:38:58,980  
Australian vaccination skeptics Network

826  
00:38:54,389 --> 00:39:01,230  
likes to say in public listen to this

827

00:38:58,980 --> 00:39:04,108  
clip from Polly Tommy because there's

828  
00:39:01,230 --> 00:39:06,838  
more and more and more babies being born

829  
00:39:04,108 --> 00:39:08,670  
that are not going to be vaccinated over

830  
00:39:06,838 --> 00:39:12,690  
our dead bodies do you come near our

831  
00:39:08,670 --> 00:39:14,670  
babies with a needle of any kind I don't

832  
00:39:12,690 --> 00:39:16,679  
forget that Polly Tommy and Merrill Dory

833  
00:39:14,670 --> 00:39:19,289  
were quite happy to sit side by side on

834  
00:39:16,679 --> 00:39:22,319  
the stage during a

835  
00:39:19,289 --> 00:39:25,570  
of axle during the Q&A we will bring you

836  
00:39:22,320 --> 00:39:36,440  
any updates to this developing story

837  
00:39:25,570 --> 00:39:36,440  
[Music]

838  
00:39:40,489 --> 00:39:45,029  
QED 2017 is fast approaching and you

839  
00:39:44,010 --> 00:39:46,890  
don't want to miss it

840  
00:39:45,030 --> 00:39:49,140  
in the acid QED has brought you the

841  
00:39:46,889 --> 00:39:51,629

arrows of time the origin of recording

842

00:39:49,139 --> 00:39:53,759

an escape from the Westboro Baptists the

843

00:39:51,630 --> 00:39:56,190

sex bias of sex science and all manner

844

00:39:53,760 --> 00:39:59,040

of other science pseudoscience activism

845

00:39:56,190 --> 00:40:00,539

slacktivism and more plus insects for

846

00:39:59,039 --> 00:40:03,179

breakfast mmm YUM

847

00:40:00,539 --> 00:40:05,279

QED 2017 takes place on the fourteenth

848

00:40:03,179 --> 00:40:07,440

and fifteenth of October in Manchester

849

00:40:05,280 --> 00:40:09,420

England we've already known speakers

850

00:40:07,440 --> 00:40:12,030

like Sophie Wilson co-inventor of the

851

00:40:09,420 --> 00:40:14,099

armed computer chip Simon Singh who will

852

00:40:12,030 --> 00:40:16,110

be showing how to crack a genuine Enigma

853

00:40:14,099 --> 00:40:17,159

machine Phil's great and talking through

854

00:40:16,110 --> 00:40:19,050

the real-life cover-up of the

855

00:40:17,159 --> 00:40:21,809

Hillsborough tragedy and physicists

856  
00:40:19,050 --> 00:40:23,910  
Helen cherski and Tim O'Brien we'll have

857  
00:40:21,809 --> 00:40:25,559  
a live show from the para pod voice and

858  
00:40:23,909 --> 00:40:28,859  
the whole event will be emceed by ace

859  
00:40:25,559 --> 00:40:29,759  
position Dave anak have some laughs meet

860  
00:40:28,860 --> 00:40:32,280  
some new friends

861  
00:40:29,760 --> 00:40:34,380  
make new connections all thrown 109

862  
00:40:32,280 --> 00:40:34,830  
pounds including all the mates those

863  
00:40:34,380 --> 00:40:37,800  
times

864  
00:40:34,829 --> 00:40:40,860  
panels podcasts workshops our subtle -

865  
00:40:37,800 --> 00:40:43,890  
statement and lots more check out QED

866  
00:40:40,860 --> 00:40:45,000  
con dot org the details we'll see you in

867  
00:40:43,889 --> 00:40:50,960  
October

868  
00:40:45,000 --> 00:40:50,960  
[Music]

