

1
00:00:05,929 --> 00:00:13,699
welcome to the skeptic zone the podcast

2
00:00:09,119 --> 00:00:13,699
from Australia for science and reason

3
00:00:23,300 --> 00:00:30,089
hello and welcome to the skeptic zone

4
00:00:26,160 --> 00:00:33,149
episode number 202 for the first off

5
00:00:30,089 --> 00:00:36,329
September 2012 Richard Saunders here

6
00:00:33,149 --> 00:00:39,149
with you from Sydney Australia coming up

7
00:00:36,329 --> 00:00:41,549
on this week's show some really really

8
00:00:39,149 --> 00:00:43,530
wonderful skeptics and some good people

9
00:00:41,549 --> 00:00:46,589
to put to my favorite people in the

10
00:00:43,530 --> 00:00:49,620
world dr. Pamela gay a wonderful

11
00:00:46,590 --> 00:00:52,680
astronomer dr. Pamela gay and dr.

12
00:00:49,619 --> 00:00:54,238
Harriet Hall known as the skip doc now

13
00:00:52,679 --> 00:00:56,009
both these wonderful people are at the

14
00:00:54,238 --> 00:00:58,858
amazing meeting where of course of

15
00:00:56,009 --> 00:01:01,108
course they spoke to Maynard I'm

16
00:00:58,859 --> 00:01:03,359
beginning to think that everybody of the

17
00:01:01,109 --> 00:01:06,118
amazing meeting must have spoken to main

18
00:01:03,359 --> 00:01:07,680
out at some stage or other I'm also

19
00:01:06,118 --> 00:01:10,618
beginning to think that the man must be

20
00:01:07,680 --> 00:01:12,450
twins or triplets I don't know how on

21
00:01:10,618 --> 00:01:15,900
earth he got all these interviews in

22
00:01:12,450 --> 00:01:17,879
such a short time but he did and we're

23
00:01:15,900 --> 00:01:19,740
still enjoying every one of them and

24
00:01:17,879 --> 00:01:21,780
more to come over the weeks to come it's

25
00:01:19,739 --> 00:01:24,060
just incredible and for those people who

26
00:01:21,780 --> 00:01:25,739
might be new to the skeptic zone the

27
00:01:24,060 --> 00:01:27,540
only reason may not went to the amazing

28
00:01:25,739 --> 00:01:30,089
meeting in Las Vegas is because

29

00:01:27,540 --> 00:01:32,670
listeners of this show paid for him to

30
00:01:30,090 --> 00:01:34,590
go there listen up our folks that's what

31
00:01:32,670 --> 00:01:37,259
it's all about then coming up after

32
00:01:34,590 --> 00:01:40,079
those interviews I travel to Sydney

33
00:01:37,259 --> 00:01:41,489
University which isn't so far from where

34
00:01:40,078 --> 00:01:45,209
i live sort of down the road a little

35
00:01:41,489 --> 00:01:48,149
bit and I speak to the young scientists

36
00:01:45,209 --> 00:01:50,908
of Australia now this is an organization

37
00:01:48,149 --> 00:01:53,489
dedicated to outreach and encouraging

38
00:01:50,909 --> 00:01:57,090
young people to take up or be involved

39
00:01:53,489 --> 00:01:59,218
with science very very worthy cause I

40
00:01:57,090 --> 00:02:01,530
think now some important news that's

41
00:01:59,218 --> 00:02:04,019
come to us from our good friends in

42
00:02:01,530 --> 00:02:05,879
Melbourne the Australian skeptics

43
00:02:04,019 --> 00:02:07,289

National Convention and there's more

44

00:02:05,879 --> 00:02:11,128
information coming up later in the show

45

00:02:07,290 --> 00:02:12,870
the tickets are selling out already now

46

00:02:11,128 --> 00:02:13,769
I know it's a months away it's at the

47

00:02:12,870 --> 00:02:17,159
end of november

48

00:02:13,770 --> 00:02:19,409
but the tickets are selling already this

49

00:02:17,159 --> 00:02:22,099
is a situation where it's not a good

50

00:02:19,409 --> 00:02:24,389
idea to sort of wait and think and delay

51

00:02:22,099 --> 00:02:26,460
get your tickets as soon as you can

52

00:02:24,389 --> 00:02:28,169
don't miss out don't be one of those

53

00:02:26,460 --> 00:02:30,750
people who say oh I finally I bought

54

00:02:28,169 --> 00:02:32,250
tickets don't miss out details about the

55

00:02:30,750 --> 00:02:34,830
Australian skeptics National Convention

56

00:02:32,250 --> 00:02:37,770
being held in Melbourne with James Randi

57

00:02:34,830 --> 00:02:39,660
and DJ Grothe and rebecca watson and a

58
00:02:37,770 --> 00:02:42,810
whole heap of other people details

