

**The Skeptic Zone**  
**Show 202 - 1 Sep 2012**



**Dr. Pamela L. Gay**



**Harriet A. Hall, MD**

1  
00:00:23,290 --> 00:00:09,110  
welcome to the skeptic zone the podcast

2  
00:00:30,080 --> 00:00:26,150  
hello and welcome to the skeptic zone

3  
00:00:33,139 --> 00:00:30,090  
episode number 202 for the first off

4  
00:00:36,319 --> 00:00:33,149  
September 2012 Richard Saunders here

5  
00:00:39,139 --> 00:00:36,329  
with you from Sydney Australia coming up

6  
00:00:41,540 --> 00:00:39,149  
on this week's show some really really

7  
00:00:43,520 --> 00:00:41,550  
wonderful skeptics and some good people

8  
00:00:46,580 --> 00:00:43,530  
to put to my favorite people in the

9  
00:00:49,610 --> 00:00:46,590  
world dr. Pamela gay a wonderful

10  
00:00:52,670 --> 00:00:49,620  
astronomer dr. Pamela gay and dr.

11  
00:00:54,229 --> 00:00:52,680  
Harriet Hall known as the skip doc now

12  
00:00:56,000 --> 00:00:54,239  
both these wonderful people are at the

13  
00:00:58,849 --> 00:00:56,010

amazing meeting where of course of

14

00:01:01,099 --> 00:00:58,859

course they spoke to Maynard I'm

15

00:01:03,349 --> 00:01:01,109

beginning to think that everybody of the

16

00:01:06,109 --> 00:01:03,359

amazing meeting must have spoken to main

17

00:01:07,670 --> 00:01:06,119

out at some stage or other I'm also

18

00:01:10,609 --> 00:01:07,680

beginning to think that the man must be

19

00:01:12,440 --> 00:01:10,619

twins or triplets I don't know how on

20

00:01:15,890 --> 00:01:12,450

earth he got all these interviews in

21

00:01:17,870 --> 00:01:15,900

such a short time but he did and we're

22

00:01:19,730 --> 00:01:17,880

still enjoying every one of them and

23

00:01:21,770 --> 00:01:19,740

more to come over the weeks to come it's

24

00:01:24,050 --> 00:01:21,780

just incredible and for those people who

25

00:01:25,730 --> 00:01:24,060

might be new to the skeptic zone the

26  
00:01:27,530 --> 00:01:25,740  
only reason may not went to the amazing

27  
00:01:30,080 --> 00:01:27,540  
meeting in Las Vegas is because

28  
00:01:32,660 --> 00:01:30,090  
listeners of this show paid for him to

29  
00:01:34,580 --> 00:01:32,670  
go there listen up our folks that's what

30  
00:01:37,249 --> 00:01:34,590  
it's all about then coming up after

31  
00:01:40,069 --> 00:01:37,259  
those interviews I travel to Sydney

32  
00:01:41,480 --> 00:01:40,079  
University which isn't so far from where

33  
00:01:45,200 --> 00:01:41,490  
i live sort of down the road a little

34  
00:01:48,139 --> 00:01:45,210  
bit and I speak to the young scientists

35  
00:01:50,899 --> 00:01:48,149  
of Australia now this is an organization

36  
00:01:53,480 --> 00:01:50,909  
dedicated to outreach and encouraging

37  
00:01:57,080 --> 00:01:53,490  
young people to take up or be involved

38  
00:01:59,209 --> 00:01:57,090

with science very very worthy cause I

39

00:02:01,520 --> 00:01:59,219

think now some important news that's

40

00:02:04,010 --> 00:02:01,530

come to us from our good friends in

41

00:02:05,870 --> 00:02:04,020

Melbourne the Australian skeptics

42

00:02:07,280 --> 00:02:05,880

National Convention and there's more

43

00:02:11,119 --> 00:02:07,290

information coming up later in the show

44

00:02:12,860 --> 00:02:11,129

the tickets are selling out already now

45

00:02:13,760 --> 00:02:12,870

I know it's a months away it's at the

46

00:02:17,150 --> 00:02:13,770

end of november

47

00:02:19,400 --> 00:02:17,160

but the tickets are selling already this

48

00:02:22,090 --> 00:02:19,410

is a situation where it's not a good

49

00:02:24,380 --> 00:02:22,100

idea to sort of wait and think and delay

50

00:02:26,450 --> 00:02:24,390

get your tickets as soon as you can

51  
00:02:28,160 --> 00:02:26,460  
don't miss out don't be one of those

52  
00:02:30,740 --> 00:02:28,170  
people who say oh I finally I bought

53  
00:02:32,240 --> 00:02:30,750  
tickets don't miss out details about the

54  
00:02:34,820 --> 00:02:32,250  
Australian skeptics National Convention

55  
00:02:37,760 --> 00:02:34,830  
being held in Melbourne with James Randi

56  
00:02:39,650 --> 00:02:37,770  
and DJ Grothe and rebecca watson and a

57  
00:02:42,800 --> 00:02:39,660  
whole heap of other people details

58  
00:02:44,600 --> 00:02:42,810  
coming up later in the show but now it's

59  
00:02:54,020 --> 00:02:44,610  
time for me to leave this recording

60  
00:02:58,640 --> 00:02:54,030  
studio run downstairs come to the fridge

61  
00:03:17,030 --> 00:02:58,650  
and look inside our I'm going to have a

62  
00:03:33,660 --> 00:03:17,040  
nice glass of creaming soda while you

63  
00:03:41,410 --> 00:03:38,100

here's my not spooky action at a

64

00:03:45,620 --> 00:03:44,090

well ladies and gentlemen it's new

65

00:03:47,390 --> 00:03:45,630

interview time here and I've got someone

66

00:03:49,850 --> 00:03:47,400

who spends a lot of time looking at the

67

00:03:51,470 --> 00:03:49,860

Stars poring over data or pouring over

68

00:03:54,050 --> 00:03:51,480

data depending on how you want to say it

69

00:03:55,280 --> 00:03:54,060

who've we got here I'm dr. Pamela game

70

00:03:57,530 --> 00:03:55,290

on the faculty at southern illinois

71

00:03:59,210 --> 00:03:57,540

university edwardsville now what's at

72

00:04:00,800 --> 00:03:59,220

university like is it a hard-drinking

73

00:04:03,830 --> 00:04:00,810

kind of place do they have a fantastic

74

00:04:05,780 --> 00:04:03,840

sport team no we're actually a fairly

75

00:04:07,490 --> 00:04:05,790

small University in the middle of the

76

00:04:09,830 --> 00:04:07,500

country and what's often referred to as

77

00:04:11,690 --> 00:04:09,840

the flyover zone oh we have a lot of

78

00:04:13,540 --> 00:04:11,700

good hard-working kids most of them come

79

00:04:15,470 --> 00:04:13,550

from the farms or the inner city and

80

00:04:17,479 --> 00:04:15,480

they're just trying to get through

81

00:04:19,670 --> 00:04:17,489

school working full-time jobs going to

82

00:04:21,890 --> 00:04:19,680

college it's I couldn't ask for a better

83

00:04:23,720 --> 00:04:21,900

group of hard-working kids so that means

84

00:04:26,150 --> 00:04:23,730

you don't get much light pollution there

85

00:04:28,250 --> 00:04:26,160

do you know actually we don't we have an

86

00:04:30,860 --> 00:04:28,260

oil refinery that takes up one horizon

87

00:04:33,200 --> 00:04:30,870

unfortunately but we can still see a lot

88

00:04:35,090 --> 00:04:33,210

of clear constellations and now remember

89

00:04:36,170 --> 00:04:35,100

I spoke to you 8am Australia and I think

90

00:04:38,630 --> 00:04:36,180

I asked you what was your favorite

91

00:04:40,550 --> 00:04:38,640

astronomical object of what did you like

92

00:04:41,990 --> 00:04:40,560

and you're a bit of fan of Neptune

93

00:04:43,550 --> 00:04:42,000

because of it's sort of bluish

94

00:04:45,410 --> 00:04:43,560

atmosphere i believe is caused by the

95

00:04:47,090 --> 00:04:45,420

methane is that correct that is correct

96

00:04:49,190 --> 00:04:47,100

although I have to say since I had a

97

00:04:51,110 --> 00:04:49,200

chance to go to South Africa I'm partial

98

00:04:52,790 --> 00:04:51,120

to the tarantula nebula because it

99

00:04:54,710 --> 00:04:52,800

actually looks like a Trench Luthor

100

00:04:57,800 --> 00:04:54,720

small telescope but that's just kind of

101  
00:05:00,560 --> 00:04:57,810  
creepy and awesome Wow and it was easy

102  
00:05:02,540 --> 00:05:00,570  
to find in that in the southern sky the

103  
00:05:05,360 --> 00:05:02,550  
tarantula nebula is fairly easy to find

104  
00:05:06,890 --> 00:05:05,370  
it's easy if you have a telescope that

105  
00:05:09,260 --> 00:05:06,900  
has a computer which I was lucky enough

106  
00:05:12,590 --> 00:05:09,270  
to use but if you know your bright stars

107  
00:05:15,440 --> 00:05:12,600  
you can star hop to it it's it's bright

108  
00:05:17,360 --> 00:05:15,450  
it's easy to find now I was looking I

109  
00:05:19,460 --> 00:05:17,370  
love watching Discovery Channel stuff on

110  
00:05:21,650 --> 00:05:19,470  
on galaxies and things like that and

111  
00:05:23,180 --> 00:05:21,660  
astronomy of the universe shows like

112  
00:05:24,650 --> 00:05:23,190  
that do you get any airtime on that do

113  
00:05:26,690 --> 00:05:24,660

they become along to you and give you a

114

00:05:28,310 --> 00:05:26,700

bit of a chat I've actually got to be on

115

00:05:31,040 --> 00:05:28,320

three different episodes of the universe

116

00:05:32,900 --> 00:05:31,050

and I did one episode of Nova but I

117

00:05:34,970 --> 00:05:32,910

think everything but my eyeball and

118

00:05:36,830 --> 00:05:34,980

ended up on the cutting room floor so

119

00:05:39,380 --> 00:05:36,840

that was a bit of sadness and of course

120

00:05:40,700 --> 00:05:39,390

you want to get like a 15 30 second grab

121

00:05:43,490 --> 00:05:40,710

at the most and you've got to explain

122

00:05:45,260 --> 00:05:43,500

quite complicated concepts sometimes so

123

00:05:48,770 --> 00:05:45,270

how do you go of that because you've

124

00:05:50,270 --> 00:05:48,780

obviously studied where more is more if

125

00:05:51,680 --> 00:05:50,280

you're writing an essay and it's a

126  
00:05:54,110 --> 00:05:51,690  
complete opposite of that with a media

127  
00:05:54,950 --> 00:05:54,120  
grab the nice thing about being a

128  
00:05:56,779 --> 00:05:54,960  
university

129  
00:05:59,240 --> 00:05:56,789  
fessor is I've had lots of students ask

130  
00:06:00,559 --> 00:05:59,250  
me lots of random questions off topic

131  
00:06:02,420 --> 00:06:00,569  
that I've learned how to answer quickly

132  
00:06:05,270 --> 00:06:02,430  
so I could go back where we went where

133  
00:06:06,950 --> 00:06:05,280  
we meant to be going so I use the same

134  
00:06:08,689 --> 00:06:06,960  
tactic with the news people that I use

135  
00:06:10,279 --> 00:06:08,699  
with students who are asking off topic

136  
00:06:12,050 --> 00:06:10,289  
questions that I still want to answer oh

137  
00:06:13,249 --> 00:06:12,060  
okay and what do you reckon the

138  
00:06:15,080 --> 00:06:13,259

strangest thing I've asked you because

139

00:06:17,300 --> 00:06:15,090

like TV has some really weird ideas

140

00:06:19,279 --> 00:06:17,310

sometimes I mind you you haven't

141

00:06:22,790 --> 00:06:19,289

finished this any of you get I think

142

00:06:24,379 --> 00:06:22,800

talking about the energy involved and

143

00:06:26,980 --> 00:06:24,389

the number of atoms in the human body

144

00:06:30,409 --> 00:06:26,990

for transporter beams and discussing

145

00:06:33,230 --> 00:06:30,419

what would actually happen if you tried

146

00:06:35,270 --> 00:06:33,240

to transport someone in terms of the

147

00:06:37,490 --> 00:06:35,280

energy necessary to pull apart all the

148

00:06:40,310 --> 00:06:37,500

atoms in the human body and then leaving

149

00:06:43,339 --> 00:06:40,320

behind vacuum when you removed the human

150

00:06:45,290 --> 00:06:43,349

body obviously doing the calculations

151  
00:06:47,330 --> 00:06:45,300  
was crazy yeah because you could copy

152  
00:06:48,770 --> 00:06:47,340  
the person to another place but to get

153  
00:06:50,450 --> 00:06:48,780  
this person to leave this place and go

154  
00:06:53,899 --> 00:06:50,460  
to another place that's a different

155  
00:06:55,550 --> 00:06:53,909  
concept isn't it yeah it 3d printing is

156  
00:06:57,890 --> 00:06:55,560  
much easier thing to do than to actually

157  
00:07:00,140 --> 00:06:57,900  
transport a living breathing human being

158  
00:07:01,670 --> 00:07:00,150  
wholesale to another place well I'll

159  
00:07:03,740 --> 00:07:01,680  
stop the project I was working on with

160  
00:07:04,820 --> 00:07:03,750  
that I had my hollowed-out volcano where

161  
00:07:06,710 --> 00:07:04,830  
I was getting really stuck into that

162  
00:07:07,610 --> 00:07:06,720  
concept and actually there we go i

163  
00:07:09,140 --> 00:07:07,620

thought we met again that's a nice

164

00:07:11,270 --> 00:07:09,150

little punctuation thing you go well the

165

00:07:14,240 --> 00:07:11,280

rings of Saturn and that would get your

166

00:07:17,270 --> 00:07:14,250

students attention that would work mmm

167

00:07:18,589 --> 00:07:17,280

now somehow dense is the Sun now it's a

168

00:07:20,450 --> 00:07:18,599

hot thing frankly we don't want to go

169

00:07:21,950 --> 00:07:20,460

near it but how dense is that I was

170

00:07:24,290 --> 00:07:21,960

reading that it's only like a hundred

171

00:07:25,339 --> 00:07:24,300

times more dense than water and have I

172

00:07:27,260 --> 00:07:25,349

been drinking everything it was that

173

00:07:29,270 --> 00:07:27,270

correct it all depends on what depth

174

00:07:31,909 --> 00:07:29,280

you're at if you're near the surface of

175

00:07:34,399 --> 00:07:31,919

the Sun it's actually just vapor but as

176

00:07:36,290 --> 00:07:34,409

you go deeper and deeper and deeper then

177

00:07:38,149 --> 00:07:36,300

it gets a lot more than a hundred times

178

00:07:40,249 --> 00:07:38,159

denser than water it gets thousands and

179

00:07:41,899 --> 00:07:40,259

thousands and thousands and this is why

180

00:07:45,499 --> 00:07:41,909

we're able to have nuclear reactions in

181

00:07:48,649 --> 00:07:45,509

the core of the Sun so there's a density

182

00:07:51,290 --> 00:07:48,659

pressure temperature gradient as you go

183

00:07:54,439 --> 00:07:51,300

through the Sun and the further down you

184

00:07:55,670 --> 00:07:54,449

go the more pressure you're going to

185

00:07:58,279 --> 00:07:55,680

experience because it's trying to

186

00:08:01,010 --> 00:07:58,289

support all that mass that's above you

187

00:08:02,930 --> 00:08:01,020

and what is the largest style that we

188

00:08:05,450 --> 00:08:02,940

know of is it and I hope I get the

189

00:08:07,760 --> 00:08:05,460

pronunciation right is it beetle juice

190

00:08:08,690 --> 00:08:07,770

or beetle Gail's because I it looks like

191

00:08:10,730 --> 00:08:08,700

bilges like

192

00:08:12,500 --> 00:08:10,740