869  
00:40:51,780 --> 00:40:58,760  
his main art spooky action at a distance

870  
00:40:59,659 --> 00:41:04,949  
yes all the hustle and bustle of the

871  
00:41:02,340 --> 00:41:07,019  
Australian Museum during the Sydney

872  
00:41:04,949 --> 00:41:09,239  
Science Festival we're here wandering

873  
00:41:07,019 --> 00:41:11,400  
around in our lab coats hoping to meet a

874  
00:41:09,239 --> 00:41:13,559  
few scientists or some people that are

875  
00:41:11,400 --> 00:41:15,329  
just getting all science we're in the

876  
00:41:13,559 --> 00:41:17,759  
main hall here where they have lots of

877  
00:41:15,329 --> 00:41:20,190  
people we've got commercial people like

878  
00:41:17,760 --> 00:41:23,460  
3m Australia we've got various tertiary

879  
00:41:20,190 --> 00:41:25,800  
adjust institutions here UTS is here and

880  
00:41:23,460 --> 00:41:29,909  
so here they're the they're the site

881  
00:41:25,800 --> 00:41:30,870  
near the nuclear people I just look over

882  
00:41:29,909 --> 00:41:31,769  
there there's a whole bunch of kids

883  
00:41:30,869 --> 00:41:35,279  
having a lot of fun with the

884

00:41:31,769 --> 00:41:37,199  
non-newtonian fluid which means that III

885  
00:41:35,280 --> 00:41:38,970  
yeah what year Newton Newton mucked

886  
00:41:37,199 --> 00:41:40,879  
around with it oh no he didn't no Newton

887  
00:41:38,969 --> 00:41:42,659  
wasn't allowed to play with that stuff

888  
00:41:40,880 --> 00:41:45,420  
we're here at the Australian

889  
00:41:42,659 --> 00:41:46,799  
mathematical Science Institute booth now

890  
00:41:45,420 --> 00:41:47,760  
this is a bit of an issue with me

891  
00:41:46,800 --> 00:41:50,130  
because I've never been particularly

892  
00:41:47,760 --> 00:41:51,510  
good with maths but what's your favorite

893  
00:41:50,130 --> 00:41:53,700  
area of mathematics have you got your

894  
00:41:51,510 --> 00:41:57,480  
degree yet yes I have my PhD in maths

895  
00:41:53,699 --> 00:42:00,029  
indeed you do your thesis on

896  
00:41:57,480 --> 00:42:03,510  
I studied not theory so studying tying

897  
00:42:00,030 --> 00:42:05,190  
of knots but in the fourth dimension ah

898  
00:42:03,510 --> 00:42:07,530

so does that mean you had to rotate the

899

00:42:05,190 --> 00:42:10,200

third dimension by 90 degrees or you're

900

00:42:07,530 --> 00:42:14,190

talking about time I'm talking about me

901

00:42:10,199 --> 00:42:15,629

though it's it's another spatial

902

00:42:14,190 --> 00:42:17,130

dimension and actually that's something

903

00:42:15,630 --> 00:42:19,289

we're looking at here not the fourth

904

00:42:17,130 --> 00:42:20,970

dimension but the second dimension and

905

00:42:19,289 --> 00:42:22,949

how do you take something like the earth

906

00:42:20,969 --> 00:42:25,079

which is a three-dimensional object and

907

00:42:22,949 --> 00:42:27,059

draw a two-dimensional map of it so how

908

00:42:25,079 --> 00:42:28,590

do you go down a dimension this is

909

00:42:27,059 --> 00:42:30,389

fantastic actually talking my language

910

00:42:28,590 --> 00:42:33,090

here now I have read the book flatland

911

00:42:30,389 --> 00:42:35,069

which looks at this very point so I

912

00:42:33,090 --> 00:42:36,780

imagine the way you do it is you would

913  
00:42:35,070 --> 00:42:39,480  
move the three-dimensional object

914  
00:42:36,780 --> 00:42:41,250  
through the two dimensions and then it

915  
00:42:39,480 --> 00:42:42,750  
would get wider and smaller or something

916  
00:42:41,250 --> 00:42:44,849  
like that am i anywhere close to the

917  
00:42:42,750 --> 00:42:47,070  
answer there's only one way of doing it

918  
00:42:44,849 --> 00:42:49,170  
it's not the way that we draw maps so in

919  
00:42:47,070 --> 00:42:50,430  
terms of navigation of drawing maps but

920  
00:42:49,170 --> 00:42:51,930  
that's certainly a way that you can go

921  
00:42:50,429 --> 00:42:53,489  
down a dimension by taking cross

922  
00:42:51,929 --> 00:42:56,449  
sections of a shape

923  
00:42:53,489 --> 00:42:59,549  
so can you tell us what the answer was D

924  
00:42:56,449 --> 00:43:01,348  
quickly or not for me in terms of

925  
00:42:59,550 --> 00:43:03,030  
studying the fourth dimension actually

926  
00:43:01,349 --> 00:43:06,119  
taking cross sections is actually what

927  
00:43:03,030 --> 00:43:08,099  
we did so I don't know how detailed you

928  
00:43:06,119 --> 00:43:10,108  
would like me to go but I think that's

929  
00:43:08,099 --> 00:43:11,849  
enough for us at home to get into it and

930  
00:43:10,108 --> 00:43:14,009  
what excited you about maths was

931  
00:43:11,849 --> 00:43:15,990  
something from an early age where just

932  
00:43:14,010 --> 00:43:17,940  
numbers and the fact that they unlock

933  
00:43:15,989 --> 00:43:20,189  
reality was your thing how did you get

934  
00:43:17,940 --> 00:43:22,289  
into it I didn't enjoy maths until I was

935  
00:43:20,190 --> 00:43:24,088  
in about year 11 or 12 at school and I

936  
00:43:22,289 --> 00:43:26,190  
never enjoyed maths when I was younger

937  
00:43:24,088 --> 00:43:28,559  
because it was boring in school it was

938  
00:43:26,190 --> 00:43:30,599  
doing calculations it was here's a page

939  
00:43:28,559 --> 00:43:33,150  
of 20 quadratic formula solve them and

940  
00:43:30,599 --> 00:43:35,700  
that didn't interest me and it was going

941

00:43:33,150 --> 00:43:37,710  
to university and seeing proofs and

942  
00:43:35,699 --> 00:43:40,129  
seeing that creative side of mass which

943  
00:43:37,710 --> 00:43:42,449  
really got me excited about the subject

944  
00:43:40,130 --> 00:43:47,130  
in a shop I bet you'd be really good at

945  
00:43:42,449 --> 00:43:49,019  
making change oh you'd be great oh yeah

946  
00:43:47,130 --> 00:43:50,280  
that's 75 that's 25 cents change because

947  
00:43:49,019 --> 00:43:51,989  
I was really crap at that when I work

948  
00:43:50,280 --> 00:43:53,700  
for the railway I just imagine you'd be

949  
00:43:51,989 --> 00:43:55,618  
good at that actually can you do just

950  
00:43:53,699 --> 00:43:57,389  
stuff in your head really well do you

951  
00:43:55,619 --> 00:43:58,670  
ever do you ever need a calculator

952  
00:43:57,389 --> 00:44:01,379  
[Music]