59
00:02:39,659 --> 00:02:44,609
coming up later in the show but now it's

60
00:02:42,810 --> 00:02:54,030
time for me to leave this recording

61
00:02:44,610 --> 00:02:58,650
studio run downstairs come to the fridge

62
00:02:54,030 --> 00:03:17,039
and look inside our I'm going to have a

63
00:02:58,650 --> 00:03:20,810
nice glass of creaming soda while you

64
00:03:17,039 --> 00:03:20,810
enjoy the skeptic zone

65
00:03:33,669 --> 00:03:40,649
here's my not spooky action at a

66
00:03:38,110 --> 00:03:40,650
distance

67
00:03:41,419 --> 00:03:45,629
well ladies and gentlemen it's new

68
00:03:44,099 --> 00:03:47,400
interview time here and I've got someone

69
00:03:45,629 --> 00:03:49,859
who spends a lot of time looking at the

70
00:03:47,400 --> 00:03:51,480
Stars poring over data or pouring over

71
00:03:49,860 --> 00:03:54,060
data depending on how you want to say it

72
00:03:51,479 --> 00:03:55,289
who've we got here I'm dr. Pamela game

73
00:03:54,060 --> 00:03:57,539
on the faculty at southern illinois

74
00:03:55,289 --> 00:03:59,219
university edwardsville now what's at

75
00:03:57,539 --> 00:04:00,810
university like is it a hard-drinking

76
00:03:59,219 --> 00:04:03,840
kind of place do they have a fantastic

77
00:04:00,810 --> 00:04:05,789
sport team no we're actually a fairly

78
00:04:03,840 --> 00:04:07,500
small University in the middle of the

79
00:04:05,789 --> 00:04:09,840
country and what's often referred to as

80
00:04:07,500 --> 00:04:11,699
the flyover zone oh we have a lot of

81
00:04:09,840 --> 00:04:13,550
good hard-working kids most of them come

82
00:04:11,699 --> 00:04:15,479
from the farms or the inner city and

83
00:04:13,550 --> 00:04:17,489
they're just trying to get through

84
00:04:15,479 --> 00:04:19,680
school working full-time jobs going to

85
00:04:17,488 --> 00:04:21,899
college it's I couldn't ask for a better

86

00:04:19,680 --> 00:04:23,730
group of hard-working kids so that means

87
00:04:21,899 --> 00:04:26,159
you don't get much light pollution there

88
00:04:23,730 --> 00:04:28,259
do you know actually we don't we have an

89
00:04:26,160 --> 00:04:30,870
oil refinery that takes up one horizon

90
00:04:28,259 --> 00:04:33,209
unfortunately but we can still see a lot

91
00:04:30,870 --> 00:04:35,100
of clear constellations and now remember

92
00:04:33,209 --> 00:04:36,180
I spoke to you 8am Australia and I think

93
00:04:35,100 --> 00:04:38,640
I asked you what was your favorite

94
00:04:36,180 --> 00:04:40,560
astronomical object of what did you like

95
00:04:38,639 --> 00:04:42,000
and you're a bit of fan of Neptune

96
00:04:40,560 --> 00:04:43,560
because of it's sort of bluish

97
00:04:42,000 --> 00:04:45,420
atmosphere i believe is caused by the

98
00:04:43,560 --> 00:04:47,100
methane is that correct that is correct

99
00:04:45,420 --> 00:04:49,199
although I have to say since I had a

100
00:04:47,100 --> 00:04:51,120

chance to go to South Africa I'm partial

101

00:04:49,199 --> 00:04:52,800

to the tarantula nebula because it

102

00:04:51,120 --> 00:04:54,720

actually looks like a Trench Luthor

103

00:04:52,800 --> 00:04:57,810

small telescope but that's just kind of

104

00:04:54,720 --> 00:05:00,570

creepy and awesome Wow and it was easy

105

00:04:57,810 --> 00:05:02,550

to find in that in the southern sky the

106

00:05:00,569 --> 00:05:05,370

tarantula nebula is fairly easy to find

107

00:05:02,550 --> 00:05:06,900

it's easy if you have a telescope that

108

00:05:05,370 --> 00:05:09,269

has a computer which I was lucky enough

109

00:05:06,899 --> 00:05:12,599

to use but if you know your bright stars

110

00:05:09,269 --> 00:05:15,449

you can star hop to it it's it's bright

111

00:05:12,600 --> 00:05:17,370

it's easy to find now I was looking I

112

00:05:15,449 --> 00:05:19,469

love watching Discovery Channel stuff on

113

00:05:17,370 --> 00:05:21,660

on galaxies and things like that and

114

00:05:19,470 --> 00:05:23,190

astronomy of the universe shows like

115
00:05:21,660 --> 00:05:24,660
that do you get any airtime on that do

116