each lke is God but it's not pronounced

193

00:08:14,870 --> 00:08:12,510

that way well it's pronounced either

194

00:08:17,270 --> 00:08:14,880

baitul fatal juice or Beetlejuice

195

00:08:19,640 --> 00:08:17,280

orbital guys depending on which

196

00:08:22,640 --> 00:08:19,650

dictionary you're using and that's a

197

00:08:24,830 --> 00:08:22,650

really nearby giant star that could go

198

00:08:26,300 --> 00:08:24,840

supernova in our lifetimes it's one of

199

00:08:28,730 --> 00:08:26,310

the two stars most likely to go

200

00:08:30,830 --> 00:08:28,740

supernova that we watch but it's not the

201  
00:08:32,510 --> 00:08:30,840  
biggest star we've seen there's actually

202  
00:08:34,340 --> 00:08:32,520  
a big star we've seen is something

203  
00:08:35,870 --> 00:08:34,350  
that's always a record that's always

204  
00:08:38,600 --> 00:08:35,880  
getting broken there's a certain

205  
00:08:41,270 --> 00:08:38,610  
physical limit up around a hundred times

206  
00:08:43,340 --> 00:08:41,280  
the mass of the Sun where material that

207  
00:08:45,590 --> 00:08:43,350  
tries to fall on to the forming star is

208  
00:08:48,770 --> 00:08:45,600  
getting pushed off by light from the

209  
00:08:51,200 --> 00:08:48,780  
forming star almost the same rate so

210  
00:08:52,970 --> 00:08:51,210  
there's brief moments where things might

211  
00:08:54,740 --> 00:08:52,980  
be bigger than other things for a few

212  
00:08:58,010 --> 00:08:54,750  
million years which in cosmology is a

213  
00:09:00,170 --> 00:08:58,020

brief period in time but a pistol star

214

00:09:03,020 --> 00:09:00,180

is one of the biggest wow great 92

215

00:09:04,430 --> 00:09:03,030

casino at least it's not XJ 37 dash

216

00:09:05,390 --> 00:09:04,440

because that can be I know you've got to

217

00:09:06,830 --> 00:09:05,400

have that because you're gonna run our

218

00:09:09,200 --> 00:09:06,840

names eventually but numbers just don't

219

00:09:10,910 --> 00:09:09,210

do it do they really know astronomers

220

00:09:12,980 --> 00:09:10,920

are kind of bad about how we name things

221

00:09:16,970 --> 00:09:12,990

that we give things names that are

222

00:09:19,610 --> 00:09:16,980

letters numbers HDH dead you name it

223

00:09:21,230 --> 00:09:19,620

we've probably used it at some point now

224

00:09:23,930 --> 00:09:21,240

look the skeptics guard the universe and

225

00:09:26,420 --> 00:09:23,940

George Arab have both got really really

226

00:09:28,940 --> 00:09:26,430

really angry with recent movies and

227

00:09:30,650 --> 00:09:28,950

their scientific inaccuracies there's a

228

00:09:32,090 --> 00:09:30,660

few we can think of obviously what is

229

00:09:34,220 --> 00:09:32,100

the one that really annoys you is an

230

00:09:35,390 --> 00:09:34,230

astronomer like you know you're looking

231

00:09:37,190 --> 00:09:35,400

at the wrong thing and they're calling

232

00:09:39,020 --> 00:09:37,200

it the wrong thing or the star fields

233

00:09:40,580 --> 00:09:39,030

incorrect on the Titanic movie which

234

00:09:41,840 --> 00:09:40,590

I've got to say that's that that's a

235

00:09:43,820 --> 00:09:41,850

really nitpicking if you're going look

236

00:09:45,470 --> 00:09:43,830

the stars weren't doing on the ok fine

237

00:09:47,210 --> 00:09:45,480

yummy here what's the one that really

238

00:09:48,800 --> 00:09:47,220

annoys you that almost had you standing

239

00:09:51,680 --> 00:09:48,810

up in the cinema going this must not

240

00:09:54,290 --> 00:09:51,690

stand that this is such a petty annoyed

241

00:09:57,760 --> 00:09:54,300

but it drives me crazy I'll of iron man

242

00:10:00,440 --> 00:09:57,770

but iron man would get mushed into a

243

00:10:03,740 --> 00:10:00,450

million little tiny bits of iron man

244

00:10:06,110 --> 00:10:03,750

every time he lands high speed I I when

245

00:10:07,730 --> 00:10:06,120

I was a little kid building model

246

00:10:09,200 --> 00:10:07,740

rockets made the mistake of launching an

247

00:10:11,960 --> 00:10:09,210

earthworm earthworms don't have

248

00:10:14,980 --> 00:10:11,970

exoskeletons earthworms return to Earth

249

00:10:17,350 --> 00:10:14,990

in a very bad state

250

00:10:19,060 --> 00:10:17,360

and because I'm I'm man doesn't have the

251  
00:10:20,470 --> 00:10:19,070  
sort of a forcefield thing going on does

252  
00:10:21,880 --> 00:10:20,480  
he just kind of got the suit there's no

253  
00:10:24,070 --> 00:10:21,890  
force field that supposedly

254  
00:10:26,350 --> 00:10:24,080  
counteracting gravity is there right so

255  
00:10:27,730 --> 00:10:26,360  
so Tony Stark every time he did one of

256  
00:10:30,550 --> 00:10:27,740  
the sudden stops he wouldn't just

257  
00:10:33,579 --> 00:10:30,560  
complain he would die brutally spine

258  
00:10:36,730 --> 00:10:33,589  
compressed bones breaking skin going to

259  
00:10:38,949 --> 00:10:36,740  
mush yet he's fine so apparently

260  
00:10:40,540 --> 00:10:38,959  
conservation of momentum doesn't apply

261  
00:10:42,820 --> 00:10:40,550  
when you have one of those neat little

262  
00:10:44,470 --> 00:10:42,830  
nuclear devices in your chest and how do

263  
00:10:46,510 --> 00:10:44,480

you find tam here how many times have

264

00:10:49,150 --> 00:10:46,520

you been to it's an amazing place las

265

00:10:52,329 --> 00:10:49,160

vegas i got to say the drinks are really

266

00:10:54,370 --> 00:10:52,339

cheap and in australia we the cocktail

267

00:10:57,760 --> 00:10:54,380

waitress thing we have that but it's not

268

00:10:59,320 --> 00:10:57,770

it's it's natural and overt here it's

269

00:11:00,760 --> 00:10:59,330

like all right you're dressed like a

270

00:11:03,190 --> 00:11:00,770

cocktail waitress I guess that's just

271

00:11:05,310 --> 00:11:03,200

I'm in Las Vegas it's a it's it's a bit

272

00:11:08,410 --> 00:11:05,320

of a sad sir illness to it doesn't it I

273

00:11:10,030 --> 00:11:08,420

have to admit Las Vegas is one of those

274

00:11:13,240 --> 00:11:10,040

cities that just leaves me confused

275

00:11:15,100 --> 00:11:13,250

flying here from Dallas I'm flying over

276

00:11:18,130 --> 00:11:15,110

the canyon lands of America which are

277

00:11:20,889 --> 00:11:18,140

absolutely stunning absolutely empty no

278

00:11:24,639 --> 00:11:20,899

roads no trails and then suddenly you

279

00:11:28,329 --> 00:11:24,649

come over a set of weird formations and

280

00:11:32,100 --> 00:11:28,339

there's this giant sprawling plague of

281

00:11:36,010 --> 00:11:32,110

buildings and and somehow this whole

282

00:11:39,100 --> 00:11:36,020

island of weirdness and anything goes

283

00:11:41,319 --> 00:11:39,110

that Springs out in the desert gives

284

00:11:43,600 --> 00:11:41,329

people a certain freedom that you don't

285

00:11:45,730 --> 00:11:43,610

quite encounter anywhere else and it's

286

00:11:48,250 --> 00:11:45,740

just like but there's so much cool

287

00:11:50,019 --> 00:11:48,260

geology near here now they'd much rather

288

00:11:52,810 --> 00:11:50,029

go to the Luxor and look at the fake

289

00:11:54,639 --> 00:11:52,820

pyramid and if you could build a fake

290

00:11:56,860 --> 00:11:54,649

something like say you okay it's the

291

00:11:59,380 --> 00:11:56,870

Pamela gay resort hotel and you were

292

00:12:02,350 --> 00:11:59,390

going to build something after another

293

00:12:04,090 --> 00:12:02,360

by famous an asteroid or a great feature

294

00:12:07,889 --> 00:12:04,100

or an astronomical feature what would it

295

00:12:12,160 --> 00:12:07,899

be what shape would your hotel resort be

296

00:12:15,430 --> 00:12:12,170

so I I have to say that when I was a

297

00:12:17,590 --> 00:12:15,440

dorky teenager I attended Space Camp and

298

00:12:19,540 --> 00:12:17,600

they had these dormitories there that

299

00:12:22,060 --> 00:12:19,550

were modeled after like some weird

300

00:12:25,660 --> 00:12:22,070

vision of Starfleet Academy or something

301  
00:12:26,540 --> 00:12:25,670  
and everything was just kind of NASA

302  
00:12:30,470 --> 00:12:26,550  
bunk

303  
00:12:33,710 --> 00:12:30,480  
bed cross ikea done with stainless steel

304  
00:12:38,060 --> 00:12:33,720  
and it was kind of awesome and I can

305  
00:12:39,530 --> 00:12:38,070  
imagine building a giant space park for

306  
00:12:42,170 --> 00:12:39,540  
people training for suborbital

307  
00:12:44,240 --> 00:12:42,180  
commercial spaceflight so if I could

308  
00:12:46,009 --> 00:12:44,250  
somehow be involved in one of those

309  
00:12:49,069 --> 00:12:46,019  
resorts for people getting ready for

310  
00:12:50,750 --> 00:12:49,079  
launch that would be kind of awesome and

311  
00:12:52,670 --> 00:12:50,760  
do you think you could have a you have

312  
00:12:54,199 --> 00:12:52,680  
the ticket to go into space I don't

313  
00:12:57,380 --> 00:12:54,209

think I could use the space toilet I

314

00:12:58,550 --> 00:12:57,390

don't think I could you know that I mean

315

00:13:00,199 --> 00:12:58,560

they say you're not a real astronaut

316

00:13:01,340 --> 00:13:00,209

until you've done that I don't think I

317

00:13:04,790 --> 00:13:01,350

could get it right and if you get it

318

00:13:06,319 --> 00:13:04,800

wrong everybody pays one of the more

319

00:13:08,600 --> 00:13:06,329

disturbing things they realized last

320

00:13:09,949 --> 00:13:08,610

year while attending a meeting is folks

321

00:13:11,540 --> 00:13:09,959

who go up into space for suborbital

322

00:13:14,329 --> 00:13:11,550

spaceflight are all going to be in

323

00:13:17,240 --> 00:13:14,339

spacesuits there's no bathroom there is

324

00:13:19,910 --> 00:13:17,250

a diaper or other form of waste removal

325

00:13:22,690 --> 00:13:19,920

system in the spacesuit but these are

326

00:13:27,019 --> 00:13:22,700

space suits that are used for many years

327

00:13:29,509 --> 00:13:27,029

by many people wow this is have a hell

328

00:13:31,519 --> 00:13:29,519

of a great dry cleaner that that's three

329

00:13:34,760 --> 00:13:31,529

day turnaround I'm just thinking I don't

330

00:13:36,650 --> 00:13:34,770

like using bowling shoes so I I'm

331

00:13:38,780 --> 00:13:36,660

thinking I need to be rich enough to buy

332

00:13:40,699 --> 00:13:38,790

my own space suit before I'm willing to

333

00:13:41,930 --> 00:13:40,709

go into space well we'll even just to

334

00:13:44,360 --> 00:13:41,940

wander around Las Vegas because they got

335

00:13:46,069 --> 00:13:44,370

cooling units in the way you go you know

336

00:13:47,569 --> 00:13:46,079

cooling units are great you can use them

337

00:13:50,510 --> 00:13:47,579

for so many different things you can use

338

00:13:53,389 --> 00:13:50,520

them for your space you could be offered

339

00:13:55,880 --> 00:13:53,399

to be his call you well what I love is I

340

00:13:58,970 --> 00:13:55,890

met a stormtrooper in the 500 and first

341

00:14:02,000 --> 00:13:58,980

two had got military surplus cooling

342

00:14:04,360 --> 00:14:02,010

unit from a jet pilot and he was nice

343

00:14:06,650 --> 00:14:04,370

and cool in his a stormtrooper costume

344

00:14:09,170 --> 00:14:06,660

look let's talk about some anomalies

345

00:14:11,240 --> 00:14:09,180

here now on William Shatner's a weird or

346

00:14:13,250 --> 00:14:11,250

what which i think is the go-to program

347

00:14:15,650 --> 00:14:13,260

for any factual science you would need

348

00:14:16,790 --> 00:14:15,660

and in fact they recut it for discovery

349

00:14:18,560 --> 00:14:16,800

channel so it's just weird or what

350

00:14:20,090 --> 00:14:18,570

without the William Shatner just didn't

351

00:14:22,010 --> 00:14:20,100

have the same ring to it without his

352

00:14:23,210 --> 00:14:22,020

voice anyway and he was inside his house

353

00:14:25,430 --> 00:14:23,220

and of course that was his real house

354

00:14:28,100 --> 00:14:25,440

obviously imagine you watched the show

355

00:14:30,970 --> 00:14:28,110

quite a bit I have to admit I don't have

356

00:14:33,620 --> 00:14:30,980

that much time for TV that isn't on hulu

357

00:14:35,470 --> 00:14:33,630

okay well he was looking at one of the

358

00:14:38,180 --> 00:14:35,480

great theories that these large

359

00:14:39,740 --> 00:14:38,190

earth-sized spaceships are zipping in

360

00:14:42,590 --> 00:14:39,750

and out of the Sun for

361

00:14:45,050 --> 00:14:42,600

reason and why do you think that might

362

00:14:47,480 --> 00:14:45,060

be and would anyone not be telling us

363

00:14:49,580 --> 00:14:47,490

about it if it was happening there is

364

00:14:54,890 --> 00:14:49,590

this spacecraft called solar dynamic

365

00:14:57,680 --> 00:14:54,900

orbiter s do it's taking 320 gigabytes

366

00:15:00,830 --> 00:14:57,690

of data of the Sun every single day

367

00:15:03,260 --> 00:15:00,840

there's many many images per minute

368

00:15:05,150 --> 00:15:03,270

being taken of the Sun these things have

369

00:15:07,400 --> 00:15:05,160

such high resolution that we've image

370

00:15:10,280 --> 00:15:07,410

tornadoes of plasma moving across the

371

00:15:12,230 --> 00:15:10,290

surface of the Sun we haven't seen these

372

00:15:14,390 --> 00:15:12,240

spacecraft i'm going to say they're not

373

00:15:15,980 --> 00:15:14,400

there well there you go that's the end

374

00:15:18,620 --> 00:15:15,990

of that one and i'll have a few words to

375

00:15:20,810 --> 00:15:18,630

say to build when i see him actually is

376

00:15:22,400 --> 00:15:20,820

there a theory or an anomaly that people

377

00:15:25,220 --> 00:15:22,410

keep bringing up with you that kind of

378

00:15:27,230 --> 00:15:25,230

annoys you as a scientist I'm much the

379

00:15:29,990 --> 00:15:27,240

way as homeopathy annoys a lot of

380

00:15:33,200 --> 00:15:30,000

doctors the the idea that there is a

381

00:15:37,280 --> 00:15:33,210

large object whether it be a additional

382

00:15:39,770 --> 00:15:37,290

planet a solar type object star brown

383

00:15:41,150 --> 00:15:39,780

dwarf pick pick your poison heading

384

00:15:44,980 --> 00:15:41,160

towards the Earth on a collision course

385