953  
00:43:58,670 --> 00:44:03,059  
that's another myth of mathematics that

954  
00:44:01,380 --> 00:44:04,950  
to be good at maths you have to be fast

955  
00:44:03,059 --> 00:44:06,960

at mental arithmetic and it's not true

956

00:44:04,949 --> 00:44:08,519

you talk to most people who have a PhD

957

00:44:06,960 --> 00:44:11,190

in math and they're really awful at

958

00:44:08,519 --> 00:44:12,838

mental arithmetic and I'm a geometer I'm

959

00:44:11,190 --> 00:44:15,450

all about shapes and patterns and I'm

960

00:44:12,838 --> 00:44:17,608

not good at numbers actually so when you

961

00:44:15,449 --> 00:44:19,889

see a problem you see it in like knots

962

00:44:17,608 --> 00:44:21,598

doing and undoing I see it in pictures I

963

00:44:19,889 --> 00:44:23,848

cannot do math until I draw a picture

964

00:44:21,599 --> 00:44:25,950

you were just into maths here are you oh

965

00:44:23,849 --> 00:44:27,420

yeah I love maths my favourite subjects

966

00:44:25,949 --> 00:44:28,769

I don't know what's your favourite area

967

00:44:27,420 --> 00:44:29,760

of math so you've got a favorite type of

968

00:44:28,769 --> 00:44:32,250

problem you like to solve

969

00:44:29,760 --> 00:44:33,660

I like geometry thank you well I think

970  
00:44:32,250 --> 00:44:36,340  
you'd come you've come to the right

971  
00:44:33,659 --> 00:44:38,299  
person enjoy your time here

972  
00:44:36,340 --> 00:44:41,360  
Jessica was excited about geometry

973  
00:44:38,300 --> 00:44:43,850  
wasn't she Richard and origami SS yes

974  
00:44:41,360 --> 00:44:45,320  
with all the maps they have there you

975  
00:44:43,849 --> 00:44:47,480  
can fold the all those shapes to make

976  
00:44:45,320 --> 00:44:49,400  
different globes of the world it's great

977  
00:44:47,480 --> 00:44:51,050  
I said remember there's some

978  
00:44:49,400 --> 00:44:53,389  
mathematical computer equation called a

979  
00:44:51,050 --> 00:44:54,740  
smooth and noodle map as well I'm sure

980  
00:44:53,389 --> 00:44:56,629  
saying that as people that they're going

981  
00:44:54,739 --> 00:44:58,639  
yeah he mentioned smooth noodle maps

982  
00:44:56,630 --> 00:45:02,230  
which is also the name of a Devo album I

983  
00:44:58,639 --> 00:45:02,230  
think I had that for dinner last night

984  
00:45:02,650 --> 00:45:06,470  
where are you from

985  
00:45:04,429 --> 00:45:08,419  
this is jenolan caves and we're about

986  
00:45:06,469 --> 00:45:10,519  
three and a half hours west of Sydney

987  
00:45:08,420 --> 00:45:12,260  
and we're here because we're actually

988  
00:45:10,519 --> 00:45:15,139  
promoting a lot of the good science that

989  
00:45:12,260 --> 00:45:17,180  
we're doing out there so I'm a guide and

990  
00:45:15,139 --> 00:45:18,739  
I'm actually a paleontologist out there

991  
00:45:17,179 --> 00:45:20,539  
as well so we're gonna see what we

992  
00:45:18,739 --> 00:45:22,099  
Ferrari now I know more difference

993  
00:45:20,539 --> 00:45:24,469  
between a static not just a like tight

994  
00:45:22,099 --> 00:45:26,710  
but that's where it ends to me okay well

995  
00:45:24,469 --> 00:45:28,609  
there's more to it than that I'm sure

996  
00:45:26,710 --> 00:45:30,139  
what are you showing people here you've

997  
00:45:28,610 --> 00:45:31,910  
got some rocks and it looks like this um

998

00:45:30,139 --> 00:45:33,739  
is that a crystal formation of some sort

999  
00:45:31,909 --> 00:45:35,779  
absolutely we brought some of our

1000  
00:45:33,739 --> 00:45:38,329  
limestone rock and the limestone is

1001  
00:45:35,780 --> 00:45:40,490  
particularly exciting stuff because lime

1002  
00:45:38,329 --> 00:45:43,429  
stones formed from the remains of living

1003  
00:45:40,489 --> 00:45:45,409  
creatures so the limestone is what the

1004  
00:45:43,429 --> 00:45:46,609  
crystal comes from so typically they're

1005  
00:45:45,409 --> 00:45:48,289  
almost the same thing

1006  
00:45:46,610 --> 00:45:53,240  
so does limestone eventually turn into

1007  
00:45:48,289 --> 00:45:55,909  
oil no limestone turns into beautiful

1008  
00:45:53,239 --> 00:45:57,469  
cave crystal so and it's a chemical

1009  
00:45:55,909 --> 00:45:59,960  
thing that can happen over many many

1010  
00:45:57,469 --> 00:46:02,929  
millions of years our limestone here is

1011  
00:45:59,960 --> 00:46:06,470  
actually what's left of a vast belt of a

1012  
00:46:02,929 --> 00:46:08,389

shallow sea that was a Western New South

1013

00:46:06,469 --> 00:46:11,089

Wales central New South Wales in this

1014

00:46:08,389 --> 00:46:13,909

case is over 400 million years ago so

1015

00:46:11,090 --> 00:46:18,620

what we've got our sea shells and corals

1016

00:46:13,909 --> 00:46:20,299

have look we're just having a look

1017

00:46:18,619 --> 00:46:21,920

through we got only a close look up here

1018

00:46:20,300 --> 00:46:24,060

never mind glasses under to get make

1019

00:46:21,920 --> 00:46:27,269

sure I get a really good look

1020

00:46:24,059 --> 00:46:28,949

and so this is an ancient world okay in

1021

00:46:27,269 --> 00:46:32,369

ancient coral and when you said four

1022

00:46:28,949 --> 00:46:35,149

million years to do 430 million years

1023

00:46:32,369 --> 00:46:37,170

ago so when this was a shallow sea

1024

00:46:35,150 --> 00:46:39,300

dinosaurs weren't even gonna peer for

1025

00:46:37,170 --> 00:46:41,010

another 200 million years well this is a

1026

00:46:39,300 --> 00:46:41,910

shallow sea life on land was just

1027  
00:46:41,010 --> 00:46:44,820  
getting started

1028  
00:46:41,909 --> 00:46:46,049  
and most of the life was in the sea you

1029  
00:46:44,820 --> 00:46:48,269  
weren't going to get your birds or

1030  
00:46:46,050 --> 00:46:50,519  
mammals forget many many betting and

1031  
00:46:48,269 --> 00:46:51,780  
certainly no walking fish Mexican

1032  
00:46:50,519 --> 00:46:54,179  
walking fish not yet they hadn't come

1033  
00:46:51,780 --> 00:46:56,130  
out not yet you had early fishes and

1034  
00:46:54,179 --> 00:46:58,139  
these early fishes were fabulous because

1035  
00:46:56,130 --> 00:46:59,730  
they had no fins they had no Jaws well

1036  
00:46:58,139 --> 00:47:02,099  
John's fish were starting up at about

1037  
00:46:59,730 --> 00:47:04,050  
the same time but the world was as far

1038  
00:47:02,099 --> 00:47:06,659  
as backbone creatures the world was a

1039  
00:47:04,050 --> 00:47:08,640  
world of fishes and most of the life was

1040  
00:47:06,659 --> 00:47:11,369  
in the sea so this was what you find all

1041  
00:47:08,639 --> 00:47:14,009  
over the globe so these are critics and

1042  
00:47:11,369 --> 00:47:16,349  
critics are fabulous related to your

1043  
00:47:14,010 --> 00:47:17,730  
starfish and the Quint nodes are

1044  
00:47:16,349 --> 00:47:20,429  
actually still around today but they're

1045  
00:47:17,730 --> 00:47:23,039  
very very ancient and it's the mineral

1046  
00:47:20,429 --> 00:47:23,609  
in the shells the coral for this case

1047  
00:47:23,039 --> 00:47:26,550  
crinoid

1048  
00:47:23,610 --> 00:47:28,740  
that makes the mineral rock so calcium

1049  
00:47:26,550 --> 00:47:31,019  
carbonate shells calcium carbonate rock

1050  
00:47:28,739 --> 00:47:33,149  
and then you get the calcium carbonate

1051  
00:47:31,019 --> 00:47:35,759  
crystal in the chemical reaction that

1052  
00:47:33,150 --> 00:47:38,039  
will form that is when your rock could

1053  
00:47:35,760 --> 00:47:40,500  
be dissolved away by acidic waters

1054  
00:47:38,039 --> 00:47:43,139  
happens naturally and then the water

1055

00:47:40,500 --> 00:47:46,380  
enters caves it ends up dripping into

1056  