00:05:23,189 --> 00:05:26,699
they become along to you and give you a

117
00:05:24,660 --> 00:05:28,320
bit of a chat I've actually got to be on

118
00:05:26,699 --> 00:05:31,050
three different episodes of the universe

119
00:05:28,319 --> 00:05:32,909
and I did one episode of Nova but I

120
00:05:31,050 --> 00:05:34,980
think everything but my eyeball and

121
00:05:32,910 --> 00:05:36,840
ended up on the cutting room floor so

122
00:05:34,980 --> 00:05:39,390
that was a bit of sadness and of course

123
00:05:36,839 --> 00:05:40,709
you want to get like a 15 30 second grab

124
00:05:39,389 --> 00:05:43,500
at the most and you've got to explain

125
00:05:40,709 --> 00:05:45,269
quite complicated concepts sometimes so

126
00:05:43,500 --> 00:05:48,779
how do you go of that because you've

127
00:05:45,269 --> 00:05:50,279
obviously studied where more is more if

128
00:05:48,779 --> 00:05:51,689
you're writing an essay and it's a

129
00:05:50,279 --> 00:05:54,119
complete opposite of that with a media

130
00:05:51,689 --> 00:05:54,959
grab the nice thing about being a

131
00:05:54,120 --> 00:05:56,788
university

132
00:05:54,959 --> 00:05:59,250
fessor is I've had lots of students ask

133
00:05:56,788 --> 00:06:00,568
me lots of random questions off topic

134
00:05:59,250 --> 00:06:02,430
that I've learned how to answer quickly

135
00:06:00,569 --> 00:06:05,280
so I could go back where we went where

136
00:06:02,430 --> 00:06:06,959
we meant to be going so I use the same

137
00:06:05,279 --> 00:06:08,698
tactic with the news people that I use

138
00:06:06,959 --> 00:06:10,288
with students who are asking off topic

139
00:06:08,699 --> 00:06:12,060
questions that I still want to answer oh

140
00:06:10,288 --> 00:06:13,259
okay and what do you reckon the

141
00:06:12,060 --> 00:06:15,089
strangest thing I've asked you because

142
00:06:13,259 --> 00:06:17,310
like TV has some really weird ideas

143

00:06:15,089 --> 00:06:19,288
sometimes I mind you you haven't

144
00:06:17,310 --> 00:06:22,800
finished this any of you get I think

145
00:06:19,288 --> 00:06:24,389
talking about the energy involved and

146
00:06:22,800 --> 00:06:26,990
the number of atoms in the human body

147
00:06:24,389 --> 00:06:30,418
for transporter beams and discussing

148
00:06:26,990 --> 00:06:33,240
what would actually happen if you tried

149
00:06:30,418 --> 00:06:35,279
to transport someone in terms of the

150
00:06:33,240 --> 00:06:37,500
energy necessary to pull apart all the

151
00:06:35,279 --> 00:06:40,319
atoms in the human body and then leaving

152
00:06:37,500 --> 00:06:43,348
behind vacuum when you removed the human

153
00:06:40,319 --> 00:06:45,300
body obviously doing the calculations

154
00:06:43,348 --> 00:06:47,339
was crazy yeah because you could copy

155
00:06:45,300 --> 00:06:48,780
the person to another place but to get

156
00:06:47,339 --> 00:06:50,459
this person to leave this place and go

157
00:06:48,779 --> 00:06:53,908

to another place that's a different

158

00:06:50,459 --> 00:06:55,560

concept isn't it yeah it 3d printing is

159

00:06:53,908 --> 00:06:57,899

much easier thing to do than to actually

160

00:06:55,560 --> 00:07:00,149

transport a living breathing human being

161

00:06:57,899 --> 00:07:01,679

wholesale to another place well I'll

162

00:07:00,149 --> 00:07:03,750

stop the project I was working on with

163

00:07:01,680 --> 00:07:04,829

that I had my hollowed-out volcano where

164

00:07:03,750 --> 00:07:06,720

I was getting really stuck into that

165

00:07:04,829 --> 00:07:07,620

concept and actually there we go i

166

00:07:06,720 --> 00:07:09,150

thought we met again that's a nice

167

00:07:07,620 --> 00:07:11,280

little punctuation thing you go well the

168

00:07:09,149 --> 00:07:14,250

rings of Saturn and that would get your

169

00:07:11,279 --> 00:07:17,279

students attention that would work mmm

170

00:07:14,250 --> 00:07:18,598

now somehow dense is the Sun now it's a

171

00:07:17,279 --> 00:07:20,459

hot thing frankly we don't want to go

172
00:07:18,598 --> 00:07:21,959
near it but how dense is that I was