00:15:49,370 --> 00:15:44,990

to hit us in December bothers me because

386

00:15:51,890 --> 00:15:49,380

we're capable of spotting objects five

387

00:15:55,820 --> 00:15:51,900

miles across at the distance of the

388

00:15:57,980 --> 00:15:55,830

planet Pluto we would have been able to

389

00:16:00,770 --> 00:15:57,990

see such an object with normal

390

00:16:02,870 --> 00:16:00,780

telescopes and a whole lot of work if it

391

00:16:04,340 --> 00:16:02,880

was on a collision course to hit us by

392

00:16:06,350 --> 00:16:04,350

then because it would already be past

393

00:16:08,840 --> 00:16:06,360

Jupiter I'm what if the planet has an

394

00:16:10,430 --> 00:16:08,850

extremely wide orbit like millions of

395

00:16:12,980 --> 00:16:10,440

years or whatever would be still be

396

00:16:14,540 --> 00:16:12,990

still becoming we might not see if it

397

00:16:15,890 --> 00:16:14,550

was going to hit us in December we'd

398

00:16:17,270 --> 00:16:15,900

already be able to see it because it

399

00:16:18,950 --> 00:16:17,280

would have to be about as close as

400

00:16:20,600 --> 00:16:18,960

Jupiter if not close okay yeah and

401  
00:16:22,190 --> 00:16:20,610  
you're gonna notice that you're going to

402  
00:16:23,960 --> 00:16:22,200  
notice that so why do you think people

403  
00:16:25,250 --> 00:16:23,970  
keep pushing that because that's a

404  
00:16:26,810 --> 00:16:25,260  
pretty easy one to disprove you've done

405  
00:16:28,370 --> 00:16:26,820  
up there in like under 30 seconds I

406  
00:16:30,950 --> 00:16:28,380  
could use as a grab on discovery quite

407  
00:16:32,720 --> 00:16:30,960  
easily so yeah why don't people them

408  
00:16:33,800 --> 00:16:32,730  
because I mean I guess it's people

409  
00:16:35,420 --> 00:16:33,810  
thinking that there's withheld

410  
00:16:37,220 --> 00:16:35,430  
information I guess that's the problem

411  
00:16:39,079 --> 00:16:37,230  
you got open I don't think most people

412  
00:16:41,329 --> 00:16:39,089  
understand how powerful the average

413  
00:16:44,329 --> 00:16:41,339

backyard telescope is the the other day

414

00:16:47,270 --> 00:16:44,339

I was watching some people react to a

415

00:16:49,710 --> 00:16:47,280

video of Saturn being shown through just

416

00:16:51,420 --> 00:16:49,720

a backyard 8 inch telescope

417

00:16:53,730 --> 00:16:51,430

they're like wow I didn't know you could

418

00:16:55,139 --> 00:16:53,740

see the Rings and and they forget that

419

00:16:57,439 --> 00:16:55,149

Galileo is working with a two inch

420

00:16:59,850 --> 00:16:57,449

telescope and he saw the rings of Saturn

421

00:17:01,410 --> 00:16:59,860

when you underestimate the power of a

422

00:17:04,169 --> 00:17:01,420

backyard telescope it's easy to imagine

423

00:17:05,610 --> 00:17:04,179

that NASA which actually doesn't control

424

00:17:08,429 --> 00:17:05,620

the telescope's National Science

425

00:17:10,679 --> 00:17:08,439

Foundation does it's easy to imagine

426

00:17:12,539 --> 00:17:10,689

that all these organizations have all

427

00:17:15,270 --> 00:17:12,549

these conspiracies going on because they

428

00:17:18,390 --> 00:17:15,280

control the information know most of the

429

00:17:21,000 --> 00:17:18,400

information in terms of asteroids what's

430

00:17:23,669 --> 00:17:21,010

going on with the planets these things

431

00:17:25,919 --> 00:17:23,679

are getting monitored by a bunch of

432

00:17:27,779 --> 00:17:25,929

mostly great guys and a few great gals

433

00:17:32,039 --> 00:17:27,789

working in their backyards and their

434

00:17:34,230 --> 00:17:32,049

driveways and their backfield telescopes

435

00:17:35,549 --> 00:17:34,240

they're the ones for spotting new storms

436

00:17:37,409 --> 00:17:35,559

on Saturn they're the ones who are

437

00:17:39,480 --> 00:17:37,419

spotting the dust storms on Mars they're

438

00:17:42,570 --> 00:17:39,490

the ones who are doing all of this great

439

00:17:44,340 --> 00:17:42,580

planetary work and they have internet

440

00:17:45,840 --> 00:17:44,350

they have twitter they have facebook and

441

00:17:47,580 --> 00:17:45,850

they're not part of NASA they're not

442

00:17:49,409 --> 00:17:47,590

part of the National Science Foundation

443

00:17:53,460 --> 00:17:49,419

and they're going to share anything they

444

00:17:54,659 --> 00:17:53,470

find oh there goes another one you're

445

00:17:57,240 --> 00:17:54,669

blowing away a lot of theories here

446

00:17:59,549 --> 00:17:57,250

today now one of the things about your

447

00:18:01,380 --> 00:17:59,559

study is you your field of study is it

448

00:18:02,789 --> 00:18:01,390

requires love discipline not just in so

449

00:18:05,039 --> 00:18:02,799

if I was studying and learning things

450

00:18:07,110 --> 00:18:05,049

but a lot of patience a lot of sitting

451

00:18:08,700 --> 00:18:07,120

around order sifting through data is

452

00:18:10,919 --> 00:18:08,710

there something that you wish you had

453

00:18:12,720 --> 00:18:10,929

the discipline to do even more as part

454

00:18:14,250 --> 00:18:12,730

of your of your job because I would

455

00:18:16,080 --> 00:18:14,260

imagine that sometime you know you might

456

00:18:17,430 --> 00:18:16,090

want to go to bed early or something

457

00:18:21,840 --> 00:18:17,440

like that and you've got to sift through

458

00:18:24,450 --> 00:18:21,850

this data data the great weakness i have

459

00:18:26,700 --> 00:18:24,460

is proof reading things i just want to

460

00:18:29,039 --> 00:18:26,710

do the work i just want to get to the

461

00:18:31,950 --> 00:18:29,049

result i want to share it and present it

462

00:18:33,840 --> 00:18:31,960

but the time necessary to write the

463

00:18:35,820 --> 00:18:33,850

journal article that has all of the

464

00:18:37,140 --> 00:18:35,830

references to all of the literature to

465

00:18:40,049 --> 00:18:37,150

all the things that people have said in

466

00:18:42,480 --> 00:18:40,059

the past I hate it I hate it I would

467

00:18:44,700 --> 00:18:42,490

note in footnoting hey I I hate foot

468

00:18:46,140 --> 00:18:44,710

netting it's a required part of science

469

00:18:48,120 --> 00:18:46,150

and if you don't have enough references

470

00:18:50,159 --> 00:18:48,130

in your article it will be rejected I

471

00:18:53,220 --> 00:18:50,169

have learned this so it's not like

472

00:18:55,380 --> 00:18:53,230

Wikipedia no no sadly peer review

473

00:18:58,289 --> 00:18:55,390

requires you to actually cite who

474

00:19:00,270 --> 00:18:58,299

originated the ideas how the idea is

475

00:19:02,700 --> 00:19:00,280

evolved over time how what you're doing

476

00:19:03,460 --> 00:19:02,710

builds on the established ideas you

477

00:19:04,930 --> 00:19:03,470

can't just say

478

00:19:08,409 --> 00:19:04,940

look shiny you have to say you look

479

00:19:10,600 --> 00:19:08,419

shiny in context which is almost the

480

00:19:11,890 --> 00:19:10,610

it's the direct opposite of the creative

481

00:19:13,419 --> 00:19:11,900

process because with the creative

482

00:19:15,520 --> 00:19:13,429

process year you can build on stuff from

483

00:19:17,110 --> 00:19:15,530

the past but if it works it works if

484

00:19:18,640 --> 00:19:17,120

it's funny it's funny to a certain

485

00:19:20,890 --> 00:19:18,650

amount of people and you don't have to

486

00:19:23,399 --> 00:19:20,900

prove why it's funny that's

487

00:19:26,560 --> 00:19:23,409

unfortunately only true if you work in

488

00:19:28,390 --> 00:19:26,570

popular culture even academic artists

489

00:19:30,850 --> 00:19:28,400

are cursed with having to footnote and

490

00:19:34,360 --> 00:19:30,860

describe the intellectual creative

491

00:19:36,669 --> 00:19:34,370

legacy of their inspiration and what

492

00:19:41,320 --> 00:19:36,679

periods and things influence their work

493

00:19:43,120 --> 00:19:41,330

there's nothing that takes the art out

494

00:19:45,430 --> 00:19:43,130

of art more than reading someone's art

495

00:19:47,919 --> 00:19:45,440

master's thesis yeah whenever I hear the

496

00:19:49,149 --> 00:19:47,929

phrase fine arts that's I kind of run

497

00:19:50,799 --> 00:19:49,159

because that means none of these people

498

00:19:52,029 --> 00:19:50,809

are really good at writing essays and

499

00:19:53,020 --> 00:19:52,039

backing their stuff up so I'm not going

500

00:19:54,760 --> 00:19:53,030

to get an argument with them and

501  
00:19:57,100 --> 00:19:54,770  
scientists are even worse you guys can

502  
00:19:58,510 --> 00:19:57,110  
argue to the cows come home well at

503  
00:20:00,640 --> 00:19:58,520  
least we're trying to argue with facts

504  
00:20:02,740 --> 00:20:00,650  
rather than opinion EU you can't win

505  
00:20:04,330 --> 00:20:02,750  
when dealing with artists arguing over

506  
00:20:06,730 --> 00:20:04,340  
the shade of green I walked into the

507  
00:20:10,510 --> 00:20:06,740  
document once died laughing and they

508  
00:20:13,140 --> 00:20:10,520  
can't reach well it's it's it's funny

509  
00:20:16,659 --> 00:20:13,150  
when cultures collide I i was literally

510  
00:20:19,779 --> 00:20:16,669  
listening to two art majors argue over

511  
00:20:25,840 --> 00:20:19,789  
how to mix the perfect shade of green

512  
00:20:28,390 --> 00:20:25,850  
and it was a brilliant thing to watch

513  
00:20:30,220 --> 00:20:28,400

and I'm thinking some sort of altered

514

00:20:32,710 --> 00:20:30,230

state would have made it even better but

515

00:20:34,570 --> 00:20:32,720

now I was completely sober and I just

516

00:20:36,760 --> 00:20:34,580

died laughing because that's so

517

00:20:38,620 --> 00:20:36,770

subjective in the way my eye perceives

518

00:20:39,760 --> 00:20:38,630

green could even be different physically

519

00:20:41,380 --> 00:20:39,770

let alone what I actually think

520

00:20:44,289 --> 00:20:41,390

emotionally about the color that going

521

00:20:46,899 --> 00:20:44,299

to get and and yet there are people who

522

00:20:50,860 --> 00:20:46,909

this is their academic study so that's

523

00:20:52,690 --> 00:20:50,870

what they do look being at the skeptical

524

00:20:54,039 --> 00:20:52,700

movement is is an outreach movement

525

00:20:55,480 --> 00:20:54,049

trying to get more people involved with

526

00:20:57,159 --> 00:20:55,490

it but I reckon it is the key to getting

527

00:20:59,409 --> 00:20:57,169

more people involved because whenever I

528

00:21:01,539 --> 00:20:59,419

think of science I think of hard work I

529

00:21:04,090 --> 00:21:01,549

think quadratics which I was terrible at

530

00:21:06,460 --> 00:21:04,100

at school I think of physics which

531

00:21:08,470 --> 00:21:06,470

physics to me is just really hard maths

532

00:21:10,029 --> 00:21:08,480

I know it has a practical thing I push

533

00:21:12,220 --> 00:21:10,039

the bell as some sort of thing going on

534

00:21:14,500 --> 00:21:12,230

there but you know the maths to explain

535

00:21:15,170 --> 00:21:14,510

that I really couldn't stay awake for so

536

00:21:17,060 --> 00:21:15,180

how is

537

00:21:18,140 --> 00:21:17,070

getting everybody into it gonna be a

538

00:21:20,270 --> 00:21:18,150

little bit easy we're going to make it

539

00:21:22,340 --> 00:21:20,280

sexy or interesting or will he make it

540

00:21:23,690 --> 00:21:22,350

compelling for them this is actually at

541

00:21:25,850 --> 00:21:23,700

the heart of what I do with my career I

542

00:21:28,100 --> 00:21:25,860

I work in a field called citizen science

543

00:21:29,630 --> 00:21:28,110

so to give you an example the lunar

544

00:21:31,280 --> 00:21:29,640

reconnaissance orbiter is this little

545

00:21:33,170 --> 00:21:31,290

tiny spacecraft that's going round and

546

00:21:35,570 --> 00:21:33,180

round the moon and it's taking images at

547

00:21:37,700 --> 00:21:35,580

such a high resolution that if your

548

00:21:39,230 --> 00:21:37,710

standard basketball player lay down on

549

00:21:41,060 --> 00:21:39,240

the surface of the Moon and assume the

550

00:21:43,610 --> 00:21:41,070

snow angel position with his arms and

551  
00:21:46,280 --> 00:21:43,620  
legs out you could actually see him as a

552  
00:21:48,500 --> 00:21:46,290  
speck in the images what does that mean

553  
00:21:50,210 --> 00:21:48,510  
we've got all the images of the Apollo

554  
00:21:52,460 --> 00:21:50,220  
missions and so we can prove that we

555  
00:21:54,290 --> 00:21:52,470  
went there we can see actually the

556  
00:21:56,420 --> 00:21:54,300  
trails left behind by the astronauts

557  
00:21:58,130 --> 00:21:56,430  
Rovers by their feet as they walked

558  
00:21:59,720 --> 00:21:58,140  
around we can see the missions

559  
00:22:02,240 --> 00:21:59,730  
themselves where the lem's got left

560  
00:22:03,830 --> 00:22:02,250  
behind is the resolution high after you

561  
00:22:05,300 --> 00:22:03,840  
can see the photos of the astronauts

562  
00:22:06,260 --> 00:22:05,310  
left of their families on the moon I

563  
00:22:08,120 --> 00:22:06,270

think that's an interesting one because

564

00:22:10,250 --> 00:22:08,130

they put them in a it has sort of a glad

565

00:22:11,900 --> 00:22:10,260

wrap mylar bag and put them there and I

566

00:22:13,520 --> 00:22:11,910

mentioned that still be there although

567

00:22:15,020 --> 00:22:13,530

the only thing I thought was if it was

568

00:22:16,640 --> 00:22:15,030

close to where the blast was from the

569

00:22:18,800 --> 00:22:16,650

rocket that could have been blown away

570

00:22:20,360 --> 00:22:18,810

but yeah that's it immediately that's

571

00:22:22,250 --> 00:22:20,370

what I thought oh well the resolution on

572

00:22:24,350 --> 00:22:22,260

these images about half a half a meter

573

00:22:26,480 --> 00:22:24,360

per pixel so those are a little bit too

574

00:22:28,490 --> 00:22:26,490

small to be seen you'll get there well

575

00:22:30,530 --> 00:22:28,500

we'll get there and especially when we

576  
00:22:33,200 --> 00:22:30,540  
have Rovers starting to roam around and

577  
00:22:34,520 --> 00:22:33,210  
reach Splore the moon in the future now