00:47:43,139 --> 00:47:48,539  
caves and the extra carbon dioxide that

1057  
00:47:46,380 --> 00:47:51,030  
makes it acidic evaporates as escapes

1058  
00:47:48,539 --> 00:47:53,279  
the crystal forms and it's beautiful

1059  
00:47:51,030 --> 00:47:55,019  
stuff and what's the most exciting thing

1060  
00:47:53,280 --> 00:47:56,760  
you've found there in your career at the

1061  
00:47:55,019 --> 00:47:58,409  
john cave so far have you found a rock

1062  
00:47:56,760 --> 00:47:59,220  
you went man this rock is really unique

1063  
00:47:58,409 --> 00:48:01,500  
what have you found

1064  
00:47:59,219 --> 00:48:03,929  
yeah that's excited you well I'm

1065  
00:48:01,500 --> 00:48:07,260  
actually a vertebrate paleontologist and

1066  
00:48:03,929 --> 00:48:09,329  
I actually got most excited at least up

1067  
00:48:07,260 --> 00:48:11,610  
until now by something somebody else had

1068  
00:48:09,329 --> 00:48:14,519  
found but it wasn't identified as what

1069  
00:48:11,610 --> 00:48:15,730

we had so it's mega food I say too big a

1070

00:48:14,519 --> 00:48:17,889

photo and

1071

00:48:15,730 --> 00:48:20,079

thought for a long time oh well there

1072

00:48:17,889 --> 00:48:21,429

was the Diprotodon of jenolan caves and

1073

00:48:20,079 --> 00:48:21,940

that's the biggest marsupial that we

1074

00:48:21,429 --> 00:48:23,799

know of

1075

00:48:21,940 --> 00:48:26,530

fabulous Hannibal with a look a large

1076

00:48:23,800 --> 00:48:28,240

one but oh yes yes yes they're like big

1077

00:48:26,530 --> 00:48:30,700

one best but they are not one best so

1078

00:48:28,239 --> 00:48:32,289

they're called the giant lumbus but they

1079

00:48:30,699 --> 00:48:34,809

weren't there was actually a real giant

1080

00:48:32,289 --> 00:48:36,279

love but but what what I did was I

1081

00:48:34,809 --> 00:48:39,039

actually would it had a good look at it

1082

00:48:36,280 --> 00:48:41,380

that's me and I really identified it as

1083

00:48:39,039 --> 00:48:43,329

a different animal okay so you can see

1084  
00:48:41,380 --> 00:48:44,800  
that I'm actually going chipping through

1085  
00:48:43,329 --> 00:48:47,559  
the rock to have a good look at the

1086  
00:48:44,800 --> 00:48:49,570  
skull it's stuff in the rock and what it

1087  
00:48:47,559 --> 00:48:52,329  
is instead is an edible called as a

1088  
00:48:49,570 --> 00:48:53,769  
group of chourus so difference in the

1089  
00:48:52,329 --> 00:48:55,659  
spine where you went a hawk was long

1090  
00:48:53,769 --> 00:48:57,460  
like that yes there's one tooth there's

1091  
00:48:55,659 --> 00:48:59,409  
the killer tooth if you get to what's

1092  
00:48:57,460 --> 00:49:01,690  
called the premolar and so i chipped

1093  
00:48:59,409 --> 00:49:04,118  
away and there was the premolar that is

1094  
00:49:01,690 --> 00:49:05,440  
what is distinctive so size said you

1095  
00:49:04,119 --> 00:49:07,150  
know shouldn't be a deaf program it's a

1096  
00:49:05,440 --> 00:49:09,429  
bit too small but when I found that

1097  
00:49:07,150 --> 00:49:10,869  
killer tooth that was what I said yep

1098  
00:49:09,429 --> 00:49:12,699  
that's it and that was really great

1099  
00:49:10,869 --> 00:49:15,220  
because that means we can identify that

1100  
00:49:12,699 --> 00:49:17,409  
animal and that is what you'd expect to

1101  
00:49:15,219 --> 00:49:19,539  
have been in general its nickname is the

1102  
00:49:17,409 --> 00:49:22,629  
swamp owl and it would have been lucky

1103  
00:49:19,539 --> 00:49:25,570  
around in the waterways maybe even in

1104  
00:49:22,630 --> 00:49:27,250  
what's now the Blue Lake and though they

1105  
00:49:25,570 --> 00:49:30,100  
were the animals would expect to have

1106  
00:49:27,250 --> 00:49:31,989  
found only the Ice Age living with the

1107  
00:49:30,099 --> 00:49:33,699  
Aboriginal people died out maybe thirty

1108  
00:49:31,989 --> 00:49:35,349  
five thirty thousand years ago

1109  
00:49:33,699 --> 00:49:36,368  
what have all the kids been asked what's

1110  
00:49:35,349 --> 00:49:37,719  
the thing that's been exciting them

1111  
00:49:36,369 --> 00:49:40,119  
about your rocks here from the john

1112

00:49:37,719 --> 00:49:42,429  
caves yeah well I mean they love seeing

1113  
00:49:40,119 --> 00:49:43,840  
fossils I think I think if you ask some

1114  
00:49:42,429 --> 00:49:46,079  
kid if they want to see something that

1115  
00:49:43,840 --> 00:49:48,579  
got fossils in it they'll go yeah right

1116  
00:49:46,079 --> 00:49:51,039  
do you want to touch something that was

1117  
00:49:48,579 --> 00:49:54,039  
alive 200 million years before the

1118  
00:49:51,039 --> 00:49:55,509  
dinosaurs oh yeah yeah and where can we

1119  
00:49:54,039 --> 00:49:58,420  
find you online before we go

1120  
00:49:55,510 --> 00:50:00,970  
okay that jenolan caves dark day you is

1121  
00:49:58,420 --> 00:50:02,858  
there Arthur as our address and there is

1122  
00:50:00,969 --> 00:50:04,569  
a website and that's got lots of

1123  
00:50:02,858 --> 00:50:06,519  
interesting things on it we're going to

1124  
00:50:04,570 --> 00:50:08,180  
be developing special things for the

1125  
00:50:06,519 --> 00:50:09,710  
schools coming up

1126  
00:50:08,179 --> 00:50:12,078

we got a new program that we're going to

1127

00:50:09,710 --> 00:50:15,528

try to launch it about early 2018 and

1128

00:50:12,079 --> 00:50:17,809

that'll include things on specifically

1129

00:50:15,528 --> 00:50:20,028

science that's related to jenolan the

1130

00:50:17,809 --> 00:50:22,548

minerals the scape science the

1131

00:50:20,028 --> 00:50:24,798

paleontology programs that are actually

1132

00:50:22,548 --> 00:50:26,929

really relevant to what kids might be

1133

00:50:24,798 --> 00:50:29,389

interested in what the school curriculum

1134

00:50:26,929 --> 00:50:31,399

at some point might be that's a little

1135

00:50:29,389 --> 00:50:33,949

ways down the line and what New South

1136

00:50:31,400 --> 00:50:36,108

Wales is all about in the past to the

1137

00:50:33,949 --> 00:50:38,028

present so we've got living you know

1138

00:50:36,108 --> 00:50:40,429

ecosystems lots of endangered species

1139

00:50:38,028 --> 00:50:42,889

lots of stops cool thank you have a good

1140

00:50:40,429 --> 00:50:48,019

day happy science week thank you - thank

1141  
00:50:42,889 --> 00:50:49,639  
you this room is just full of people

1142  
00:50:48,019 --> 00:50:51,920  
have done science it's full of people

1143  
00:50:49,639 --> 00:50:54,379  
Bennett University for more than the day

1144  
00:50:51,920 --> 00:50:57,970  
that I was there and I went on the day

1145  
00:50:54,380 --> 00:50:57,970  
that they Ramazan holidays were sharp

1146  
00:50:58,150 --> 00:51:03,160  
I've just wanted past the joint academic

1147  
00:51:00,880 --> 00:51:04,240  
microbiology seminars or jams as they're

1148  
00:51:03,159 --> 00:51:06,278  
known if you're looking for your

1149  
00:51:04,239 --> 00:51:08,078  
weaponized bird flu and you've got some

1150  
00:51:06,278 --> 00:51:10,539  
money left in a blackops budget are you

1151  
00:51:08,079 --> 00:51:12,460  
get the guys to come - we focus on lots

1152  
00:51:10,539 --> 00:51:14,440  
of different types of microorganisms not

1153  
00:51:12,460 --> 00:51:17,440  
all bad but yeah we do work with

1154  
00:51:14,440 --> 00:51:19,059  
pathogens and dangerous bacteria have

1155  
00:51:17,440 --> 00:51:20,858  
you had the level 5 suit on everything

1156  
00:51:19,059 --> 00:51:22,180  
on some of my colleagues have yep so

1157  
00:51:20,858 --> 00:51:24,250  
some of them are currently working on a

1158  
00:51:22,179 --> 00:51:26,440  