173
00:07:20,459 --> 00:07:24,299
reading that it's only like a hundred

174
00:07:21,959 --> 00:07:25,348
times more dense than water and have I

175
00:07:24,300 --> 00:07:27,270
been drinking everything it was that

176
00:07:25,348 --> 00:07:29,279
correct it all depends on what depth

177
00:07:27,269 --> 00:07:31,918
you're at if you're near the surface of

178
00:07:29,279 --> 00:07:34,408
the Sun it's actually just vapor but as

179
00:07:31,918 --> 00:07:36,299
you go deeper and deeper and deeper then

180
00:07:34,408 --> 00:07:38,158
it gets a lot more than a hundred times

181
00:07:36,300 --> 00:07:40,259
denser than water it gets thousands and

182
00:07:38,158 --> 00:07:41,908
thousands and thousands and this is why

183
00:07:40,259 --> 00:07:45,509
we're able to have nuclear reactions in

184
00:07:41,908 --> 00:07:48,658
the core of the Sun so there's a density

185
00:07:45,509 --> 00:07:51,300
pressure temperature gradient as you go

186
00:07:48,658 --> 00:07:54,449
through the Sun and the further down you

187
00:07:51,300 --> 00:07:55,680
go the more pressure you're going to

188
00:07:54,449 --> 00:07:58,288
experience because it's trying to

189
00:07:55,680 --> 00:08:01,019
support all that mass that's above you

190
00:07:58,288 --> 00:08:02,939
and what is the largest style that we

191
00:08:01,019 --> 00:08:05,459
know of is it and I hope I get the

192
00:08:02,939 --> 00:08:07,769
pronunciation right is it beetle juice

193
00:08:05,459 --> 00:08:08,699
or beetle Gail's because I it looks like

194
00:08:07,769 --> 00:08:10,740
bilges like

195
00:08:08,699 --> 00:08:12,509
each Ike is God but it's not pronounced

196
00:08:10,740 --> 00:08:14,879
that way well it's pronounced either

197
00:08:12,509 --> 00:08:17,279
baitul fatal juice or Beetlejuice

198
00:08:14,879 --> 00:08:19,649
orbital guys depending on which

199
00:08:17,279 --> 00:08:22,649
dictionary you're using and that's a

200

00:08:19,649 --> 00:08:24,839
really nearby giant star that could go

201
00:08:22,649 --> 00:08:26,310
supernova in our lifetimes it's one of

202
00:08:24,839 --> 00:08:28,739
the two stars most likely to go

203
00:08:26,310 --> 00:08:30,839
supernova that we watch but it's not the

204
00:08:28,740 --> 00:08:32,519
biggest star we've seen there's actually

205
00:08:30,839 --> 00:08:34,350
a big star we've seen is something

206
00:08:32,519 --> 00:08:35,879
that's always a record that's always

207
00:08:34,350 --> 00:08:38,610
getting broken there's a certain

208
00:08:35,879 --> 00:08:41,279
physical limit up around a hundred times

209
00:08:38,610 --> 00:08:43,350
the mass of the Sun where material that

210
00:08:41,279 --> 00:08:45,600
tries to fall on to the forming star is

211
00:08:43,350 --> 00:08:48,779
getting pushed off by light from the

212
00:08:45,600 --> 00:08:51,210
forming start almost the same rate so

213
00:08:48,779 --> 00:08:52,980
there's brief moments where things might

214
00:08:51,210 --> 00:08:54,750

be bigger than other things for a few

215

00:08:52,980 --> 00:08:58,019

million years which in cosmology is a

216

00:08:54,750 --> 00:09:00,179

brief period in time but a pistol star

217

00:08:58,019 --> 00:09:03,029

is one of the biggest wow great 92

218

00:09:00,179 --> 00:09:04,439

casino at least it's not XJ 37 dash

219

00:09:03,029 --> 00:09:05,399

because that can be I know you've got to

220

00:09:04,440 --> 00:09:06,840

have that because you're gonna run our

221

00:09:05,399 --> 00:09:09,209

names eventually but numbers just don't

222

00:09:06,840 --> 00:09:10,920

do it do they really know astronomers

223

00:09:09,210 --> 00:09:12,990

are kind of bad about how we name things

224

00:09:10,919 --> 00:09:16,979

that we give things names that are

225

00:09:12,990 --> 00:09:19,620

letters numbers HDH dead you name it

226

00:09:16,980 --> 00:09:21,240

we've probably used it at some point now

227

00:09:19,620 --> 00:09:23,940

look the skeptics guard the universe and

228

00:09:21,240 --> 00:09:26,430

George Arab have both got really really

229
00:09:23,940 --> 00:09:28,950