578  
00:22:36,800 --> 00:22:34,530  
what's awesome with the Lunar

579  
00:22:38,450 --> 00:22:36,810  
Reconnaissance orbiters it's returning

580  
00:22:40,700 --> 00:22:38,460  
all this data that we're going to

581  
00:22:42,440 --> 00:22:40,710  
eventually use to figure out where do we

582  
00:22:44,780 --> 00:22:42,450  
want to put communication stations where

583  
00:22:46,700 --> 00:22:44,790  
are the safe places to build but there's

584  
00:22:50,090 --> 00:22:46,710  
so much data coming back that the

585  
00:22:52,850 --> 00:22:50,100  
scientists don't have time to handle all

586  
00:22:54,560 --> 00:22:52,860  
the data on their own so they tried

587  
00:22:56,420 --> 00:22:54,570  
programming computers do things like

588  
00:22:58,430 --> 00:22:56,430

identify where craters are identify

589

00:23:00,490 --> 00:22:58,440

where Boulder fields art and we learned

590

00:23:02,810 --> 00:23:00,500

that computers are kind of bad at it and

591

00:23:05,390 --> 00:23:02,820

so what we've done is we've taken all of

592

00:23:08,210 --> 00:23:05,400

these images and we've put them online

593

00:23:10,610 --> 00:23:08,220

in a project called moon mappers at

594

00:23:13,010 --> 00:23:10,620

cosmic quest org and we're asking

595

00:23:14,360 --> 00:23:13,020

everyday people to help us map the

596

00:23:15,980 --> 00:23:14,370

surface of the Moon and we have our

597

00:23:18,080 --> 00:23:15,990

first science results coming out next

598

00:23:19,970 --> 00:23:18,090

week the lunar forms at NASA Ames and

599

00:23:21,830 --> 00:23:19,980

we're actually previewing that science

600

00:23:23,870 --> 00:23:21,840

here at tam no explain to be law

601  
00:23:25,730 --> 00:23:23,880  
computers are so bad at mapping it does

602  
00:23:28,610 --> 00:23:25,740  
it have trouble telling shadow from

603  
00:23:29,010 --> 00:23:28,620  
crater the problem with computers is

604  
00:23:30,720 --> 00:23:29,020  
they want

605  
00:23:35,010 --> 00:23:30,730  
everything to be the same all the time

606  
00:23:37,680 --> 00:23:35,020  
and the moon is made up of a thousand

607  
00:23:39,030 --> 00:23:37,690  
different shades of grey and so when

608  
00:23:41,430 --> 00:23:39,040  
you're looking at the surface of the

609  
00:23:44,310 --> 00:23:41,440  
moon that's 950 more than the book and

610  
00:23:47,790 --> 00:23:44,320  
that's nine yes yes it is and there's a

611  
00:23:51,090 --> 00:23:47,800  
lot less rope involved now when you look

612  
00:23:53,820 --> 00:23:51,100  
at the moon you're seeing bits of lava

613  
00:23:55,260 --> 00:23:53,830

you're seeing bits of quartz you're

614

00:23:57,840 --> 00:23:55,270

seeing silicas you're seeing all these

615

00:24:01,320 --> 00:23:57,850

different minerals and when you see

616

00:24:03,570 --> 00:24:01,330

something go from grey to white white to

617

00:24:05,460 --> 00:24:03,580

black sometimes what you're seeing is

618

00:24:09,240 --> 00:24:05,470

shadow line sometimes what you're seeing

619

00:24:12,060 --> 00:24:09,250

is a difference in composition and all

620

00:24:15,660 --> 00:24:12,070

of that confuses a computer because a

621

00:24:17,730 --> 00:24:15,670

crater made in a dark area of soil and a

622

00:24:19,920 --> 00:24:17,740

crater made in a light area of soil are

623

00:24:21,900 --> 00:24:19,930

going to look different and then you

624

00:24:23,220 --> 00:24:21,910

have shadow angles to deal with because

625

00:24:24,960 --> 00:24:23,230

sometimes the Sun is straight overhead

626

00:24:27,690 --> 00:24:24,970

sometimes the Sun is at a steep angle

627

00:24:29,790 --> 00:24:27,700

depending on the image all of these

628

00:24:32,570 --> 00:24:29,800

different factors lead to computers

629

00:24:35,850 --> 00:24:32,580

being may be very good at finding one

630

00:24:38,460 --> 00:24:35,860

size of crater one type of Crater one

631

00:24:41,790 --> 00:24:38,470

type of Crater and one type of soil but

632

00:24:43,500 --> 00:24:41,800

they can't understand the diversity of

633

00:24:47,610 --> 00:24:43,510

all the different ways craters are

634

00:24:49,890 --> 00:24:47,620

shaped humans can't so how do you feel

635

00:24:52,290 --> 00:24:49,900

about hogeland's interpretation of

636

00:24:54,270 --> 00:24:52,300

certain moon images as being like

637

00:24:56,070 --> 00:24:54,280

ancient civilizations and that kind of

638

00:24:58,380 --> 00:24:56,080

thing from some photos that have come

639

00:25:00,210 --> 00:24:58,390

back his interpretation of those photos

640

00:25:02,460 --> 00:25:00,220

he really needs to get a look at the

641

00:25:05,640 --> 00:25:02,470

high-resolution images because really

642

00:25:08,820 --> 00:25:05,650

the moon is volcanoes craters fault

643

00:25:10,440 --> 00:25:08,830

lines rocks more rocks a few more rocks

644

00:25:12,210 --> 00:25:10,450

or a few more craters and that's really

645

00:25:14,160 --> 00:25:12,220

all that's there other than crashed and

646

00:25:16,560 --> 00:25:14,170

left behind spacecraft and there are

647

00:25:18,060 --> 00:25:16,570

spacecraft and Russian spacecraft yeah

648

00:25:20,010 --> 00:25:18,070

the Russian one that looks like a really

649

00:25:23,910 --> 00:25:20,020

big toilet with the solar thing that's

650

00:25:25,950 --> 00:25:23,920

really amazing I would never put it that

651  
00:25:27,330 --> 00:25:25,960  
way it does because it flips up like

652  
00:25:29,670 --> 00:25:27,340  
that looks like the toilet seat back

653  
00:25:31,860 --> 00:25:29,680  
it's true I wouldn't have put it that

654  
00:25:33,990 --> 00:25:31,870  
way but yes the the Russians did build

655  
00:25:35,130 --> 00:25:34,000  
things that flipped open and I can see

656  
00:25:37,980 --> 00:25:35,140  
why you would say that they look like

657  
00:25:39,270 --> 00:25:37,990  
toilets look where can people find out

658  
00:25:40,740 --> 00:25:39,280  
more about what you do and listen to

659  
00:25:42,150 --> 00:25:40,750  
your podcast and get some more of the

660  
00:25:43,830 --> 00:25:42,160  
straight juice although

661  
00:25:45,540 --> 00:25:43,840  
I think I prolly still will be watching

662  
00:25:48,270 --> 00:25:45,550  
william shedd as weird or what I just

663  
00:25:50,100 --> 00:25:48,280

gotta think I'm a connoisseur of bad

664

00:25:51,600 --> 00:25:50,110

science myself but if you want to hear

665

00:25:53,910 --> 00:25:51,610

the good science you can check out

666

00:25:56,070 --> 00:25:53,920

astronomy cast at astronomy cast calm

667

00:25:58,380 --> 00:25:56,080

and if you want to do science we have a

668

00:26:01,380 --> 00:25:58,390

variety of different projects at cosmic

669

00:26:02,610 --> 00:26:01,390

west o RG and what's the litmus test for

670

00:26:03,750 --> 00:26:02,620

all of us when you think that

671

00:26:05,640 --> 00:26:03,760

something's not quite right or

672

00:26:06,600 --> 00:26:05,650

something's up in the astronomical world

673

00:26:09,840 --> 00:26:06,610

you know hang on that doesn't seem quite

674

00:26:13,500 --> 00:26:09,850

right what's a simple test for it can it

675

00:26:15,510 --> 00:26:13,510

be repeated and if you can't repeat it

676  
00:26:16,800 --> 00:26:15,520  
because let's face it sometimes you get

677  
00:26:20,340 --> 00:26:16,810  
lucky and you see a once-in-a-lifetime

678  
00:26:24,290 --> 00:26:20,350  
event can you explain it using physics

679  
00:26:26,310 --> 00:26:24,300  
of similar things otherwise be tight on

680  
00:26:33,450 --> 00:26:26,320  
otherwise you probably had a glitch in

681  
00:26:40,379 --> 00:26:37,419  
world ladies and gentlemen dr. Harriet

682  
00:26:43,119 --> 00:26:40,389  
Hall a Herod what he would talk to off i

683  
00:26:44,769 --> 00:26:43,129  
specialized in family practice and i was

684  
00:26:47,649 --> 00:26:44,779  
also a flight surgeon in the air force

685  
00:26:50,259 --> 00:26:47,659  
well is there a certain personality with

686  
00:26:53,649 --> 00:26:50,269  
guys that fly fighter planes as opposed

687  
00:26:55,479 --> 00:26:53,659  
to bombers are they much more aggressive

688  
00:26:58,529 --> 00:26:55,489

is ever certain different personality

689

00:27:01,539 --> 00:26:58,539

with a fighter type there is certainly a

690

00:27:06,190 --> 00:27:01,549

mythology that there is they're famous

691

00:27:07,570 --> 00:27:06,200

for thinking there they can they can do

692

00:27:10,239 --> 00:27:07,580

anything and they're never going to die

693

00:27:11,889 --> 00:27:10,249

and there they take risks or I think

694

00:27:14,169 --> 00:27:11,899

there's a certain personality that goes

695

00:27:16,029 --> 00:27:14,179

for that sort of thing and what

696

00:27:18,789 --> 00:27:16,039

attracted you to doing flot medicine in

697

00:27:20,619 --> 00:27:18,799

the first place well I was already in

698

00:27:26,169 --> 00:27:20,629

the Air Force I had done an Air Force

699

00:27:29,580 --> 00:27:26,179

internship and I was in a family

700

00:27:33,279 --> 00:27:29,590

practice residency in the Air Force and

701  
00:27:34,989 --> 00:27:33,289  
a friend of mine had a small plane and

702  
00:27:36,909 --> 00:27:34,999  
he took me up in it one day let me take

703  
00:27:39,249 --> 00:27:36,919  
the controls and I got hooked I learned

704  
00:27:41,169 --> 00:27:39,259  
to fly and bought my own plane and then

705  
00:27:42,789 --> 00:27:41,179  
I found out that flight surgeons got to

706  
00:27:44,200 --> 00:27:42,799  
take care of people who flew and they

707  
00:27:46,629 --> 00:27:44,210  
got to right along an air force our

708  
00:27:48,729 --> 00:27:46,639  
plane so I said great i can combine two

709  
00:27:51,970 --> 00:27:48,739  
of my passions medicine and flying so i

710  
00:27:53,499 --> 00:27:51,980  
did and how many g's can you take with

711  
00:27:56,649 --> 00:27:53,509  
that squeezing thing haggle with you

712  
00:28:00,849 --> 00:27:56,659  
I've never been tested most most of my

713  
00:28:04,779 --> 00:28:00,859

flight time was in helicopters and not

714

00:28:07,419 --> 00:28:04,789

doing maneuvers that would cause a lot

715

00:28:11,049 --> 00:28:07,429

of geez i did get to fly some in the FB

716

00:28:12,700 --> 00:28:11,059

111 which is a supersonic aircraft but

717

00:28:15,009 --> 00:28:12,710

we were not allowed to break the sound

718

00:28:18,279 --> 00:28:15,019

barrier was that the one with the

719

00:28:19,539 --> 00:28:18,289

swing-wing yes it was yes we had them in

720

00:28:21,820 --> 00:28:19,549

Australia as well I wish I could

721

00:28:23,349 --> 00:28:21,830

remember the name of the f-111 we called

722

00:28:26,680 --> 00:28:23,359

them but they have a nickname or

723

00:28:28,720 --> 00:28:26,690

anything oh it seems like it did but I

724

00:28:31,450 --> 00:28:28,730

can't remember now what it was the FB

725

00:28:34,060 --> 00:28:31,460

111 is and if as an f-111 that's fitted

726

00:28:36,039 --> 00:28:34,070

with bombs so it's the same airplane but

727

00:28:37,599 --> 00:28:36,049

it carries bummed did you ever go to any

728

00:28:39,849 --> 00:28:37,609

theater where there was any actual

729

00:28:42,690 --> 00:28:39,859

action whether it was fighting no

730

00:28:45,300 --> 00:28:42,700

because back then during

731

00:28:48,630 --> 00:28:45,310

I was in during Vietnam and they

732

00:28:51,900 --> 00:28:48,640

wouldn't send women to combat zones so

733

00:28:54,860 --> 00:28:51,910

it was okay for nurses but physicians no

734

00:28:58,110 --> 00:28:54,870

yes and I never understood that because

735

00:29:00,840 --> 00:28:58,120

doctors didn't go out on the battlefield

736

00:29:04,200 --> 00:29:00,850

they were working in hospitals in the

737

00:29:06,030 --> 00:29:04,210

theater I know a nurse who took up a gun

738

00:29:08,370 --> 00:29:06,040

and defended her patients when her

739

00:29:10,500 --> 00:29:08,380

hospital was attacked in Vietnam so I

740

00:29:12,210 --> 00:29:10,510

doesn't didn't make any sense to me that

741

00:29:14,040 --> 00:29:12,220

they couldn't send me over there to work

742

00:29:16,670 --> 00:29:14,050

in a hospital but if they wanted to keep

743

00:29:20,010 --> 00:29:16,680

me safe that was all right with me and

744

00:29:22,230 --> 00:29:20,020

as dark as a doctor and I get this with

745

00:29:23,730 --> 00:29:22,240

a lot of professionals that are deeply

746

00:29:25,980 --> 00:29:23,740

involved with various sorts of Medicine

747

00:29:28,410 --> 00:29:25,990

what really annoys you in the world of

748

00:29:29,940 --> 00:29:28,420

blue and the world of alternative

749

00:29:34,170 --> 00:29:29,950

medicine mozzarella really annoys you

750

00:29:38,880 --> 00:29:34,180

the most when you see it well it's hard

751  
00:29:40,800 --> 00:29:38,890  
to say I guess maybe homeopathy because

752  
00:29:43,830 --> 00:29:40,810  
that's the most ridiculous thing of all

753  
00:29:46,350 --> 00:29:43,840  
the idea that you can dilute everything

754  
00:29:48,090 --> 00:29:46,360  
out of out of a remedy and have the

755  
00:29:49,560 --> 00:29:48,100  
water remember something that it's

756  
00:29:53,190 --> 00:29:49,570  
supposed to remember is just so

757  
00:29:54,750 --> 00:29:53,200  
completely illogical and stupid yes not

758  
00:29:56,640 --> 00:29:54,760  
at that annoys me but I don't think it

759  
00:29:58,740 --> 00:29:56,650  
does much harm I think the most of the

760  
00:30:00,530 --> 00:29:58,750  
harm is in the people who are against

761  
00:30:06,750 --> 00:30:00,540  
vaccines and some of the other areas

762  
00:30:10,500 --> 00:30:06,760  
what about Bach Flower Remedies they

763  
00:30:12,390 --> 00:30:10,510

smell good no I wrote an article about

764

00:30:13,800 --> 00:30:12,400

that on the science-based medicine blog

765

00:30:16,370 --> 00:30:13,810

recently there's not a shred of evidence

766

00:30:18,360 --> 00:30:16,380

to support them it's just total

767

00:30:20,430 --> 00:30:18,370

imagination but there are people who

768

00:30:22,230 --> 00:30:20,440

swear by them I'm trying to say that to

769

00:30:24,510 --> 00:30:22,240