bowler wearing the UM wearing the full

1159  
00:51:24,250 --> 00:51:27,849  
suits to protect them but what I find

1160  
00:51:26,440 --> 00:51:29,528  
weird about a bowl is you've got the guy

1161  
00:51:27,849 --> 00:51:30,760  
with the suit then standing 20 feet away

1162  
00:51:29,528 --> 00:51:32,889  
there's someone with a clipboard and

1163  
00:51:30,760 --> 00:51:34,299  
shorts that's always a bit weird that's

1164  
00:51:32,889 --> 00:51:37,210  
an administrative problem but if you're

1165  
00:51:34,298 --> 00:51:38,500  
actually handling the bacteria then yeah

1166  
00:51:37,210 --> 00:51:39,909  
I mean and so those guys are working in

1167  
00:51:38,500 --> 00:51:41,829  
some pretty tough conditions but when

1168  
00:51:39,909 --> 00:51:43,778  
you're actually handling the viruses

1169

00:51:41,829 --> 00:51:45,730  
then you need need that level of

1170  
00:51:43,778 --> 00:51:47,170  
protection yep well having that protects

1171  
00:51:45,730 --> 00:51:48,969  
the rest of our skin from getting sick

1172  
00:51:47,170 --> 00:51:50,889  
from these diseases yeah now you've got

1173  
00:51:48,969 --> 00:51:52,449  
down the front here a couple of now you

1174  
00:51:50,889 --> 00:51:54,068  
got you know you favor the bacterias

1175  
00:51:52,449 --> 00:51:55,179  
you've got no time for the viruses where

1176  
00:51:54,068 --> 00:51:57,369  
do you sit where do you sit

1177  
00:51:55,179 --> 00:51:59,199  
I work with bacteria but I'm a lot of my

1178  
00:51:57,369 --> 00:52:01,150  
colleagues work with viruses as well and

1179  
00:51:59,199 --> 00:52:03,159  
microscopic higher organisms are

1180  
00:52:01,150 --> 00:52:04,778  
eukaryotes let's say we do everything

1181  
00:52:03,159 --> 00:52:06,129  
and funghi now what have you got down

1182  
00:52:04,778 --> 00:52:07,659  
here and you've been asking if you got

1183  
00:52:06,130 --> 00:52:09,640

climb idiot here that's because it's

1184

00:52:07,659 --> 00:52:11,588

kind of a microbiology thing it's like a

1185

00:52:09,639 --> 00:52:13,000

small it's not a virus but it's a small

1186

00:52:11,588 --> 00:52:14,980

back that has it work where does it sit

1187

00:52:13,000 --> 00:52:16,000

in your frontier so that's the yeah

1188

00:52:14,980 --> 00:52:18,010

that's your right that's sort of halfway

1189

00:52:16,000 --> 00:52:19,960

between in this behavior between a virus

1190

00:52:18,010 --> 00:52:21,010

and a bacterium and we don't have that

1191

00:52:19,960 --> 00:52:23,260

one here but we do have similar

1192

00:52:21,010 --> 00:52:25,869

organisms so what we've got is a whole

1193

00:52:23,260 --> 00:52:27,609

suite here of different viruses fungi

1194

00:52:25,869 --> 00:52:29,858

and bacterias that do different things

1195

00:52:27,608 --> 00:52:32,019

some are good and some are bad so we

1196

00:52:29,858 --> 00:52:33,460

have the good guys like yeast which is a

1197

00:52:32,019 --> 00:52:35,440

fungus that of course we used to make

1198  
00:52:33,460 --> 00:52:37,028  
bread and beer now I'm looking at what

1199  
00:52:35,440 --> 00:52:39,519  
might is that the chicken pox one the

1200  
00:52:37,028 --> 00:52:41,500  
spotted one yeah was that small percent

1201  
00:52:39,519 --> 00:52:42,940  
small needles that's amazing but we do

1202  
00:52:41,500 --> 00:52:45,010  
have the small pox one as well

1203  
00:52:42,940 --> 00:52:47,980  
this is golden staph so this is an

1204  
00:52:45,010 --> 00:52:50,260  
antibiotic resistant bacteria so you can

1205  
00:52:47,980 --> 00:52:52,240  
see that it's wearing a cape that's a

1206  
00:52:50,260 --> 00:52:54,039  
super bug so this is where a lot of

1207  
00:52:52,239 --> 00:52:56,469  
research is focused on the moment in

1208  
00:52:54,039 --> 00:52:57,849  
understanding how these bacteria become

1209  
00:52:56,469 --> 00:52:59,048  
resistant to antibiotics

1210  
00:52:57,849 --> 00:53:00,160  
yeah and how we can prevent that

1211  
00:52:59,048 --> 00:53:01,838  
happening because that's a massive

1212  
00:53:00,159 --> 00:53:03,399  
problem at the moment but what's what is

1213  
00:53:01,838 --> 00:53:04,298  
the current method that most most

1214  
00:53:03,400 --> 00:53:06,460  
antibiotics

1215  
00:53:04,298 --> 00:53:08,079  
killed the bacteria like that dude they

1216  
00:53:06,460 --> 00:53:08,800  
deny them food do they take something

1217  
00:53:08,079 --> 00:53:10,269  
out of their Dean

1218  
00:53:08,800 --> 00:53:11,500  
well how do they normally work what's

1219  
00:53:10,269 --> 00:53:13,420  
the mechanism and there's a few

1220  
00:53:11,500 --> 00:53:15,849  
different mechanisms so classically they

1221  
00:53:13,420 --> 00:53:17,800  
interfered with the chemicals that make

1222  
00:53:15,849 --> 00:53:20,589  
the cell wall or the structure of the

1223  
00:53:17,800 --> 00:53:22,780  
bacteria by interfering the synthesis of

1224  
00:53:20,590 --> 00:53:25,030  
those chemicals but now there's a lot of

1225  
00:53:22,780 --> 00:53:26,380  
types they interrupt different stages of

1226

00:53:25,030 --> 00:53:29,650  
what's called the metabolism of the

1227  
00:53:26,380 --> 00:53:31,539  
cells so that's how the cell grows from

1228  
00:53:29,650 --> 00:53:33,130  
the instructions in its genome to

1229  
00:53:31,539 --> 00:53:35,559  
actually performing functions via

1230  
00:53:33,130 --> 00:53:36,970  
enzymes and it blocks different stages

1231  
00:53:35,559 --> 00:53:38,949  
and different antibiotics work in

1232  
00:53:36,969 --> 00:53:41,169  
different ways some target the genes

1233  
00:53:38,949 --> 00:53:43,379  
that get switched on some interfere with

1234  
00:53:41,170 --> 00:53:45,340  
parts of the cell that are being made by

1235  
00:53:43,380 --> 00:53:47,470  
constructive parts of the cell like the

1236  
00:53:45,340 --> 00:53:50,289  
cell wall being synthesized now see

1237  
00:53:47,469 --> 00:53:51,609  
we've got some ecoli back there that's

1238  
00:53:50,289 --> 00:53:54,190  
pretty much everywhere poo is everywhere

1239  
00:53:51,610 --> 00:53:55,360  
isn't it yep yep so we coli : really is

1240  
00:53:54,190 --> 00:53:57,610

everywhere it's sort of the model

1241  
00:53:55,360 --> 00:53:59,440  
organism that we use in the lab but it's

1242  
00:53:57,610 --> 00:54:01,329  
also present in our bodies and in our

1243  
00:53:59,440 --> 00:54:04,150  
guts and it's also present in things

1244  
00:54:01,329 --> 00:54:05,469  
like um waterways and then some are good

1245  
00:54:04,150 --> 00:54:08,050  
and some are bad so a lot of these

1246  
00:54:05,469 --> 00:54:09,339  
species are very variable so if it's in

1247  
00:54:08,050 --> 00:54:10,600  
the right place doing the right thing

1248  
00:54:09,340 --> 00:54:13,030  
it's good for you and it's part of our

1249  
00:54:10,599 --> 00:54:15,940  
natural micro flora but also different

1250  
00:54:13,030 --> 00:54:17,590  
strains can cause disease particularly

1251  
00:54:15,940 --> 00:54:19,929  
if they're coming from say feces into

1252  
00:54:17,590 --> 00:54:21,820  
water and then we're consuming them so

1253  
00:54:19,929 --> 00:54:23,799  
yeah these things are quite complicated

1254  
00:54:21,820 --> 00:54:24,850  
in different species do different things

1255  
00:54:23,800 --> 00:54:28,450  
in different environments

1256  
00:54:24,849 --> 00:54:29,949  
now would you encounter polio in the

1257  
00:54:28,449 --> 00:54:31,480  
wild very normally here now I know

1258  
00:54:29,949 --> 00:54:33,489  
people might not be getting it as much

1259  
00:54:31,480 --> 00:54:36,610  
in Australia but is it is this a turn-up

1260  
00:54:33,489 --> 00:54:38,949  