really angry with recent movies and

230
00:09:26,429 --> 00:09:30,659
their scientific inaccuracies there's a

231
00:09:28,950 --> 00:09:32,100
few we can think of obviously what is

232
00:09:30,659 --> 00:09:34,230
the one that really annoys you is an

233
00:09:32,100 --> 00:09:35,399
astronomer like you know you're looking

234
00:09:34,230 --> 00:09:37,200
at the wrong thing and they're calling

235
00:09:35,399 --> 00:09:39,029
it the wrong thing or the star fields

236
00:09:37,200 --> 00:09:40,590
incorrect on the Titanic movie which

237
00:09:39,029 --> 00:09:41,850
I've got to say that's that that's a

238
00:09:40,590 --> 00:09:43,830
really nitpicking if you're going look

239
00:09:41,850 --> 00:09:45,480
the stars weren't doing on the ok fine

240
00:09:43,830 --> 00:09:47,220
yummy here what's the one that really

241
00:09:45,480 --> 00:09:48,810
annoys you that almost had you standing

242
00:09:47,220 --> 00:09:51,690
up in the cinema going this must not

243
00:09:48,809 --> 00:09:54,299
stand that this is such a petty annoyed

244
00:09:51,690 --> 00:09:57,770
but it drives me crazy I'll of iron man

245
00:09:54,299 --> 00:10:00,449
but iron man would get mushed into a

246
00:09:57,769 --> 00:10:03,750
million little tiny bits of iron man

247
00:10:00,450 --> 00:10:06,120
every time he lands high speed I I when

248
00:10:03,750 --> 00:10:07,740
I was a little kid building model

249
00:10:06,120 --> 00:10:09,210
rockets made the mistake of launching an

250
00:10:07,740 --> 00:10:11,970
earthworm earthworms don't have

251
00:10:09,210 --> 00:10:14,990
exoskeletons earthworms return to Earth

252
00:10:11,970 --> 00:10:17,360
in a very bad state

253
00:10:14,990 --> 00:10:19,070
and because I'm I'm man doesn't have the

254
00:10:17,360 --> 00:10:20,480
sort of a forcefield thing going on does

255
00:10:19,070 --> 00:10:21,890
he just kind of got the suit there's no

256
00:10:20,480 --> 00:10:24,080
force field that supposedly

257

00:10:21,889 --> 00:10:26,360
counteracting gravity is there right so

258
00:10:24,080 --> 00:10:27,740
so Tony Stark every time he did one of

259
00:10:26,360 --> 00:10:30,560
the sudden stops he wouldn't just

260
00:10:27,740 --> 00:10:33,589
complain he would die brutally spine

261
00:10:30,559 --> 00:10:36,739
compressed bones breaking skin going to

262
00:10:33,589 --> 00:10:38,959
mush yet he's fine so apparently

263
00:10:36,740 --> 00:10:40,549
conservation of momentum doesn't apply

264
00:10:38,958 --> 00:10:42,829
when you have one of those neat little

265
00:10:40,549 --> 00:10:44,479
nuclear devices in your chest and how do

266
00:10:42,830 --> 00:10:46,520
you find tam here how many times have

267
00:10:44,480 --> 00:10:49,159
you been to it's an amazing place las

268
00:10:46,519 --> 00:10:52,338
vegas i got to say the drinks are really

269
00:10:49,159 --> 00:10:54,379
cheap and in australia we the cocktail

270
00:10:52,339 --> 00:10:57,770
waitress thing we have that but it's not

271
00:10:54,379 --> 00:10:59,330

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

272

00:10:57,769 --> 00:11:00,769
like all right you're dressed like a

273

00:10:59,330 --> 00:11:03,200
cocktail waitress I guess that's just

274

00:11:00,769 --> 00:11:05,319
I'm in Las Vegas it's a it's it's a bit

275

00:11:03,200 --> 00:11:08,420
of a sad sir illness to it doesn't it I

276

00:11:05,320 --> 00:11:10,040
have to admit Las Vegas is one of those

277

00:11:08,419 --> 00:11:13,250
cities that just leaves me confused

278

00:11:10,039 --> 00:11:15,110
flying here from Dallas I'm flying over

279

00:11:13,250 --> 00:11:18,139
the canyon lands of America which are

280

00:11:15,110 --> 00:11:20,899
absolutely stunning absolutely empty no

281

00:11:18,139 --> 00:11:24,649
roads no trails and then suddenly you

282

00:11:20,899 --> 00:11:28,339
come over a set of weird formations and

283

00:11:24,649 --> 00:11:32,110
there's this giant sprawling plague of

284

00:11:28,339 --> 00:11:36,020
buildings and and somehow this whole

285

00:11:32,110 --> 00:11:39,110
island of weirdness and anything goes

286
00:11:36,019 --> 00:11:41,328