work to one or two girls at work and

770

00:30:26,220 --> 00:30:24,520

they swear by Rescue Remedy now is

771

00:30:29,220 --> 00:30:26,230

rescue remedy and homeopathy thing I was

772

00:30:33,180 --> 00:30:29,230

at a bar what is that way it's a Bach

773

00:30:35,790 --> 00:30:33,190

Flower Remedies our system is a sort of

774

00:30:39,380 --> 00:30:35,800

a subdivision of homeopathy because the

775

00:30:42,750 --> 00:30:39,390

flower essences are highly diluted and

776

00:30:46,350 --> 00:30:42,760

rescue remedy works because placebo is

777

00:30:48,000 --> 00:30:46,360

work if if you're not feeling well and

778

00:30:50,070 --> 00:30:48,010

you take something that you think is

779

00:30:53,130 --> 00:30:50,080

going to help you you're likely to think

780

00:30:55,560 --> 00:30:53,140

you feel better now is there any with

781

00:30:57,480 --> 00:30:55,570

you condom subscribe to do you ever

782

00:30:59,130 --> 00:30:57,490

my peeps have a casual glance at your

783

00:31:00,900 --> 00:30:59,140

horoscope do you ever take more vitamins

784

00:31:03,810 --> 00:31:00,910

when you don't really need to is there

785

00:31:06,780 --> 00:31:03,820

anything you you fall prey to yourself

786

00:31:08,640 --> 00:31:06,790

well the closest I could come is that I

787

00:31:13,290 --> 00:31:08,650

used to take a multivitamin for

788

00:31:15,090 --> 00:31:13,300

psychotherapy how much surely LSD or

789

00:31:17,360 --> 00:31:15,100

ecstasy would be as effective as that

790

00:31:21,330 --> 00:31:17,370

wouldn't it well what I mean is that I

791

00:31:23,700 --> 00:31:21,340

don't always eat in the most healthy

792

00:31:25,530 --> 00:31:23,710

foods so i would take a multivitamin and

793

00:31:27,360 --> 00:31:25,540

say well now i don't have to worry about

794

00:31:28,940 --> 00:31:27,370

it because I got my vitamin so I can eat

795

00:31:32,190 --> 00:31:28,950

eat things that I shouldn't be eating

796

00:31:34,950 --> 00:31:32,200

but I knew it really wasn't rational and

797

00:31:37,770 --> 00:31:34,960

finally one day I saw some research that

798

00:31:40,770 --> 00:31:37,780

said that with postmenopausal women were

799

00:31:42,750 --> 00:31:40,780

more likely to have fractures if they

800

00:31:44,730 --> 00:31:42,760

took vitamin A which is in all the

801  
00:31:46,890 --> 00:31:44,740  
multivitamins so I stopped taking it

802  
00:31:48,660 --> 00:31:46,900  
right then and there and how are your

803  
00:31:51,300 --> 00:31:48,670  
bones anyway but had any scans Harley

804  
00:31:53,340 --> 00:31:51,310  
I've had a scan and I'm fine and of

805  
00:31:55,260 --> 00:31:53,350  
course I would out to everybody they get

806  
00:31:56,430 --> 00:31:55,270  
your pelvic floor muscle going as early

807  
00:31:58,320 --> 00:31:56,440  
as possible is that a good thing for

808  
00:32:01,550 --> 00:31:58,330  
women like it should be me their 20s be

809  
00:32:04,820 --> 00:32:01,560  
working on it that the Kegel exercises I

810  
00:32:07,800 --> 00:32:04,830  
don't I have never seen any evidence of

811  
00:32:10,050 --> 00:32:07,810  
studies on women who did it in their 20s

812  
00:32:11,670 --> 00:32:10,060  
so I really can't comment and what is

813  
00:32:13,590 --> 00:32:11,680

the one thing we can do is a preventive

814

00:32:15,240 --> 00:32:13,600

thing that's very easy that we overlook

815

00:32:17,430 --> 00:32:15,250

all the time that you think I'm silly

816

00:32:19,830 --> 00:32:17,440

people you should be doing that tell you

817

00:32:21,510 --> 00:32:19,840

what I overlooked exercise I'm a couch

818

00:32:23,280 --> 00:32:21,520

potato and I know it would be good for

819

00:32:25,800 --> 00:32:23,290

me but I just can't make myself do it

820

00:32:27,540 --> 00:32:25,810

look I I want to say this on this first

821

00:32:30,690 --> 00:32:27,550

I actually bought a pair of Spanx this

822

00:32:32,850 --> 00:32:30,700

week for men and they pulled you in a

823

00:32:34,950 --> 00:32:32,860

bit like William Shatner yeah and I

824

00:32:36,660 --> 00:32:34,960

think that's kind of cool but you know

825

00:32:38,010 --> 00:32:36,670

I'll look good but I'll still die 5

826  
00:32:40,470 --> 00:32:38,020  
years early because I'm not exercising

827  
00:32:43,800 --> 00:32:40,480  
is just walking around simple exercising

828  
00:32:47,970 --> 00:32:43,810  
yes so any activity is good in fact a

829  
00:32:50,820 --> 00:32:47,980  
lot of the exercise advice now is just

830  
00:32:52,770 --> 00:32:50,830  
do more go out and garden do your

831  
00:32:54,480 --> 00:32:52,780  
housework walk around the house client

832  
00:32:56,400 --> 00:32:54,490  
take the stairs instead of the elevator

833  
00:32:58,410 --> 00:32:56,410  
just simple little things anything that

834  
00:33:01,920 --> 00:32:58,420  
increases your activity level is on the

835  
00:33:03,600 --> 00:33:01,930  
good side and dr. Harriet whole um I can

836  
00:33:04,950 --> 00:33:03,610  
call your doctor even a retired is that

837  
00:33:08,690 --> 00:33:04,960  
is it like the president I can still

838  
00:33:10,670 --> 00:33:08,700

clear dr. afterwards yes um what makes

839

00:33:12,290 --> 00:33:10,680

shake your fist at the television I mean

840

00:33:14,090 --> 00:33:12,300

because there's Fox News there's all

841

00:33:15,740 --> 00:33:14,100

sorts of things on CNN they have their

842

00:33:18,110 --> 00:33:15,750

little medicine moment what's the one

843

00:33:19,820 --> 00:33:18,120

that really you throw the foam brick at

844

00:33:23,680 --> 00:33:19,830

the television and make your husband

845

00:33:28,520 --> 00:33:23,690

angry and PBS public broadcasting

846

00:33:30,740 --> 00:33:28,530

station it puts up all kinds of quack

847

00:33:32,150 --> 00:33:30,750

programs that are really infomercials

848

00:33:33,830 --> 00:33:32,160

for the people that want to sell their

849

00:33:36,080 --> 00:33:33,840

books and the one that I've been

850

00:33:37,970 --> 00:33:36,090

particularly involved with is dr. ayman

851

00:33:41,390 --> 00:33:37,980

I've written about him for Clark watch

852

00:33:45,140 --> 00:33:41,400

and for the the science-based medicine

853

00:33:47,870 --> 00:33:45,150

blog he does these beautiful brain scans

854

00:33:50,300 --> 00:33:47,880

and he gets pretty colored pictures and

855

00:33:53,830 --> 00:33:50,310

he tells people he can see things that

856

00:33:57,200 --> 00:33:53,840

are causing their ADHD or their various

857

00:33:59,090 --> 00:33:57,210

psychological problems or addiction

858

00:34:01,370 --> 00:33:59,100

disorders he says look there's a red

859

00:34:03,710 --> 00:34:01,380

spot on the scan that that's where your

860

00:34:06,650 --> 00:34:03,720

problem is is he looking to certain part

861

00:34:08,990 --> 00:34:06,660

of the brain was he doing well he's

862

00:34:11,840 --> 00:34:09,000

doing a legitimate scan but he's reading

863

00:34:13,850 --> 00:34:11,850

things into them that he has no evidence

864

00:34:15,710 --> 00:34:13,860

for and he's charging people thousands

865

00:34:17,540 --> 00:34:15,720

of dollars and he's telling them the

866

00:34:19,730 --> 00:34:17,550

same things that you could have told him

867

00:34:21,200 --> 00:34:19,740

without doing the scans and how does he

868

00:34:22,730 --> 00:34:21,210

allegedly cue them as he's selling

869

00:34:24,260 --> 00:34:22,740

something as well or was he got some

870

00:34:27,980 --> 00:34:24,270

little alternative treatment what's he's

871

00:34:30,260 --> 00:34:27,990

what's his line he pushes a lot of diet

872

00:34:33,470 --> 00:34:30,270

supplements that have not been tested

873

00:34:35,840 --> 00:34:33,480

and proven and do you think in the

874

00:34:39,500 --> 00:34:35,850

psychiatric realm diet supplements are

875

00:34:42,620 --> 00:34:39,510

kind of useful or at the worst harmless

876  
00:34:44,960 --> 00:34:42,630  
or can they do more damage in that well

877  
00:34:46,940 --> 00:34:44,970  
there is no evidence for them there's

878  
00:34:49,090 --> 00:34:46,950  
there's a lot of claims out there for

879  
00:34:51,020 --> 00:34:49,100  
everything you can think of and

880  
00:34:53,210 --> 00:34:51,030  
particularly with something like autism

881  
00:34:55,330 --> 00:34:53,220  
where there isn't a good simple medical

882  
00:34:57,410 --> 00:34:55,340  
treatment there are some effective

883  
00:34:59,740 --> 00:34:57,420  
psychological treatments educational

884  
00:35:01,790 --> 00:34:59,750  
treatments that have been devised but

885  
00:35:03,590 --> 00:35:01,800  
everybody has jumped on the autism

886  
00:35:07,760 --> 00:35:03,600  
bandwagon and they're they're trying to

887  
00:35:11,540 --> 00:35:07,770  
sell this that everything to autistic

888  
00:35:13,190 --> 00:35:11,550

kids was all kinds of claims and if you

889

00:35:14,960 --> 00:35:13,200

could with some sort of magic wand at

890

00:35:16,940 --> 00:35:14,970

the amazing meeting here is there's one

891

00:35:19,130 --> 00:35:16,950

thing you could cure what would it be

892

00:35:20,260 --> 00:35:19,140

there's so many illnesses out there what

893

00:35:22,210 --> 00:35:20,270

would be the one if you

894

00:35:25,290 --> 00:35:22,220

to pick one it's very difficult as a

895

00:35:28,170 --> 00:35:25,300

doctor because you see them all time

896

00:35:30,790 --> 00:35:28,180

again it would be really hard to choose

897

00:35:33,430 --> 00:35:30,800

diabetes would be a good candidate I

898

00:35:34,720 --> 00:35:33,440

won't say cancer because cancer is many

899

00:35:37,390 --> 00:35:34,730

different illnesses there are so many

900

00:35:40,540 --> 00:35:37,400

different kinds but diabetic diabetes is

901  
00:35:41,680 --> 00:35:40,550  
a big problem and a growing problem do

902  
00:35:43,510 --> 00:35:41,690  
you think though that is because we

903  
00:35:45,370 --> 00:35:43,520  
aren't exercising evading too much sugar

904  
00:35:48,100 --> 00:35:45,380  
is that it or is it not as simple as

905  
00:35:50,710 --> 00:35:48,110  
that it's not as simple as that but if

906  
00:35:52,120 --> 00:35:50,720  
people ate right and didn't gain too

907  
00:35:53,470 --> 00:35:52,130  
much weight it would go a long ways

908  
00:35:55,540 --> 00:35:53,480  
towards cutting the incidence of

909  
00:35:57,070 --> 00:35:55,550  
diabetes down and what are you gonna be

910  
00:35:59,260 --> 00:35:57,080  
doing here at Tim what are you up to you

911  
00:36:01,870 --> 00:35:59,270  
of doing this some stand-up comedy some

912  
00:36:05,920 --> 00:36:01,880  
mime what he got to I'm going to be

913  
00:36:08,530 --> 00:36:05,930

participating in a workshop oh and we

914

00:36:10,210 --> 00:36:08,540

call it dr. Google about people people

915

00:36:13,060 --> 00:36:10,220

who google for medical information

916

00:36:17,680 --> 00:36:13,070

you're on there with dr. Richie now my

917

00:36:20,260 --> 00:36:17,690

dad he's about 83 85 and he really

918

00:36:21,940 --> 00:36:20,270

really forced me to go online and get a

919

00:36:23,440 --> 00:36:21,950

book for him there's some American

920

00:36:25,090 --> 00:36:23,450

doctor she has a thing about a liver

921

00:36:26,440 --> 00:36:25,100

diet or something I don't know what her

922

00:36:28,660 --> 00:36:26,450

name is but he forced me to go on an

923

00:36:31,390 --> 00:36:28,670

order her book which was 36 Australian I

924

00:36:33,190 --> 00:36:31,400

was delivered and he was thinking he was

925

00:36:35,320 --> 00:36:33,200

really concerned about his bilirubin

926

00:36:37,240 --> 00:36:35,330

level now if my dad was listening to

927

00:36:38,770 --> 00:36:37,250

this is the bilirubin level in the liver

928

00:36:40,990 --> 00:36:38,780

something you should be obsessed with

929

00:36:43,870 --> 00:36:41,000

like my daddy's or is it an indicator of

930

00:36:46,120 --> 00:36:43,880

something else bilirubin can be a sign

931

00:36:48,880 --> 00:36:46,130

of liver disease but there is a range of

932

00:36:50,530 --> 00:36:48,890

normal and I haven't heard of that diet

933

00:36:52,600 --> 00:36:50,540

you're talking about I don't know what

934

00:36:54,160 --> 00:36:52,610

what that's a new one for me I'll have

935

00:36:55,870 --> 00:36:54,170

to look that up when I get home oh you

936

00:36:57,280 --> 00:36:55,880

know it doc doc doc dr. ride she was

937

00:36:59,200 --> 00:36:57,290

into that going I'll just tell your dad

938

00:37:00,760 --> 00:36:59,210

to exercise a bit more and eat carefully

939

00:37:02,320 --> 00:37:00,770

but you know he just wants to know he's

940

00:37:04,000 --> 00:37:02,330

obsessed with his bilirubin level for

941

00:37:06,100 --> 00:37:04,010

some reason none of the other indicators

942

00:37:07,930 --> 00:37:06,110

just that particular one for some reason

943

00:37:09,100 --> 00:37:07,940

but when you're 85 I imagine you know

944

00:37:12,130 --> 00:37:09,110

you Lee would be taken with a knock

945

00:37:14,200 --> 00:37:12,140

anyway wouldn't yes and if you if you do

946

00:37:15,730 --> 00:37:14,210

20 lab tests on a perfectly normal

947

00:37:17,680 --> 00:37:15,740

person one of them will come out outside

948

00:37:19,450 --> 00:37:17,690

the normal range just because of the way

949

00:37:21,910 --> 00:37:19,460

we determine normal ranges there is a

950

00:37:23,800 --> 00:37:21,920

bell curve and just like some people are

951  
00:37:25,690 --> 00:37:23,810  
very tall and some people are very short

952  
00:37:27,490 --> 00:37:25,700  
some people have levels that are at the

953  
00:37:31,180 --> 00:37:27,500  
extremes but there's still perfectly

954  
00:37:32,290 --> 00:37:31,190  
normal so just having having a lab tests

955  
00:37:34,090 --> 00:37:32,300  
show something

956  
00:37:35,440 --> 00:37:34,100  
is meaningless by itself you have to put

957  
00:37:38,350 --> 00:37:35,450  
it in context with all the other

958  
00:37:40,080 --> 00:37:38,360  
information because my dad has a hobby

959  
00:37:42,610 --> 00:37:40,090  
it's called going to the doctor and

960  
00:37:44,440 --> 00:37:42,620  