anyway is it our blue normally I've

1261  
00:54:36,610 --> 00:54:40,390  
believe largely it's been eradicated in

1262  
00:54:38,949 --> 00:54:42,549  
Australia but in other parts of the

1263  
00:54:40,389 --> 00:54:44,679  
world it's not but the actual organism

1264  
00:54:42,550 --> 00:54:47,470  
that causes it potentially could exist

1265  
00:54:44,679 --> 00:54:49,809  
at a low level so there's a theory

1266  
00:54:47,469 --> 00:54:51,699  
called the bus backing hypothesis that's

1267  
00:54:49,809 --> 00:54:54,639  
a bit of a calm loving that don't say it

1268  
00:54:51,699 --> 00:54:56,710  
again the bus pecking hypothesis so

1269  
00:54:54,639 --> 00:54:59,019  
those two people were content that was

1270  
00:54:56,710 --> 00:55:00,820  
his last name but but what it is is the

1271  
00:54:59,019 --> 00:55:03,489  
theory that everything is everywhere and

1272  
00:55:00,820 --> 00:55:05,500  
the environment selects so a lot of

1273  
00:55:03,489 --> 00:55:07,569  
microorganisms occur everywhere on the

1274  
00:55:05,500 --> 00:55:09,610  
planet at a really low abundance and

1275  
00:55:07,570 --> 00:55:11,710  
when the environment changes they can

1276  
00:55:09,610 --> 00:55:13,420  
become really abundant really quickly so

1277  
00:55:11,710 --> 00:55:15,610  
that's something to be aware of when we

1278  
00:55:13,420 --> 00:55:17,559  
think of things like climate change in

1279  
00:55:15,610 --> 00:55:18,820  
pollution and what what would that will

1280  
00:55:17,559 --> 00:55:20,920  
pause in the environment and what

1281  
00:55:18,820 --> 00:55:22,960  
bacteria might respond to that

1282  
00:55:20,920 --> 00:55:25,030  
so where can we find the joint academic

1283

00:55:22,960 --> 00:55:26,289  
microbiology seminars online bit more

1284  
00:55:25,030 --> 00:55:29,800  
about we've been telling us you can find

1285  
00:55:26,289 --> 00:55:31,929  
us online at jams dot org dot au

1286  
00:55:29,800 --> 00:55:33,850  
so what jams is is we're a monthly

1287  
00:55:31,929 --> 00:55:36,399  
meeting of microbiologists that meet in

1288  
00:55:33,849 --> 00:55:38,469  
Sydney and we welcome the public to come

1289  
00:55:36,400 --> 00:55:41,440  
to that what would it do Oh hidden if we

1290  
00:55:38,469 --> 00:55:44,469  
haven't been the Uni but no sort of it

1291  
00:55:41,440 --> 00:55:45,429  
tends to be academic but we welcome

1292  
00:55:44,469 --> 00:55:47,709  
everyone and we're happy to always have

1293  
00:55:45,429 --> 00:55:49,089  
a chat and explain what we're doing and

1294  
00:55:47,710 --> 00:55:50,470  
so that's once a month on the last

1295  
00:55:49,090 --> 00:55:52,360  
Tuesday of the month and you can check

1296  
00:55:50,469 --> 00:55:55,029  
out our website we also do a lot of

1297  
00:55:52,360 --> 00:55:57,340

talks and events with the public as well

1298

00:55:55,030 --> 00:56:03,030

so lots of Twitter one there our Twitter

1299

00:55:57,340 --> 00:56:06,160

is at gems org au so at symbol J AMS o

1300

00:56:03,030 --> 00:56:07,840

RG au and if you send us a tweet we

1301

00:56:06,159 --> 00:56:11,529

always happy to get in touch and talk

1302

00:56:07,840 --> 00:56:13,210

about microbiology of course on the

1303

00:56:11,530 --> 00:56:15,130

science floor here for the Sydney

1304

00:56:13,210 --> 00:56:16,570

Festival of Scientific got here and what

1305

00:56:15,130 --> 00:56:19,210

are you showing the kids today

1306

00:56:16,570 --> 00:56:21,130

my name is Olga I'm from wildlife cities

1307

00:56:19,210 --> 00:56:22,869

ER and we're just got some little stick

1308

00:56:21,130 --> 00:56:24,910

insects there we've got some young ones

1309

00:56:22,869 --> 00:56:27,909

some older ones and a few different

1310

00:56:24,909 --> 00:56:30,190

species too you can see the ones that

1311

00:56:27,909 --> 00:56:32,379

look like coat up leaves they're

1312  
00:56:30,190 --> 00:56:35,320  
actually spiny leaf insects I known as

1313  
00:56:32,380 --> 00:56:37,119  
the McClay Spectre and they're not

1314  
00:56:35,320 --> 00:56:38,710  
actually a leaf insect surprisingly no

1315  
00:56:37,119 --> 00:56:40,019  
because I do find them all over

1316  
00:56:38,710 --> 00:56:42,610  
Australia or just on the east coast

1317  
00:56:40,019 --> 00:56:44,980  
mainly on the East Coast but we do have

1318  
00:56:42,610 --> 00:56:47,170  
phasmid all over Australia all different

1319  
00:56:44,980 --> 00:56:49,679  
species so we do have a little bit of a

1320  
00:56:47,170 --> 00:56:52,349  
selection a few different

1321  
00:56:49,679 --> 00:56:54,779  
a few different ones for the kids to

1322  
00:56:52,349 --> 00:56:57,510  
have a look at the most popular ones of

1323  
00:56:54,780 --> 00:56:59,640  
course are always the biggest Oh which

1324  
00:56:57,510 --> 00:57:01,740  
in this case is the spiny leaf insect

1325  
00:56:59,639 --> 00:57:05,308  
you can see that the heavy abdomen on

1326  
00:57:01,739 --> 00:57:07,019  
the female that's full of eggs Wow and

1327  
00:57:05,309 --> 00:57:10,170  
so how many eggs would she drop in one

1328  
00:57:07,019 --> 00:57:12,389  
go she drops them one at a time although

1329  
00:57:10,170 --> 00:57:14,700  
she actually flicks them away far away

1330  
00:57:12,389 --> 00:57:17,129  
and if you have a close look at the eggs

1331  
00:57:14,699 --> 00:57:20,460  
they have a little nodule on the end

1332  
00:57:17,130 --> 00:57:22,588  
that's scented it actually attracts ants

1333  
00:57:20,460 --> 00:57:24,809  
and the ants come over pick up the egg

1334  
00:57:22,588 --> 00:57:27,420  
and carry it down into their nest

1335  
00:57:24,809 --> 00:57:30,390  
because they think it's food but they

1336  
00:57:27,420 --> 00:57:33,000  
don't eat the egg and so when the young

1337  
00:57:30,389 --> 00:57:36,029  
hatch out do they eat the ants no no the

1338  
00:57:33,000 --> 00:57:38,608  
young are also vegetarian so they're all

1339  
00:57:36,030 --> 00:57:41,269  
herbivores they eat eucalyptus leaf you

1340

00:57:38,608 --> 00:57:43,769  
know I look at her she's so cute and

1341  
00:57:41,269 --> 00:57:45,389  
they'll actually climb out they look

1342  
00:57:43,769 --> 00:57:47,400  
like ants when they're little they'll

1343  
00:57:45,389 --> 00:57:50,190  
climb out of the ant nest climb all the

1344  
00:57:47,400 --> 00:57:52,019  
way up at the tree and then they sort of

1345  
00:57:50,190 --> 00:57:54,150  
slow down quite a lot you can see how

1346  
00:57:52,019 --> 00:57:55,259  
slow she is the babies are actually

1347  
00:57:54,150 --> 00:57:58,769  
quite fast

1348  
00:57:55,260 --> 00:58:00,270  
oh and now does she they solar-powered

1349  
00:57:58,769 --> 00:58:01,679  
like when it's warm they're more active

1350  
00:58:00,269 --> 00:58:03,150  
when it's cold they just go into a leaf

1351  
00:58:01,679 --> 00:58:03,568  
and stay then that's a really good

1352  
00:58:03,150 --> 00:58:05,970  
question

1353  
00:58:03,568 --> 00:58:08,279  
just like reptiles these guys are

1354  
00:58:05,969 --> 00:58:10,828

ectotherms so they are cold-blooded and

1355

00:58:08,280 --> 00:58:13,230

they do rely on solar energy to help

1356

00:58:10,829 --> 00:58:14,700

them move wow that's quite cool and now

1357

00:58:13,230 --> 00:58:16,380

people are pretty happy to have stick

1358

00:58:14,699 --> 00:58:17,699

insects on them and stuff like that they

1359

00:58:16,380 --> 00:58:19,230

probably wouldn't feel the same way

1360

00:58:17,699 --> 00:58:21,239

about spiders why do you think people

1361

00:58:19,230 --> 00:58:22,679

have got the arachnophobia where they

1362

00:58:21,239 --> 00:58:25,259