that Springs out in the desert gives

287
00:11:39,110 --> 00:11:43,610
people a certain freedom that you don't

288
00:11:41,328 --> 00:11:45,739
quite encounter anywhere else and it's

289
00:11:43,610 --> 00:11:48,259
just like but there's so much cool

290
00:11:45,740 --> 00:11:50,028
geology near here now they'd much rather

291
00:11:48,259 --> 00:11:52,819
go to the Luxor and look at the fake

292
00:11:50,028 --> 00:11:54,649
pyramid and if you could build a fake

293
00:11:52,820 --> 00:11:56,870
something like say you okay it's the

294
00:11:54,649 --> 00:11:59,389
Pamela gay resort hotel and you were

295
00:11:56,870 --> 00:12:02,360
going to build something after another

296
00:11:59,389 --> 00:12:04,100
by famous an asteroid or a great feature

297
00:12:02,360 --> 00:12:07,899
or an astronomical feature what would it

298
00:12:04,100 --> 00:12:12,170
be what shape would your hotel resort be

299
00:12:07,899 --> 00:12:15,440
so I I have to say that when I was a

300
00:12:12,169 --> 00:12:17,599
dorky teenager I attended Space Camp and

301
00:12:15,440 --> 00:12:19,550
they had these dormitories there that

302
00:12:17,600 --> 00:12:22,070
were modeled after like some weird

303
00:12:19,549 --> 00:12:25,669
vision of Starfleet Academy or something

304
00:12:22,070 --> 00:12:26,550
and everything was just kind of NASA

305
00:12:25,669 --> 00:12:30,479
bunk

306
00:12:26,549 --> 00:12:33,719
bed cross ikea done with stainless steel

307
00:12:30,480 --> 00:12:38,070
and it was kind of awesome and I can

308
00:12:33,720 --> 00:12:39,540
imagine building a giant space park for

309
00:12:38,070 --> 00:12:42,180
people training for suborbital

310
00:12:39,539 --> 00:12:44,250
commercial spaceflight so if I could

311
00:12:42,179 --> 00:12:46,019
somehow be involved in one of those

312
00:12:44,250 --> 00:12:49,078
resorts for people getting ready for

313
00:12:46,019 --> 00:12:50,759
launch that would be kind of awesome and

314

00:12:49,078 --> 00:12:52,679
do you think you could have a you have

315
00:12:50,759 --> 00:12:54,208
the ticket to go into space I don't

316
00:12:52,679 --> 00:12:57,389
think I could use the space toilet I

317
00:12:54,208 --> 00:12:58,559
don't think I could you know that I mean

318
00:12:57,389 --> 00:13:00,208
they say you're not a real astronaut

319
00:12:58,559 --> 00:13:01,349
until you've done that I don't think I

320
00:13:00,208 --> 00:13:04,799
could get it right and if you get it

321
00:13:01,350 --> 00:13:06,329
wrong everybody pays one of the more

322
00:13:04,799 --> 00:13:08,609
disturbing things they realized last

323
00:13:06,328 --> 00:13:09,958
year while attending a meeting is folks

324
00:13:08,610 --> 00:13:11,550
who go up into space for suborbital

325
00:13:09,958 --> 00:13:14,338
spaceflight are all going to be in

326
00:13:11,549 --> 00:13:17,250
spacesuits there's no bathroom there is

327
00:13:14,339 --> 00:13:19,920
a diaper or other form of waste removal

328
00:13:17,250 --> 00:13:22,700

system in the spacesuit but these are

329

00:13:19,919 --> 00:13:27,028

space suits that are used for many years

330

00:13:22,700 --> 00:13:29,519

by many people wow this is have a hell

331

00:13:27,028 --> 00:13:31,528

of a great dry cleaner that that's three

332

00:13:29,519 --> 00:13:34,769

day turnaround I'm just thinking I don't

333

00:13:31,528 --> 00:13:36,659

like using bowling shoes so I I'm

334

00:13:34,769 --> 00:13:38,789

thinking I need to be rich enough to buy

335

00:13:36,659 --> 00:13:40,708

my own space suit before I'm willing to

336

00:13:38,789 --> 00:13:41,939

go into space well we'll even just to

337

00:13:40,708 --> 00:13:44,369

wander around Las Vegas because they got

338

00:13:41,940 --> 00:13:46,079

cooling units in the way you go you know

339

00:13:44,370 --> 00:13:47,578

cooling units are great you can use them

340

00:13:46,078 --> 00:13:50,519

for so many different things you can use

341

00:13:47,578 --> 00:13:53,399

them for your space you could be offered

342

00:13:50,519 --> 00:13:55,889

to be his call you well what I love is I