because of that I've gone a bit the

961  
00:37:48,030 --> 00:37:44,450  
other way like my dad's hassling me

962  
00:37:50,380 --> 00:37:48,040  
about is it psi for the prostate cancer

963  
00:37:53,320 --> 00:37:50,390

you know there's prostitute specific

964

00:37:55,510 --> 00:37:53,330

antigen PSA yeah and he's hounding me to

965

00:37:57,550 --> 00:37:55,520

get that done I'm not 58 I'm going it's

966

00:37:59,830 --> 00:37:57,560

okay dad i won't i won't he hounded me

967

00:38:04,090 --> 00:37:59,840

to get a bowel scan and i went to a

968

00:38:05,590 --> 00:38:04,100

specialist he met why are you here so

969

00:38:07,450 --> 00:38:05,600

yes because there's no history that kind

970

00:38:09,880 --> 00:38:07,460

of thing in the family so uh my dad is

971

00:38:12,670 --> 00:38:09,890

um yeah so I'm worried that I won't go

972

00:38:14,590 --> 00:38:12,680

to the doctor but I have to know the PSA

973

00:38:16,150 --> 00:38:14,600

is a very useful test but it's not

974

00:38:19,000 --> 00:38:16,160

useful for screening the general

975

00:38:21,550 --> 00:38:19,010

population because it picks up a lot of

976

00:38:23,170 --> 00:38:21,560

early cancers it picks up some cancers

977

00:38:24,880 --> 00:38:23,180

that would never have developed into

978

00:38:26,430 --> 00:38:24,890

anything that would hurt the person and

979

00:38:28,930 --> 00:38:26,440

there are some pretty serious

980

00:38:30,970 --> 00:38:28,940

consequences to prostate surgery and

981

00:38:33,220 --> 00:38:30,980

there have been some good studies of

982

00:38:35,980 --> 00:38:33,230

this and some major medical groups have

983

00:38:38,710 --> 00:38:35,990

come out and said it does more harm than

984

00:38:41,050 --> 00:38:38,720

good to screen the general population so

985

00:38:42,850 --> 00:38:41,060

it's not a good screening test and it's

986

00:38:44,890 --> 00:38:42,860

also not good to go looking up on google

987

00:38:46,150 --> 00:38:44,900

i remember when i had a sinus problem i

988

00:38:47,500 --> 00:38:46,160

had to have an operation to block some

989

00:38:49,060 --> 00:38:47,510

sort of some blockage there i looked it

990

00:38:52,300 --> 00:38:49,070

up and of course i thought i had sinus

991

00:38:54,040 --> 00:38:52,310

cancer which is particularly nasty and I

992

00:38:56,170 --> 00:38:54,050

thought for a day or two I was I was

993

00:38:57,760 --> 00:38:56,180

going to die until the you nose and

994

00:38:59,830 --> 00:38:57,770

throat man said no and I would just do

995

00:39:02,410 --> 00:38:59,840

that that's fine dr. Google is a bit

996

00:39:04,030 --> 00:39:02,420

dangerous isn't it it certainly is and

997

00:39:08,860 --> 00:39:04,040

that's what our workshop is going to be

998

00:39:11,050 --> 00:39:08,870

talking about how to find a believable

999

00:39:13,030 --> 00:39:11,060

information and not fall for all of the

1000

00:39:15,280 --> 00:39:13,040

misinformation that dr. Google would

1001  
00:39:18,070 --> 00:39:15,290  
like to give you is the one website we

1002  
00:39:20,410 --> 00:39:18,080  
could go to in fact when I saw what was

1003  
00:39:23,620 --> 00:39:20,420  
it the movie made in America which was

1004  
00:39:25,390 --> 00:39:23,630  
about autism they were saying go to

1005  
00:39:26,830 --> 00:39:25,400  
PubMed and look up all these studies and

1006  
00:39:28,420 --> 00:39:26,840  
you'll see that mercury is incredibly

1007  
00:39:30,100 --> 00:39:28,430  
bad and all these things are this going

1008  
00:39:32,470 --> 00:39:30,110  
on so after the movie i went to pubmed

1009  
00:39:34,900 --> 00:39:32,480  
and i was very confused because that's

1010  
00:39:36,760 --> 00:39:34,910  
designed for doctors and I rang dr. Rach

1011  
00:39:38,470 --> 00:39:36,770  
I was going and what does this mean she

1012  
00:39:40,390 --> 00:39:38,480  
said no that means the exact opposite of

1013  
00:39:41,770 --> 00:39:40,400

what you think it means and that's not a

1014

00:39:43,750 --> 00:39:41,780

good study this study over here is a

1015

00:39:44,460 --> 00:39:43,760

good one so just going to pubmed for the

1016

00:39:45,839 --> 00:39:44,470

lame

1017

00:39:47,970 --> 00:39:45,849

there's not a good idea you can end up

1018

00:39:49,830 --> 00:39:47,980

getting much more confused got you you

1019

00:39:51,780 --> 00:39:49,840

certainly can but one thing you can look

1020

00:39:53,730 --> 00:39:51,790

for is the Cochrane reviews which are

1021

00:39:57,470 --> 00:39:53,740

all listed among all the other things on

1022

00:39:59,580 --> 00:39:57,480

PubMed if the cochrane group takes

1023

00:40:01,140 --> 00:39:59,590

everything that's been published and

1024

00:40:02,880 --> 00:40:01,150

tries to make sense out of it and come

1025

00:40:05,970 --> 00:40:02,890

to a conclusion so they're usually

1026

00:40:07,470 --> 00:40:05,980

pretty trustworthy so apart from dealing

1027

00:40:08,580 --> 00:40:07,480

with our physician where is the place on

1028

00:40:09,960 --> 00:40:08,590

the web we should go to is that a

1029

00:40:12,300 --> 00:40:09,970

website you just spoke about them we

1030

00:40:14,880 --> 00:40:12,310

should check out you should go to quack

1031

00:40:17,849 --> 00:40:14,890

watch and you should go to science-based

1032

00:40:19,290 --> 00:40:17,859

medicine and where can we engage you in

1033

00:40:21,810 --> 00:40:19,300

conversation are you blogging away

1034

00:40:24,210 --> 00:40:21,820

they're fighting the good fight no I

1035

00:40:26,520 --> 00:40:24,220

haven't even joined facebook but I do I

1036

00:40:28,410 --> 00:40:26,530

write an article about that history

1037

00:40:30,000 --> 00:40:28,420

there's all those photos of you from the

1038

00:40:33,109 --> 00:40:30,010

70s that you know we really don't want

1039

00:40:35,700 --> 00:40:33,119

to see them now I write an article on

1040

00:40:37,140 --> 00:40:35,710

science-based medicine every week and we

1041

00:40:41,010 --> 00:40:37,150

have a lot of conversations in the

1042

00:40:44,400 --> 00:40:41,020

comments there and I have a website info

1043

00:40:46,970 --> 00:40:44,410

website I'm also active in the quack

1044

00:40:49,230 --> 00:40:46,980

watch health fraud discussion group so I

1045

00:40:51,810 --> 00:40:49,240

talked to people a lot in all those

1046

00:40:53,160 --> 00:40:51,820

places and you don't do too many have

1047

00:40:54,599 --> 00:40:53,170

used this been okay I haven't been like

1048

00:40:56,579 --> 00:40:54,609

to weed or anything it was my shirt okay

1049

00:40:58,650 --> 00:40:56,589

it's a like a Playboy shirt I don't

1050

00:41:01,470 --> 00:40:58,660

guess yeah is that okay that's fine with

1051  
00:41:03,270 --> 00:41:01,480  
me and you know you know I got in

1052  
00:41:05,310 --> 00:41:03,280  
trouble a couple of years ago because i

1053  
00:41:08,310 --> 00:41:05,320  
gave a talk on the anti-vaccine movement

1054  
00:41:10,940 --> 00:41:08,320  
and I mentioned Jenny McCarthy who was a

1055  
00:41:13,740 --> 00:41:10,950  
former Playboy and she's been

1056  
00:41:15,839 --> 00:41:13,750  
publicizing the vaccines are dangerous

1057  
00:41:18,300 --> 00:41:15,849  
and talking people out of out of getting

1058  
00:41:19,710 --> 00:41:18,310  
vaccinated so I picked a picture off the

1059  
00:41:22,250 --> 00:41:19,720  
internet and it showed her in a bathing

1060  
00:41:25,290 --> 00:41:22,260  
suit I got criticized for being sexist

1061  
00:41:26,400 --> 00:41:25,300  
that's kind of what she does I I quite

1062  
00:41:28,109 --> 00:41:26,410  
like the photo of her sitting on the

1063  
00:41:30,060 --> 00:41:28,119

toilet that's kind of a cute one other

1064

00:41:31,890 --> 00:41:30,070

and tell me does Jim Carrey still push

1065

00:41:33,750 --> 00:41:31,900

the anti-vaccination mine now he's not

1066

00:41:35,400 --> 00:41:33,760

going out with it I've wondered that

1067

00:41:37,010 --> 00:41:35,410

myself I don't know I haven't heard

1068

00:41:39,150 --> 00:41:37,020

anything from him since they split up

1069

00:41:40,710 --> 00:41:39,160

well thank you very much for your time

1070

00:41:42,540 --> 00:41:40,720

y'all me upstairs and really enjoy

1071

00:41:44,480 --> 00:41:42,550

myself and this is my first time at tam

1072

00:41:46,800 --> 00:41:44,490

what do you think I should look out for

1073

00:41:48,690 --> 00:41:46,810

just talk to people are some fascinating

1074

00:41:52,589 --> 00:41:48,700

people here it's great to get to know

1075

00:41:54,900 --> 00:41:52,599

strangers and one last question I'm like

1076

00:41:56,220 --> 00:41:54,910

to do a special the music of tan now

1077

00:41:57,700 --> 00:41:56,230

what music do you listen to i'm not

1078

00:41:59,440 --> 00:41:57,710

interested in particularly scare

1079

00:42:01,630 --> 00:41:59,450

tickle music but what's music you think

1080

00:42:03,520 --> 00:42:01,640

hey that gets me in the right mood for

1081

00:42:05,589 --> 00:42:03,530

being skeptical or just music you enjoy

1082

00:42:08,140 --> 00:42:05,599

is there something that's rather top of

1083

00:42:10,540 --> 00:42:08,150

that list when I'm in the car I let it

1084

00:42:12,430 --> 00:42:10,550

listen to country music now I have come

1085

00:42:14,800 --> 00:42:12,440

across some hilarious country music

1086

00:42:18,280 --> 00:42:14,810

songs that I just love like I want you

1087

00:42:20,589 --> 00:42:18,290

to love me like my dog does what about

1088

00:42:24,310 --> 00:42:20,599

my baby thinks my tractor's sexy that's

1089

00:42:27,730 --> 00:42:24,320

pretty good and there's one that we get

1090

00:42:30,040 --> 00:42:27,740

a kick out of because it's about a girl

1091

00:42:31,540 --> 00:42:30,050

and high school going out on a date and

1092

00:42:34,300 --> 00:42:31,550

her father is sitting there cleaning his

1093

00:42:36,220 --> 00:42:34,310

gun and talking to the boy and he's in

1094

00:42:37,660 --> 00:42:36,230

there he says it's a daddy thing and

1095

00:42:40,900 --> 00:42:37,670

that's what my daughter's say about my

1096

00:42:44,200 --> 00:42:40,910

husband's and so that's a daddy thing is

1097

00:42:45,910 --> 00:42:44,210

he going on globes of a 12-gauge yet he

1098

00:42:48,220 --> 00:42:45,920

has quite a gun collection he's a gun

1099

00:42:51,520 --> 00:42:48,230

enthusiast but he's never used them on

1100

00:42:53,109 --> 00:42:51,530

any boyfriend's yet yeah yeah dr. Harry

1101  
00:42:54,640 --> 00:42:53,119  
told thank you very much now look have a

1102  
00:42:56,380 --> 00:42:54,650  
great time here at Taman what's my

1103  
00:43:18,759 --> 00:42:56,390  
suggestion just yak to people isn't it

1104  
00:43:22,999 --> 00:43:21,079  
astronomy cast it takes a fact space

1105  
00:43:24,890 --> 00:43:23,009  
journey through the cosmos as it offers

1106  
00:43:27,559 --> 00:43:24,900  
listeners weekly discussions on

1107  
00:43:30,499 --> 00:43:27,569  
astronomical topics ranging from planets

1108  
00:43:32,779 --> 00:43:30,509  
to cosmology hosted by Fraser Cain of

1109  
00:43:33,769 --> 00:43:32,789  
Universe Today and myself dr. Pamela

1110  
00:43:36,469 --> 00:43:33,779  
gave southern illinois university

1111  
00:43:38,329 --> 00:43:36,479  
edwardsville this show brings the

1112  
00:43:40,759 --> 00:43:38,339  
questions of an avid astronomy lover

1113  
00:43:42,859 --> 00:43:40,769

directly to an astronomer together

1114

00:43:44,420 --> 00:43:42,869

Fraser and I explore what is known and

1115

00:43:47,150 --> 00:43:44,430

being discovered about the universe

1116

00:43:49,249 --> 00:43:47,160

around us join us each week as we take a

1117

00:43:58,640 --> 00:43:49,259

fast space journey through the cosmos at

1118

00:44:01,069 --> 00:43:58,650

astronomy cast calm the Australian

1119

00:44:04,339 --> 00:44:01,079

skeptics National Convention for 2012

1120

00:44:06,079 --> 00:44:04,349

starts on Friday November the 30th with

1121

00:44:08,599 --> 00:44:06,089

a cocktail evening and Melvin's

1122

00:44:10,640 --> 00:44:08,609

immigration Museum where you can meet

1123

00:44:12,319 --> 00:44:10,650

and mingle with free and critical

1124

00:44:15,729 --> 00:44:12,329

thinkers and some of your favorite

1125

00:44:18,400 --> 00:44:15,739

skeptics the convention theme is active

1126  
00:44:20,930 --> 00:44:18,410  
skepticism changing for the better and

1127  
00:44:23,630 --> 00:44:20,940  
continues over the first and second at

1128  
00:44:26,120 --> 00:44:23,640  
this stunning spot theater at the

1129  
00:44:30,410 --> 00:44:26,130  
University of Melbourne the lineup so

1130  
00:44:33,529 --> 00:44:30,420  
far includes James Randi DJ Grothe Brian

1131  
00:44:37,430 --> 00:44:33,539  
Thompson rebecca watson lawrence loom

1132  
00:44:41,209 --> 00:44:37,440  
ken harvey rachel dunlop richardsaunders

1133  
00:44:45,079 --> 00:44:41,219  
adam van langenberg chrissy wilson lynn

1134  
00:44:46,759 --> 00:44:45,089  
kelly and many more a gala dinner will

1135  
00:44:49,670 --> 00:44:46,769  
be held on the saturday night at

1136  
00:44:54,759 --> 00:44:49,680  
melbourne iconic art setter for more

1137  
00:45:01,969 --> 00:44:58,239  
www.fcn and click on the blue button

1138  
00:45:04,150 --> 00:45:01,979

labeled convention details here you'll

1139

00:45:07,069 --> 00:45:04,160

find more information on speakers

1140

00:45:09,799 --> 00:45:07,079

accommodation transport and a photo

1141

00:45:11,870 --> 00:45:09,809

gallery of the various venues

1142

00:45:13,969 --> 00:45:11,880

you can keep up with more details at the

1143

00:45:16,279 --> 00:45:13,979

facebook page curiously labeled

1144

00:45:19,009 --> 00:45:16,289

Australian skeptics national convention

1145

00:45:23,239 --> 00:45:19,019

2012 and don't forget to follow us on

1146

00:45:26,569 --> 00:45:23,249

twitter at oz skept com the Australian

1147

00:45:48,010 --> 00:45:26,579

skeptics national convention 2012 your

1148

00:45:52,790 --> 00:45:50,329

now I've come here today to the

1149

00:45:54,290 --> 00:45:52,800

University of Sydney in a glorious day

1150

00:45:56,329 --> 00:45:54,300