don't necessarily feel bad about the

1363

00:58:22,679 --> 00:58:26,848

stick insect oh to be honest a lot of

1364

00:58:25,260 --> 00:58:29,369

people do feel bad about the stick

1365

00:58:26,849 --> 00:58:31,798

insects until we tell them that they're

1366

00:58:29,369 --> 00:58:33,930

not able to bite them so I think with

1367

00:58:31,798 --> 00:58:35,639

spiders a lot of it it's just people

1368

00:58:33,929 --> 00:58:38,190

don't understand that most spiders

1369  
00:58:35,639 --> 00:58:42,210  
aren't willing to sacrifice their venom

1370  
00:58:38,190 --> 00:58:44,608  
on a large animal also spiders don't eat

1371  
00:58:42,210 --> 00:58:46,170  
you yeah they don't eat us and if you're

1372  
00:58:44,608 --> 00:58:47,289  
not a threat to them they don't feel the

1373  
00:58:46,170 --> 00:58:49,750  
need to use them

1374  
00:58:47,289 --> 00:58:52,329  
so we did have a spiders exhibition here

1375  
00:58:49,750 --> 00:58:54,840  
just a little while ago you're saying

1376  
00:58:52,329 --> 00:58:58,090  
the movie six legged freaks is not true

1377  
00:58:54,840 --> 00:59:02,980  
no the six you may throw that

1378  
00:58:58,090 --> 00:59:07,329  
eight-legged freak so the insect was a

1379  
00:59:02,980 --> 00:59:09,070  
pretty dull movie the little six legged

1380  
00:59:07,329 --> 00:59:11,349  
freaks and then we've got arachnids of

1381  
00:59:09,070 --> 00:59:13,059  
course the eight legged freaks okay look

1382  
00:59:11,349 --> 00:59:14,739  
this is brother just lining up to have a

1383  
00:59:13,059 --> 00:59:16,809  
good look like kids love him anything

1384  
00:59:14,739 --> 00:59:19,389  
that moves and as long as it doesn't

1385  
00:59:16,809 --> 00:59:21,369  
bite them suddenly feel like oh I'm an

1386  
00:59:19,389 --> 00:59:23,079  
adding animal Wrangler it really gives

1387  
00:59:21,369 --> 00:59:25,119  
them a bit of a hands-on experience I

1388  
00:59:23,079 --> 00:59:27,279  
think it's a it's a great way to bring

1389  
00:59:25,119 --> 00:59:28,420  
nature into the classroom as well as we

1390  
00:59:27,280 --> 00:59:32,230  
can where can we find more of your

1391  
00:59:28,420 --> 00:59:36,610  
nature online online we do have a

1392  
00:59:32,230 --> 00:59:39,969  
website wild life Sydney z.com did I you

1393  
00:59:36,610 --> 00:59:41,800  
I believe wow you caught me off guard oh

1394  
00:59:39,969 --> 00:59:44,079  
okay and have a good day here with the

1395  
00:59:41,800 --> 00:59:45,490  
kids no worries thank you so much I hope

1396  
00:59:44,079 --> 00:59:48,579  
you guys have a great time here at the

1397

00:59:45,489 --> 00:59:49,809  
Science Festival see ya well Richard

1398  
00:59:48,579 --> 00:59:51,250  
look we've been wandering around here

1399  
00:59:49,809 --> 00:59:52,869  
now what have you seen I've seen a few

1400  
00:59:51,250 --> 00:59:54,489  
people had seen a stick insect we've

1401  
00:59:52,869 --> 00:59:56,409  
seen I've tried to get bird flu

1402  
00:59:54,489 --> 00:59:57,579  
weaponized there unsuccessfully down

1403  
00:59:56,409 --> 01:00:00,219  
with those scientists what do you been

1404  
00:59:57,579 --> 01:00:03,369  
up to I was just looking at the the gene

1405  
01:00:00,219 --> 01:00:05,139  
technology from jellyfish and tiny

1406  
01:00:03,369 --> 01:00:07,539  
little creatures that swarm and multiply

1407  
01:00:05,139 --> 01:00:09,519  
in a drop of water mmm

1408  
01:00:07,539 --> 01:00:10,570  
hey look I love the person that the

1409  
01:00:09,519 --> 01:00:12,610  
University of Sydney they're they've a

1410  
01:00:10,570 --> 01:00:15,039  
big person enjoy what you do and it'll

1411  
01:00:12,610 --> 01:00:16,930

work out I couldn't agree more the

1412

01:00:15,039 --> 01:00:18,880

hardest bit is finding the thing to

1413

01:00:16,929 --> 01:00:21,250

enjoy it pays isn't that Richard that's

1414

01:00:18,880 --> 01:00:23,680

a tough bit we and we're trying minato

1415

01:00:21,250 --> 01:00:25,150

how we're trying I found it but these

1416

01:00:23,679 --> 01:00:27,759

days I just seem to be making ramen to

1417

01:00:25,150 --> 01:00:30,070

you hello skeptic zone cub reporter mane

1418

01:00:27,760 --> 01:00:31,990

out of here at a very tense moment in

1419

01:00:30,070 --> 01:00:34,000

this Sydney Science Festival as we are

1420

01:00:31,989 --> 01:00:36,099

waiting to do a couple of shows of

1421

01:00:34,000 --> 01:00:37,150

skeptics investigators thingy mystery

1422

01:00:36,099 --> 01:00:39,759

investigators always get that wrong

1423

01:00:37,150 --> 01:00:41,980

Richard Nam in the show hello we just

1424

01:00:39,760 --> 01:00:44,050

focus we're here about to perform for

1425

01:00:41,980 --> 01:00:47,050

two groups of school students would

1426  
01:00:44,050 --> 01:00:48,519  
perform your morning mmm and that

1427  
01:00:47,050 --> 01:00:50,140  
munching sound you can hear is actually

1428  
01:00:48,519 --> 01:00:52,539  
our breakfast which happens to consist

1429  
01:00:50,139 --> 01:00:55,329  
of a minty each yes I was up at 4:00

1430  
01:00:52,539 --> 01:00:56,559  
this morning don't ask and been going

1431  
01:00:55,329 --> 01:00:58,360  
all day and I completely forgot to have

1432  
01:00:56,559 --> 01:01:00,289  
breakfast so that good Australian tip

1433  
01:00:58,360 --> 01:01:01,940  
for all you overseas listeners

1434  
01:01:00,289 --> 01:01:03,679  
if you can't have breakfast have a minty

1435  
01:01:01,940 --> 01:01:05,450  
at least and it cures any breath problem

1436  
01:01:03,679 --> 01:01:07,669  
we have as well it does and we're

1437  
01:01:05,449 --> 01:01:10,699  
preparing we've got our divining rods

1438  
01:01:07,670 --> 01:01:13,550  
the juggling balls touch and bending

1439  
01:01:10,699 --> 01:01:16,429  
spoon mmm now the or by the by the way

1440  
01:01:13,550 --> 01:01:19,789  
if speaking of spoons see if you can

1441  
01:01:16,429 --> 01:01:22,369  
find on youtube I play the spoons by

1442  
01:01:19,789 --> 01:01:24,619  
Clive done from dad's Arnie's yes that's

1443  
01:01:22,369 --> 01:01:26,569  
a song I play the spoons it's terrible

1444  
01:01:24,619 --> 01:01:28,519  
but you'll enjoy it all right well we

1445  
01:01:26,570 --> 01:01:30,530  
better get ready in about 10 minutes the

1446  
01:01:28,519 --> 01:01:32,900  
rooms gonna be packed this theater will

1447  
01:01:30,530 --> 01:01:35,090  
be packed with big groups of high school

1448  
01:01:32,900 --> 01:01:36,619  
students they hold the microphone and I

1449  
01:01:35,090 --> 01:01:38,480  
will apply a little the wonders of

1450  
01:01:36,619 --> 01:01:40,309  
science I'll be hearing this is

1451  
01:01:38,480 --> 01:01:42,619  
maynard's contribution to science

1452  
01:01:40,309 --> 01:01:44,610  
everybody you often wondered well this

1453  
01:01:42,619 --> 01:01:49,179  
is it

1454

01:01:44,610 --> 01:01:53,660  
[Music]

1455  
01:01:49,179 --> 01:01:55,759  
wonder what I'm like doing that noise

1456  
01:01:53,659 --> 01:01:57,769  
you can hear is high school students

1457  
01:01:55,760 --> 01:02:02,500  
filing in and doing what high school

1458  
01:01:57,769 --> 01:02:02,500  
students do that sort of noise

1459  
01:02:03,960 --> 01:02:13,300  
is the Northwest and this Haskell's from

1460  
01:02:11,139 --> 01:02:15,639  
Seven Hills Sagan hear these screams of

1461  
01:02:13,300 --> 01:02:18,060  
delight hopefully from the his seven

1462  
01:02:15,639 --> 01:02:18,059  
students

1463  
01:02:21,429 --> 01:02:24,509  
[Music]

1464  
01:02:33,949 --> 01:02:37,009  
[Music]

1465  
01:02:37,070 --> 01:02:47,489  
[Applause]

1466  
01:02:55,730 --> 01:03:00,360  
[Applause]