343
00:13:53,399 --> 00:13:58,980
met a stormtrooper in the 500 and first

344
00:13:55,889 --> 00:14:02,009
two had got military surplus cooling

345
00:13:58,980 --> 00:14:04,370
unit from a jet pilot and he was nice

346
00:14:02,009 --> 00:14:06,659
and cool in his a stormtrooper costume

347
00:14:04,370 --> 00:14:09,179
look let's talk about some anomalies

348
00:14:06,659 --> 00:14:11,250
here now on William Shatner's a weird or

349
00:14:09,179 --> 00:14:13,259
what which i think is the go-to program

350
00:14:11,250 --> 00:14:15,659
for any factual science you would need

351
00:14:13,259 --> 00:14:16,799
and in fact they recut it for discovery

352
00:14:15,659 --> 00:14:18,569
channel so it's just weird or what

353
00:14:16,799 --> 00:14:20,099
without the William Shatner just didn't

354
00:14:18,570 --> 00:14:22,020
have the same ring to it without his

355
00:14:20,100 --> 00:14:23,220
voice anyway and he was inside his house

356
00:14:22,019 --> 00:14:25,439
and of course that was his real house

357
00:14:23,220 --> 00:14:28,110
obviously imagine you watched the show

358
00:14:25,440 --> 00:14:30,980
quite a bit I have to admit I don't have

359
00:14:28,110 --> 00:14:33,629
that much time for TV that isn't on hulu

360
00:14:30,980 --> 00:14:35,480
okay well he was looking at one of the

361
00:14:33,629 --> 00:14:38,189
great theories that these large

362
00:14:35,480 --> 00:14:39,750
earth-sized spaceships are zipping in

363
00:14:38,190 --> 00:14:42,600
and out of the Sun for

364
00:14:39,750 --> 00:14:45,059
reason and why do you think that might

365
00:14:42,600 --> 00:14:47,490
be and would anyone not be telling us

366
00:14:45,059 --> 00:14:49,589
about it if it was happening there is

367
00:14:47,490 --> 00:14:54,899
this spacecraft called solar dynamic

368
00:14:49,590 --> 00:14:57,690
orbiter s do it's taking 320 gigabytes

369
00:14:54,899 --> 00:15:00,840
of data of the Sun every single day

370
00:14:57,690 --> 00:15:03,270
there's many many images per minute

371

00:15:00,840 --> 00:15:05,160
being taken of the Sun these things have

372
00:15:03,269 --> 00:15:07,409
such high resolution that we've image

373
00:15:05,159 --> 00:15:10,289
tornadoes of plasma moving across the

374
00:15:07,409 --> 00:15:12,240
surface of the Sun we haven't seen these

375
00:15:10,289 --> 00:15:14,399
spacecraft i'm going to say they're not

376
00:15:12,240 --> 00:15:15,990
there well there you go that's the end

377
00:15:14,399 --> 00:15:18,629
of that one and i'll have a few words to

378
00:15:15,990 --> 00:15:20,820
say to build when i see him actually is

379
00:15:18,629 --> 00:15:22,409
there a theory or an anomaly that people

380
00:15:20,820 --> 00:15:25,230
keep bringing up with you that kind of

381
00:15:22,409 --> 00:15:27,240
annoys you as a scientist I'm much the

382
00:15:25,230 --> 00:15:30,000
way as homeopathy annoys a lot of

383
00:15:27,240 --> 00:15:33,210
doctors the the idea that there is a

384
00:15:30,000 --> 00:15:37,289
large object whether it be a additional

385
00:15:33,210 --> 00:15:39,780

planet a solar type object star brown

386

00:15:37,289 --> 00:15:41,159

dwarf pick pick your poison heading

387

00:15:39,779 --> 00:15:44,990

towards the Earth on a collision course

388

00:15:41,159 --> 00:15:49,379

to hit us in December bothers me because

389

00:15:44,990 --> 00:15:51,899

we're capable of spotting objects five

390

00:15:49,379 --> 00:15:55,830

miles across at the distance of the

391

00:15:51,899 --> 00:15:57,990

planet Pluto we would have been able to

392

00:15:55,830 --> 00:16:00,780

see such an object with normal

393

00:15:57,990 --> 00:16:02,879

telescopes and a whole lot of work if it

394

00:16:00,779 --> 00:16:04,350

was on a collision course to hit us by

395

00:16:02,879 --> 00:16:06,360

then because it would already be past

396

00:16:04,350 --> 00:16:08,850

Jupiter I'm what if the planet has an

397

00:16:06,360 --> 00:16:10,440

extremely wide orbit like millions of

398

00:16:08,850 --> 00:16:12,990

years or whatever would be still be

399

00:16:10,440 --> 00:16:14,550