what a beautiful day it is outside the

1151

00:45:58,520 --> 00:45:56,339

burden singing out there in the

1152

00:46:01,970 --> 00:45:58,530

courtyards but we've come in here to a

1153

00:46:04,609 --> 00:46:01,980

lecture room which is empty thankfully

1154

00:46:07,430 --> 00:46:04,619

for us I've come here to attract depart

1155

00:46:09,550 --> 00:46:07,440

from that truck driver out the window

1156

00:46:12,910 --> 00:46:09,560

that I've come here to talk to the

1157

00:46:17,570 --> 00:46:12,920

people from the young scientists of

1158

00:46:19,880 --> 00:46:17,580

Australia we have June that thank you

1159

00:46:22,130 --> 00:46:19,890

and Charlotte on a shower right now

1160

00:46:25,339 --> 00:46:22,140

Charlotte let me let's start with you

1161

00:46:28,010 --> 00:46:25,349

you're the science liaison officer for

1162

00:46:31,400 --> 00:46:28,020

this group and i met you just the other

1163

00:46:32,540 --> 00:46:31,410

day at the Australian Museum where I was

1164

00:46:34,550 --> 00:46:32,550

there to take part in the mystery

1165

00:46:37,400 --> 00:46:34,560

investigators quite a few weeks ago now

1166

00:46:38,690 --> 00:46:37,410

and during a little gap between shows i

1167

00:46:41,240 --> 00:46:38,700

was wandering around looking at some of

1168

00:46:43,160 --> 00:46:41,250

the other stands and exhibitions and

1169

00:46:45,170 --> 00:46:43,170

there you were and you were busily

1170

00:46:48,320 --> 00:46:45,180

making or doing or demonstrating

1171

00:46:50,180 --> 00:46:48,330

something what was happening i was what

1172

00:46:52,160 --> 00:46:50,190

was I making i was making mathematical

1173

00:46:55,810 --> 00:46:52,170

flip wallets that's where entitle for

1174

00:46:58,670 --> 00:46:55,820

them mathematical flip wallets mmm and

1175

00:47:02,570 --> 00:46:58,680

if anyone's familiar with the field of

1176

00:47:05,329 --> 00:47:02,580

topology an area of matts focusing on

1177

00:47:07,700 --> 00:47:05,339

surfaces and how they interact and these

1178

00:47:11,030 --> 00:47:07,710

are those wallets where you can open it

1179

00:47:13,490 --> 00:47:11,040

up and put a note on top of a piece of

1180

00:47:14,540 --> 00:47:13,500

ribbon and then close it and open it in

1181

00:47:16,640 --> 00:47:14,550

the other direction and it suddenly

1182

00:47:18,920 --> 00:47:16,650

trapped that's a nice i've seen those

1183

00:47:21,140 --> 00:47:18,930

that the kids have them know that and

1184

00:47:22,970 --> 00:47:21,150

there are glasses cases as well and you

1185

00:47:26,420 --> 00:47:22,980

may say you're showing kids how to make

1186

00:47:28,040 --> 00:47:26,430

them yes Wow yes and it's nice to show

1187

00:47:29,690 --> 00:47:28,050

them something which they might be

1188

00:47:31,910 --> 00:47:29,700

familiar with but don't necessarily know

1189

00:47:33,950 --> 00:47:31,920

how it works that's interesting so

1190

00:47:36,590 --> 00:47:33,960

you're here at the University studying

1191

00:47:39,510 --> 00:47:36,600

science naturally what of course what

1192

00:47:41,940 --> 00:47:39,520

what made you interested in joining the

1193

00:47:44,190 --> 00:47:41,950

young scientists of Australian more

1194

00:47:45,810 --> 00:47:44,200

importantly what's it all about the

1195

00:47:48,000 --> 00:47:45,820

young scientists of Australia is an

1196

00:47:51,390 --> 00:47:48,010

organization our model is promoting

1197

00:47:53,580 --> 00:47:51,400

science to the youth of Australia and to

1198

00:47:56,670 --> 00:47:53,590

that end we spend a lot of time involved

1199

00:47:59,700 --> 00:47:56,680

with them science camps and holiday

1200

00:48:03,000 --> 00:47:59,710

science schools run at universities all

1201  
00:48:05,190 --> 00:48:03,010  
around Australia in my case I attended a

1202  
00:48:06,870 --> 00:48:05,200  
couple of these science camps one of

1203  
00:48:09,240 --> 00:48:06,880  
them the international science school

1204  
00:48:12,150 --> 00:48:09,250  
run by the school of physics here at the

1205  
00:48:13,590 --> 00:48:12,160  
University of Sydney and the young

1206  
00:48:17,400 --> 00:48:13,600  
scientists of Australia were running a

1207  
00:48:20,580 --> 00:48:17,410  
socials program the so two weeks running

1208  
00:48:23,370 --> 00:48:20,590  
socials all the time and what they did

1209  
00:48:27,020 --> 00:48:23,380  
seem to be what I was interested in

1210  
00:48:30,720 --> 00:48:27,030  
there the cause of promoting science to

1211  
00:48:33,180 --> 00:48:30,730  
young people I I find quite an important

1212  
00:48:35,640 --> 00:48:33,190  
one and so I joined and I haven't looked

1213  
00:48:37,410 --> 00:48:35,650

back well I can identify with what

1214

00:48:38,910 --> 00:48:37,420

you're saying absolutely because that's

1215

00:48:40,380 --> 00:48:38,920

something there's my listeners know that

1216

00:48:43,410 --> 00:48:40,390

something very dear to my heart is

1217

00:48:45,480 --> 00:48:43,420

promoting science and critical thinking

1218

00:48:48,030 --> 00:48:45,490

to the younger generation now what I

1219

00:48:50,310 --> 00:48:48,040

guess you're more primarily interested

1220

00:48:54,780 --> 00:48:50,320

in more University students would that

1221

00:48:57,390 --> 00:48:54,790

be right our main intake is from 15 year

1222

00:49:02,340 --> 00:48:57,400

olds and who attend science camps our

1223

00:49:04,050 --> 00:49:02,350

age range is sort of 14 to 26 so we sort

1224

00:49:07,980 --> 00:49:04,060

of cover the transition period between

1225

00:49:09,330 --> 00:49:07,990

school and I guess working life and so

1226

00:49:12,050 --> 00:49:09,340

we really get people when they're

1227

00:49:14,610 --> 00:49:12,060

starting to think for themselves i guess

1228

00:49:17,220 --> 00:49:14,620

and provide people with opportunities to

1229

00:49:19,260 --> 00:49:17,230

sort of spread what they know and what

1230

00:49:21,990 --> 00:49:19,270

they're interested in and in parts of

1231

00:49:23,700 --> 00:49:22,000

science and scientific method because a

1232

00:49:25,770 --> 00:49:23,710

lot of people get confused I think

1233

00:49:27,900 --> 00:49:25,780

science is just it's just a series of

1234

00:49:30,270 --> 00:49:27,910

facts where of course in the heart of

1235

00:49:33,990 --> 00:49:30,280

science is more how you go about doing

1236

00:49:35,970 --> 00:49:34,000

things of course and you I was just

1237

00:49:37,499 --> 00:49:35,980

hearing just before you've been involved

1238

00:49:39,959 --> 00:49:37,509

in this organization and your

1239

00:49:41,759 --> 00:49:39,969

the color in the secretary but you've

1240

00:49:45,269 --> 00:49:41,769

been just about everything else I PDF

1241

00:49:48,569 --> 00:49:45,279

I've had every every almost every title

1242

00:49:50,909 --> 00:49:48,579

I can possibly get my hands on Charlotte

1243

00:49:52,589 --> 00:49:50,919

is actually it's actually the last one I

1244

00:49:54,989 --> 00:49:52,599

haven't I haven't done it's a bit like

1245

00:49:58,169 --> 00:49:54,999

Roger Federer not getting that finer

1246

00:49:59,969 --> 00:49:58,179

French Open titles and science liaison

1247

00:50:01,829 --> 00:49:59,979

to the final frontier and what's your

1248

00:50:05,509 --> 00:50:01,839

background well what gave you the

1249

00:50:08,699 --> 00:50:05,519

interest so I funnily enough we both

1250

00:50:12,539 --> 00:50:08,709

went to the same to Holliday side

1251  
00:50:14,789 --> 00:50:12,549  
schools but we didn't meet there so I I

1252  
00:50:17,249 --> 00:50:14,799  
joined after having gone to the first

1253  
00:50:19,549 --> 00:50:17,259  
holiday science school when I was hit

1254  
00:50:22,649 --> 00:50:19,559  
when I was 15 when I was in high school

1255  
00:50:24,659 --> 00:50:22,659  
and no these these guys they're being

1256  
00:50:26,219 --> 00:50:24,669  
the mentor has been the staff and they

1257  
00:50:27,899 --> 00:50:26,229  
were doing some science shows too and

1258  
00:50:29,909 --> 00:50:27,909  
they were called the young scientist of

1259  
00:50:31,979 --> 00:50:29,919  
Australia and it will give out

1260  
00:50:34,379 --> 00:50:31,989  
membership form saying if you'd like to

1261  
00:50:36,239 --> 00:50:34,389  
be with like minded people or if you'd

1262  
00:50:38,099 --> 00:50:36,249  
like to hear from people who are in

1263  
00:50:40,169 --> 00:50:38,109

university studying sites and if that

1264

00:50:43,829 --> 00:50:40,179

sort of thing appeals to you then you

1265

00:50:46,259 --> 00:50:43,839

should you should join us and I did and

1266

00:50:49,019 --> 00:50:46,269

the thing that stands out most about

1267

00:50:51,870 --> 00:50:49,029

science is that it's the most fun filled

1268

00:50:54,509 --> 00:50:51,880

I think it's most enjoyable field in

1269

00:50:58,979 --> 00:50:54,519

academia a lot of your listeners would

1270

00:51:03,689 --> 00:50:58,989

be would be very aware of the charlatans

1271

00:51:06,269 --> 00:51:03,699

claims of um you know so pseudoscience

1272

00:51:08,339 --> 00:51:06,279

oh my listeners are very sure that I

1273

00:51:11,399 --> 00:51:08,349

could assure you everything I'm fine I

1274

00:51:13,559 --> 00:51:11,409

find really interesting is to is how

1275

00:51:15,719 --> 00:51:13,569

they how they like to promote themselves

1276

00:51:18,599 --> 00:51:15,729

as being very romantic as being very

1277

00:51:19,979 --> 00:51:18,609

classical anything well it gives I'm not

1278

00:51:22,109 --> 00:51:19,989

interested you should say that because

1279

00:51:23,819 --> 00:51:22,119

we have the situation where so often

1280

00:51:25,769 --> 00:51:23,829

someone will come along saying that

1281

00:51:27,509 --> 00:51:25,779

they're the Maverick you know they've

1282

00:51:29,249 --> 00:51:27,519

got this new science but the rest of the

1283

00:51:32,159 --> 00:51:29,259

scientific community don't want you to

1284

00:51:35,009 --> 00:51:32,169

know all things that this effect now

1285

00:51:37,499 --> 00:51:35,019

history has shown us that once in a very

1286

00:51:39,689 --> 00:51:37,509

great while these people are actually on

1287

00:51:40,979 --> 00:51:39,699

to something but of course ninety-nine

1288

00:51:44,249 --> 00:51:40,989

point nine percent of the time they're

1289

00:51:47,039 --> 00:51:44,259

either deluded or just charlatans and as

1290

00:51:49,349 --> 00:51:47,049

you say that's an interesting i spent

1291

00:51:52,169 --> 00:51:49,359

more the danger of that is that they

1292

00:51:53,819 --> 00:51:52,179

they might give off the view to people

1293

00:51:55,769 --> 00:51:53,829

who may be ignorant or two children who

1294

00:51:58,439 --> 00:51:55,779

may not know better that science is

1295

00:52:00,539 --> 00:51:58,449

somehow a dull and boring pursuit that

1296

00:52:04,529 --> 00:52:00,549

it's all numbers and facts and figures

1297

00:52:07,859 --> 00:52:04,539

or as you know where pseudoscience likes

1298

00:52:10,139 --> 00:52:07,869

to to hold a property of romance and of

1299

00:52:13,139 --> 00:52:10,149

enchantment north of things that are

1300

00:52:15,779 --> 00:52:13,149

beyond the possible which is completely

1301

00:52:17,849 --> 00:52:15,789

ridiculous if anyone there is

1302

00:52:19,859 --> 00:52:17,859

anything to begin with biology or

1303

00:52:22,409 --> 00:52:19,869

physics or chemistry will know that

1304

00:52:25,049 --> 00:52:22,419

science is the most romantic academic

1305

00:52:28,529 --> 00:52:25,059

field you can possibly go in that if you

1306

00:52:31,379 --> 00:52:28,539

want to see things i want to be be be

1307

00:52:33,839 --> 00:52:31,389

used or enchanted by the world and

1308

00:52:35,699 --> 00:52:33,849

scientists be on sale anybody looking at

1309

00:52:40,049 --> 00:52:35,709

the recent videos coming back from

1310

00:52:43,639 --> 00:52:40,059

master you know it's breathtaking stuff

1311

00:52:48,089 --> 00:52:43,649

but it's also next to a magic priceless

1312

00:52:50,039 --> 00:52:48,099

what has that got to you of course one

1313

00:52:51,569 --> 00:52:50,049

thing that we've come across in the

1314

00:52:53,099 --> 00:52:51,579

australian skeptics for many many years

1315

00:52:55,169 --> 00:52:53,109

is that the people promoting

1316

00:52:57,719 --> 00:52:55,179

pseudoscience don't have to obey any any

1317

00:52:59,159 --> 00:52:57,729

particular laws of physics today i mean

1318

00:53:02,309 --> 00:52:59,169

i could just make things up as they go

1319

00:53:03,929 --> 00:53:02,319

along to suit them you know we see that

1320

00:53:05,639 --> 00:53:03,939

we see that all the time now this

1321

00:53:08,459 --> 00:53:05,649

organization the young scientists of

1322

00:53:11,669 --> 00:53:08,469

australia how far and wide are you

1323

00:53:14,759 --> 00:53:11,679

spread we have branches in sydney

1324

00:53:17,669 --> 00:53:14,769

melbourne brisbane and adelaide at the

1325

00:53:20,069 --> 00:53:17,679

moment and we've had interest in

1326  
00:53:23,249 --> 00:53:20,079  
canberra but it's just not big enough to

1327  
00:53:24,929 --> 00:53:23,259  
sustain anything as yet i think i think

1328  
00:53:27,929 --> 00:53:24,939  
for the moment Adelaide Brisbane

1329  
00:53:30,269 --> 00:53:27,939  
Melbourne and Sydney in if you have a if

1330  
00:53:33,779 --> 00:53:30,279  
you have a child about 15 years old 15

1331  
00:53:35,290 --> 00:53:33,789  
to 25 and live in one of those cities

1332  
00:53:38,320 --> 00:53:35,300  
one of the lucky ones

1333  
00:53:40,180 --> 00:53:38,330  
I think so again as I say I was very

1334  
00:53:42,340 --> 00:53:40,190  
impressed when I happened across your

1335  
00:53:44,520 --> 00:53:42,350  
stand your table there at the Australian

1336  
00:53:46,690 --> 00:53:44,530  
Museum you were having enormous fun

1337  
00:53:49,090 --> 00:53:46,700  
definitely well I knew had children

1338  
00:53:51,540 --> 00:53:49,100

surrounding you actually all busily

1339

00:53:54,670 --> 00:53:51,550

making this is this is this one of the

1340

00:53:56,560 --> 00:53:54,680