1467  
01:03:06,509 --> 01:03:12,009  
to appear on TV movies and things like

1468  
01:03:09,400 --> 01:03:14,829

that I did a show on channel 7 so Mexico

1469

01:03:12,009 --> 01:03:17,699

and also Mac - sometimes on home a

1470

01:03:14,829 --> 01:03:24,400

healthy TV shows and then I am playing a

1471

01:03:17,699 --> 01:03:26,679

theater for high schools the show went

1472

01:03:24,400 --> 01:03:28,539

very well and then came the time for

1473

01:03:26,679 --> 01:03:33,278

Richard to lie on the bed of nails

1474

01:03:28,539 --> 01:03:35,679

Willie survived really live to put

1475

01:03:33,278 --> 01:03:57,219

yourself on the bed of nails another day

1476

01:03:35,679 --> 01:04:08,439

hope so who's there Richard Saunders on

1477

01:03:57,219 --> 01:04:10,449

the bed of tetanus if you haven't be

1478

01:04:08,438 --> 01:04:12,248

very careful with the liner and one

1479

01:04:10,449 --> 01:04:13,110

thing you must never do is let anybody

1480

01:04:12,248 --> 01:04:17,829

stand on

1481

01:04:13,110 --> 01:04:21,159

[Applause]

1482

01:04:17,829 --> 01:04:21,159

[Music]

1483  
01:04:21,849 --> 01:04:28,380  
[Applause]

1484  
01:04:30,559 --> 01:04:34,559  
richard has survived the bed of nails

1485  
01:04:32,699 --> 01:04:36,210  
and the children are frankly amazed in

1486  
01:04:34,559 --> 01:05:05,940  
that kind of a way that children are

1487  
01:04:36,210 --> 01:05:11,210  
sometimes for another year at the Sydney

1488  
01:05:05,940 --> 01:05:11,210  
festival of science there is a

1489  
01:05:16,159 --> 01:05:19,250  
[Music]

1490  
01:05:21,550 --> 01:05:32,920  
on may not condone are you welcome to

1491  
01:05:28,250 --> 01:05:35,300  
bunga bunga 39 39 episodes 39 events 39

1492  
01:05:32,920 --> 01:05:37,550  
cataclysms with a show the challenges

1493  
01:05:35,300 --> 01:05:40,470  
the government the god and your very

1494  
01:05:37,550 --> 01:05:42,390  
self on today's show you'll hear

1495  
01:05:40,469 --> 01:05:43,889  
Angela here there are times are lots of

1496  
01:05:42,389 --> 01:05:49,199  
it that we all managed to get pretty

1497  
01:05:43,889 --> 01:05:50,309  
grabbing that thing over there and two

1498  
01:05:49,199 --> 01:05:51,750  
more we hear from you

1499  
01:05:50,309 --> 01:05:56,279  
well we won't be talking about this

1500  
01:05:51,750 --> 01:06:05,219  
you're a selfish arrogant on Manor

1501  
01:05:56,280 --> 01:06:11,560  
calmed are you are you

1502  
01:06:05,219 --> 01:06:11,559  
[Music]

1503  
01:06:16,429 --> 01:06:20,940  
thank you for listening to the skeptic

1504  
01:06:18,869 --> 01:06:24,539  
zone coming up next week more reports

1505  
01:06:20,940 --> 01:06:27,119  
from Iran Segal Vizia travels around the

1506  
01:06:24,539 --> 01:06:29,969  
world heading for the European skeptics

1507  
01:06:27,119 --> 01:06:32,609  
Congress coming up in Poland where I'm

1508  
01:06:29,969 --> 01:06:36,929  
delighted to say he will be a speaker if

1509  
01:06:32,610 --> 01:06:39,630  
you want to attend that meeting which is

1510  
01:06:36,929 --> 01:06:43,259  
coming up in September the 22nd to the

1511

01:06:39,630 --> 01:06:45,869  
24th of September you can find links in

1512  
01:06:43,260 --> 01:06:48,540  
the show notes and thank you to all

1513  
01:06:45,869 --> 01:06:50,339  
those people who contribute to the

1514  
01:06:48,539 --> 01:06:52,710  
skeptic zone I often say this and I

1515  
01:06:50,340 --> 01:06:55,710  
really mean it if it wasn't for people

1516  
01:06:52,710 --> 01:06:57,539  
there chipping in contributing weekly or

1517  
01:06:55,710 --> 01:07:01,590  
sometimes donations there would be no

1518  
01:06:57,539 --> 01:07:04,170  
skeptic zone so all you people who

1519  
01:07:01,590 --> 01:07:06,150  
listen for free without chipping in

1520  
01:07:04,170 --> 01:07:07,980  
that's you know I'm glad you're

1521  
01:07:06,150 --> 01:07:09,480  
listening I'm delighted thank you very

1522  
01:07:07,980 --> 01:07:12,150  
much for listening and I hope you enjoy

1523  
01:07:09,480 --> 01:07:14,159  
the show but for all those people who do

1524  
01:07:12,150 --> 01:07:16,920  
contribute even if it's a dollar a week

1525  
01:07:14,159 --> 01:07:18,899

by patreon or two dollars a week by

1526

01:07:16,920 --> 01:07:21,539

patreon or four dollars or whatever the

1527

01:07:18,900 --> 01:07:25,289

case may be or even micropayments

1528

01:07:21,539 --> 01:07:27,509

in a special thank you for you it's you

1529

01:07:25,289 --> 01:07:30,779

who make the show possible for everybody

1530

01:07:27,510 --> 01:07:33,080

else but for everybody who listens I

1531

01:07:30,780 --> 01:07:38,010

hope the show keeps you entertained

1532

01:07:33,079 --> 01:07:40,829

informed and in a very real sense I hope

1533

01:07:38,010 --> 01:07:43,620

we are good company for you I'm looking

1534

01:07:40,829 --> 01:07:46,619

forward to next week Maynard and I are

1535

01:07:43,619 --> 01:07:48,539

off to a high school here in Sydney to

1536

01:07:46,619 --> 01:07:50,849

perform the our mystery investigators

1537

01:07:48,539 --> 01:07:53,159

show once again should be a lot of fun

1538

01:07:50,849 --> 01:07:56,190

oh and don't forget to check out my

1539

01:07:53,159 --> 01:07:58,769

notes podcasts at Maynard comm dot au

1540  
01:07:56,190 --> 01:08:01,200  
but for this week this is Richard

1541  
01:07:58,769 --> 01:08:03,679  
Saunders signing off from Sydney

1542  
01:08:01,199 --> 01:08:03,679  
Australia

1543  
01:08:05,480 --> 01:08:11,699  
you've been listening to the skeptic

1544  
01:08:07,889 --> 01:08:14,609  
zone podcast visit our website at WWF

1545  
01:08:11,699 --> 01:08:18,269  
tech zone TV for contacts an archive of

1546  
01:08:14,610 --> 01:08:21,180  
all episodes since 2008 and our online

1547  
01:08:18,270 --> 01:08:23,900  
store please support the skeptic zone by

1548  
01:08:21,180 --> 01:08:26,909  
following us on twitter at skeptic zone

1549  
01:08:23,899 --> 01:08:28,439  
liking us on facebook and leaving a

1550  
01:08:26,909 --> 01:08:30,509  
review on itunes

1551  
01:08:28,439 --> 01:08:33,298  
you can also show your support by

1552  
01:08:30,509 --> 01:08:36,930  
subscribing via PayPal for as little as

1553  
01:08:33,298 --> 01:08:39,088  
99 cents a week the skeptic zone is an

1554  
01:08:36,930 --> 01:08:41,039  
independent production the views and

1555  
01:08:39,088 --> 01:08:43,259  
opinions expressed on the skeptic zone

1556  
01:08:41,039 --> 01:08:46,109  
and not necessarily those of Australian

1557  
01:08:43,259 --> 01:08:48,920  
skeptic team or any other skeptical

1558  
01:08:46,109 --> 01:08:48,920  
organisation

1559  
01:09:01,600 --> 01:09:04,759  
[Music]

1560  
01:09:21,520 --> 01:09:24,909  
where's your sister

1561  
01:09:26,789 --> 01:09:29,890  
[Music]