ID I hate to use these terms this is one

1341

00:54:00,040 --> 00:53:56,570

of the mission statements that you need

1342

00:54:02,950 --> 00:54:00,050

to get out there and be seen I would say

1343

00:54:04,600 --> 00:54:02,960

definitely I think having the motto

1344

00:54:06,640 --> 00:54:04,610

promoting science to the youth of

1345

00:54:07,930 --> 00:54:06,650

Australia we definitely have to well

1346

00:54:12,010 --> 00:54:07,940

definitely getting out there and being

1347

00:54:14,350 --> 00:54:12,020

seen for me it's so much fun doing it I

1348

00:54:17,830 --> 00:54:14,360

had a set up with a board balanced on

1349

00:54:21,880 --> 00:54:17,840

four eggs I should all know exactly and

1350

00:54:23,770 --> 00:54:21,890

and I said are you sure I weigh about 90

1351  
00:54:25,390 --> 00:54:23,780  
kilos and she and you said yes down on

1352  
00:54:27,130 --> 00:54:25,400  
the eggs and I thought this is it I was

1353  
00:54:30,250 --> 00:54:27,140  
associated on I was just waiting for the

1354  
00:54:33,250 --> 00:54:30,260  
party didn't have it I was quite amazing

1355  
00:54:35,500 --> 00:54:33,260  
and when a kid stands on that and you

1356  
00:54:37,330 --> 00:54:35,510  
see the look on their face when you say

1357  
00:54:39,910 --> 00:54:37,340  
there are four eggs holding you up

1358  
00:54:42,460 --> 00:54:39,920  
that's just the best look on my the best

1359  
00:54:44,260 --> 00:54:42,470  
or yours yes or any of the other

1360  
00:54:47,770 --> 00:54:44,270  
exhibitors actually everyone seemed

1361  
00:54:51,880 --> 00:54:47,780  
quite impressed with it yeah and so it's

1362  
00:54:54,610 --> 00:54:51,890  
fun for us as well as as you know our PI

1363  
00:54:56,710 --> 00:54:54,620

mighty cause or whatever it's just plain

1364

00:55:01,600 --> 00:54:56,720

fun and that's the other thing that why

1365

00:55:03,310 --> 00:55:01,610

i say offers i think is as well as sort

1366

00:55:06,880 --> 00:55:03,320

of opening up a world of opportunity in

1367

00:55:09,730 --> 00:55:06,890

science communication and allowing us to

1368

00:55:12,310 --> 00:55:09,740

sort of promote our our views and our

1369

00:55:14,590 --> 00:55:12,320

causes it's just a nice place for like

1370

00:55:17,530 --> 00:55:14,600

minded people to be you'd think would be

1371

00:55:20,410 --> 00:55:17,540

a bunch of people who might be classed

1372

00:55:23,020 --> 00:55:20,420

as nerds at school but surprisingly

1373

00:55:27,130 --> 00:55:23,030

we're actually very very socially

1374

00:55:29,960 --> 00:55:27,140

competent no service to me I must say

1375

00:55:32,240 --> 00:55:29,970

you two gonna have the most fun anyway

1376

00:55:35,270 --> 00:55:32,250

we sort of offer somewhere both the

1377

00:55:40,460 --> 00:55:35,280

people who might not who might be a

1378

00:55:42,920 --> 00:55:40,470

little too academically inclined to it's

1379

00:55:45,680 --> 00:55:42,930

really difficult to phrase this people

1380

00:55:49,580 --> 00:55:45,690

who yeah the people who might be a bit

1381

00:55:50,960 --> 00:55:49,590

more science or uninterested we provide

1382

00:55:53,810 --> 00:55:50,970

a place for people to come out of their

1383

00:55:55,910 --> 00:55:53,820

shells or people to just as you there

1384

00:55:58,670 --> 00:55:55,920

are stones not always the best place for

1385

00:56:00,170 --> 00:55:58,680

everyone ya feel like they belong but we

1386

00:56:01,849 --> 00:56:00,180

have some real social butterflies as

1387

00:56:04,730 --> 00:56:01,859

well that's we've got it we've got a

1388

00:56:07,310 --> 00:56:04,740

really wide variety of members which i

1389

00:56:10,370 --> 00:56:07,320

think is great yeah and I guess school

1390

00:56:13,400 --> 00:56:10,380

as with with the world at large anyway

1391

00:56:16,099 --> 00:56:13,410

that there's always a place for is a big

1392

00:56:18,260 --> 00:56:16,109

place of sports people people who are no

1393

00:56:19,670 --> 00:56:18,270

greater physical feats but if you I

1394

00:56:21,710 --> 00:56:19,680

think we could hear some of them out the

1395

00:56:23,890 --> 00:56:21,720

window right now actually doing this

1396

00:56:26,120 --> 00:56:23,900

boarding things in but you're if you're

1397

00:56:28,250 --> 00:56:26,130

particularly in high school there there

1398

00:56:31,010 --> 00:56:28,260

isn't really an outlet for for

1399

00:56:32,990 --> 00:56:31,020

scientific endeavor and so if you if I

1400

00:56:34,849 --> 00:56:33,000

guess if you have a high school child

1401

00:56:35,900 --> 00:56:34,859

who's quite interested in science but

1402

00:56:38,450 --> 00:56:35,910

doesn't know what a channel that

1403

00:56:40,190 --> 00:56:38,460

enthusiasm and where we're sort of there

1404

00:56:42,380 --> 00:56:40,200

for that niche market well some of the

1405

00:56:44,990 --> 00:56:42,390

greatest social gatherings I've ever

1406

00:56:47,329 --> 00:56:45,000

been to our the the mega conventions in

1407

00:56:49,820 --> 00:56:47,339

the United States based around science

1408

00:56:51,290 --> 00:56:49,830

and skepticism in Las Vegas I go to on

1409

00:56:54,140 --> 00:56:51,300

every year called the amazing meeting

1410

00:56:55,820 --> 00:56:54,150

it's got over a thousand people as they

1411

00:56:57,380 --> 00:56:55,830

say you come to this meeting and spend

1412

00:56:59,810 --> 00:56:57,390

time with a thousand of your closest

1413

00:57:02,030 --> 00:56:59,820

friends attendance it's a fantastic to

1414

00:57:03,620 --> 00:57:02,040

everybody has a really great time apart

1415

00:57:06,260 --> 00:57:03,630

from their wonderful things we learn as

1416

00:57:08,630 --> 00:57:06,270

the social aspect on we call it drinking

1417

00:57:10,220 --> 00:57:08,640

skeptically and speaking of which I was

1418

00:57:12,740 --> 00:57:10,230

just telling you earlier before the

1419

00:57:14,420 --> 00:57:12,750

microphone went on that we have skeptics

1420

00:57:18,079 --> 00:57:14,430

in the pub of course and I can see the

1421

00:57:19,420 --> 00:57:18,089

twinkle in your eye which is a in many

1422

00:57:23,170 --> 00:57:19,430

cities around the world

1423

00:57:25,809 --> 00:57:23,180

have and towns have skeptics in the pub

1424

00:57:27,490 --> 00:57:25,819

and the one in Sydney is every month so

1425

00:57:30,010 --> 00:57:27,500

I hope that you might come along and

1426  
00:57:32,530 --> 00:57:30,020  
have a look because as you know I'll be

1427  
00:57:34,960 --> 00:57:32,540  
a pleasure to mmm definitely I think

1428  
00:57:37,230 --> 00:57:34,970  
you'd enjoy it I think it enjoyed now if

1429  
00:57:39,370 --> 00:57:37,240  
people want to know more young

1430  
00:57:40,930 --> 00:57:39,380  
scientists and interested people

1431  
00:57:43,210 --> 00:57:40,940  
especially if you're going to university

1432  
00:57:45,849 --> 00:57:43,220  
where can people go what's the website

1433  
00:57:51,640 --> 00:57:45,859  
people should be looking at our website

1434  
00:57:54,910 --> 00:57:51,650  
is why I say ok you / Sydney replace

1435  
00:57:57,040 --> 00:57:54,920  
Sydney with your city of interest if you

1436  
00:57:58,960 --> 00:57:57,050  
don't happen to be local here I guess if

1437  
00:58:00,460 --> 00:57:58,970  
you're if you have children or if you

1438  
00:58:02,890 --> 00:58:00,470

have friends or children who might be

1439

00:58:04,720 --> 00:58:02,900

interested in getting their foot in the

1440

00:58:07,780 --> 00:58:04,730

door in the scientific community and

1441

00:58:09,670 --> 00:58:07,790

where were the people for you also if

1442

00:58:11,680 --> 00:58:09,680

you have if you're a teacher and if

1443

00:58:14,020 --> 00:58:11,690

you'd like us to visit and show you

1444

00:58:17,079 --> 00:58:14,030

actually how fun signs can be this

1445

00:58:19,359 --> 00:58:17,089

morning as that sounds then let us know

1446

00:58:24,400 --> 00:58:19,369

but it's more of a place for us than

1447

00:58:26,079 --> 00:58:24,410

ever before because scientific literacy

1448

00:58:30,339 --> 00:58:26,089

is something we don't seem to value

1449

00:58:32,589 --> 00:58:30,349

enough and I i paid for people to think

1450

00:58:36,099 --> 00:58:32,599

that we're somehow political always

1451  
00:58:38,470 --> 00:58:36,109  
somehow somehow ever have hidden their

1452  
00:58:40,470 --> 00:58:38,480  
gender of some sort and when we're

1453  
00:58:44,680 --> 00:58:40,480  
really what we're really here for is to

1454  
00:58:47,260 --> 00:58:44,690  
expose the scientific community to the

1455  
00:58:50,349 --> 00:58:47,270  
youth of Australia and I think it's a

1456  
00:58:52,809 --> 00:58:50,359  
advice motion it's it's incredibly

1457  
00:58:55,900 --> 00:58:52,819  
important for us to be scientific lips I

1458  
00:58:58,089 --> 00:58:55,910  
until a literate for two reasons one is

1459  
00:59:00,819 --> 00:58:58,099  
to to see through the to really

1460  
00:59:02,980 --> 00:59:00,829  
see through what what people are trying

1461  
00:59:06,430 --> 00:59:02,990  
to get to know when someone's trying to

1462  
00:59:09,039 --> 00:59:06,440  
sell you a vacuum cleaner on radio Alan

1463  
00:59:10,840 --> 00:59:09,049

Jones loves to bang on about how climate

1464

00:59:13,390 --> 00:59:10,850

change is a sham

1465

00:59:15,430 --> 00:59:13,400

and lots of lots of politicians have

1466

00:59:16,870 --> 00:59:15,440

trouble being just scientifically

1467

00:59:19,330 --> 00:59:16,880

literate and I think it's really

1468

00:59:23,130 --> 00:59:19,340

important for us to to sort this mess

1469

00:59:25,930 --> 00:59:23,140

out and the second reason is science is

1470

00:59:28,090 --> 00:59:25,940

scientists has all the wonder of fiction

1471

00:59:31,870 --> 00:59:28,100

or the Wonder a fantasy wrapped up in

1472

00:59:33,820 --> 00:59:31,880

reality and so if I guess if you'd like

1473

00:59:37,050 --> 00:59:33,830

to see something you haven't seen before

1474

00:59:39,310 --> 00:59:37,060

or if you have children who want to

1475

00:59:41,530 --> 00:59:39,320

explore the world at large then where

1476  
00:59:43,210 --> 00:59:41,540  
where the people for you sound like just

1477  
00:59:45,610 --> 00:59:43,220  
the people absolutely just the people

1478  
00:59:47,200 --> 00:59:45,620  
well young the scientists of Australia

1479  
00:59:49,060 --> 00:59:47,210  
thank you very much for sparing some

1480  
00:59:50,850 --> 00:59:49,070  
time for the skeptic zone and as a

1481  
00:59:53,740 --> 00:59:50,860  
little thank you I'll just reach it back

1482  
00:59:55,600 --> 00:59:53,750  
and from Australian skeptics for your

1483  
00:59:59,110 --> 00:59:55,610  
organization here's a copy of the great

1484  
01:00:01,210 --> 00:59:59,120  
water divining DVD lots of scientific

1485  
01:00:03,880 --> 01:00:01,220  
investigations of strange things on

1486  
01:00:06,910 --> 01:00:03,890  
there I'm sure you'll enjoy looking at

1487  
01:00:08,980 --> 01:00:06,920  
Cerritos Dodgers top shelf chicken that

1488  
01:00:11,140 --> 01:00:08,990

looks like fun starring the one and only

1489

01:00:14,620 --> 01:00:11,150

james randi I'm sure you'll enjoy that

1490

01:00:18,040 --> 01:00:14,630

and I hope people run to your website

1491

01:00:19,660 --> 01:00:18,050

check it out and I really really am a

1492

01:00:22,810 --> 01:00:19,670

fan of what you're trying to do because

1493

01:00:24,250 --> 01:00:22,820

I do that myself outreach encouraging

1494

01:00:26,080 --> 01:00:24,260

young people to get interested in

1495

01:00:28,630 --> 01:00:26,090

science and maybe look for a career in

1496

01:00:31,210 --> 01:00:28,640

this sort of thing so young scientists

1497

01:00:43,130 --> 01:00:31,220

of Australia thank you very much thank

1498

01:00:49,800 --> 01:00:45,690

hi this is brian dunning from the

1499

01:00:52,860 --> 01:00:49,810

sceptile podcast ATS kept ID com for 15

1500

01:00:55,620 --> 01:00:52,870

years now dr. Bob's trivia quiz has been

1501  
01:00:58,080 --> 01:00:55,630  
a part of Australian skeptics each month

1502  
01:01:00,960 --> 01:00:58,090  
the mysterious dr. Bob comes up with

1503  
01:01:04,110 --> 01:01:00,970  
questions that defy all logic and reason

1504  
01:01:06,360 --> 01:01:04,120  
only the best of the best dare attempt

1505  
01:01:09,570 --> 01:01:06,370  
to answer these brain twisters and no

1506  
01:01:15,140 --> 01:01:09,580  
google won't help you visit dr. Bob's

1507  
01:01:18,540 --> 01:01:15,150  
quiz wordpress.com that's dr be OBS quiz

1508  
01:01:21,480 --> 01:01:18,550  
wordpress.com to take part and to see

1509  
01:01:24,510 --> 01:01:21,490  
the complete archive of dr. bob's trivia

1510  
01:01:39,830 --> 01:01:24,520  
quiz i'm brian dunning from sceptile

1511  
01:01:46,740 --> 01:01:42,390  
thank you for listening to the skeptic

1512  
01:01:48,840 --> 01:01:46,750  
zone I'll just shut this fridge and go

1513  
01:01:57,650 --> 01:01:48,850

back to the recording studio up the

1514

01:02:04,260 --> 01:02:01,080

that's better coming up on next week's

1515

01:02:07,350 --> 01:02:04,270

show more interviews from Tam with may

1516

01:02:09,930 --> 01:02:07,360

not of course I think am hmm Brian

1517

01:02:12,030 --> 01:02:09,940

Dunning or Ben Radford or both one or

1518

01:02:15,690 --> 01:02:12,040

the other or both we'll see we'll see

1519

01:02:16,950 --> 01:02:15,700

next week on next week's show as ever

1520

01:02:19,320 --> 01:02:16,960

thank you to all those people who

1521

01:02:22,740 --> 01:02:19,330

subscribe to the skeptics own less than

1522

01:02:27,210 --> 01:02:22,750

a dollar a week or who chip in and you

1523

01:02:30,870 --> 01:02:27,220

can do that via visiting ww skeptic zone

1524

01:02:33,750 --> 01:02:30,880

TV but for now until next week's show

1525

01:02:40,500 --> 01:02:33,760

this is Richard Saunders signing off

1526

01:02:43,770 --> 01:02:40,510

from Sydney Australia you've been

1527

01:02:48,300 --> 01:02:43,780

listening to the skeptic zone visit our

1528

01:02:50,790 --> 01:02:48,310

website at [www.skeptics on TV](http://www.skepticsontv.com) for