still becoming we might not see if it

400
00:16:12,990 --> 00:16:15,899
was going to hit us in December we'd

401
00:16:14,549 --> 00:16:17,279
already be able to see it because it

402
00:16:15,899 --> 00:16:18,959
would have to be about as close as

403
00:16:17,279 --> 00:16:20,610
Jupiter if not close okay yeah and

404
00:16:18,960 --> 00:16:22,200
you're gonna notice that you're going to

405
00:16:20,610 --> 00:16:23,970
notice that so why do you think people

406
00:16:22,200 --> 00:16:25,259
keep pushing that because that's a

407
00:16:23,970 --> 00:16:26,820
pretty easy one to disprove you've done

408
00:16:25,259 --> 00:16:28,379
up there in like under 30 seconds I

409
00:16:26,820 --> 00:16:30,960
could use as a grab on discovery quite

410
00:16:28,379 --> 00:16:32,730
easily so yeah why don't people them

411
00:16:30,960 --> 00:16:33,810
because I mean I guess it's people

412
00:16:32,730 --> 00:16:35,430
thinking that there's withheld

413
00:16:33,809 --> 00:16:37,229
information I guess that's the problem

414
00:16:35,429 --> 00:16:39,088
you got open I don't think most people

415
00:16:37,230 --> 00:16:41,339
understand how powerful the average

416
00:16:39,089 --> 00:16:44,339
backyard telescope is the the other day

417
00:16:41,339 --> 00:16:47,280
I was watching some people react to a

418
00:16:44,339 --> 00:16:49,720
video of Saturn being shown through just

419
00:16:47,279 --> 00:16:51,429
a backyard 8 inch telescope

420
00:16:49,720 --> 00:16:53,740
they're like wow I didn't know you could

421
00:16:51,429 --> 00:16:55,149
see the Rings and and they forget that

422
00:16:53,740 --> 00:16:57,448
Galileo is working with a two inch

423
00:16:55,149 --> 00:16:59,860
telescope and he saw the rings of Saturn

424
00:16:57,448 --> 00:17:01,419
when you underestimate the power of a

425
00:16:59,860 --> 00:17:04,179
backyard telescope it's easy to imagine

426
00:17:01,419 --> 00:17:05,619
that NASA which actually doesn't control

427
00:17:04,179 --> 00:17:08,439
the telescope's National Science

428

00:17:05,619 --> 00:17:10,688
Foundation does it's easy to imagine

429
00:17:08,439 --> 00:17:12,548
that all these organizations have all

430
00:17:10,689 --> 00:17:15,279
these conspiracies going on because they

431
00:17:12,548 --> 00:17:18,400
control the information know most of the

432
00:17:15,279 --> 00:17:21,009
information in terms of asteroids what's

433
00:17:18,400 --> 00:17:23,679
going on with the planets these things

434
00:17:21,009 --> 00:17:25,929
are getting monitored by a bunch of

435
00:17:23,679 --> 00:17:27,788
mostly great guys and a few great gals

436
00:17:25,929 --> 00:17:32,048
working in their backyards and their

437
00:17:27,788 --> 00:17:34,240
driveways and their backfield telescopes

438
00:17:32,048 --> 00:17:35,558
they're the ones for spotting new storms

439
00:17:34,240 --> 00:17:37,419
on Saturn they're the ones who are

440
00:17:35,558 --> 00:17:39,490
spotting the dust storms on Mars they're

441
00:17:37,419 --> 00:17:42,580
the ones who are doing all of this great

442
00:17:39,490 --> 00:17:44,349

planetary work and they have internet

443

00:17:42,579 --> 00:17:45,849

they have twitter they have facebook and

444

00:17:44,349 --> 00:17:47,589

they're not part of NASA they're not

445

00:17:45,849 --> 00:17:49,418

part of the National Science Foundation

446

00:17:47,589 --> 00:17:53,470

and they're going to share anything they

447

00:17:49,419 --> 00:17:54,669

find oh there goes another one you're

448

00:17:53,470 --> 00:17:57,250

blowing away a lot of theories here

449

00:17:54,669 --> 00:17:59,559

today now one of the things about your

450

00:17:57,250 --> 00:18:01,390

study is you your field of study is it

451

00:17:59,558 --> 00:18:02,798

requires love discipline not just in so

452

00:18:01,390 --> 00:18:05,049

if I was studying and learning things

453

00:18:02,798 --> 00:18:07,119

but a lot of patience a lot of sitting

454

00:18:05,048 --> 00:18:08,710

around order sifting through data is

455

00:18:07,119 --> 00:18:10,928

there something that you wish you had

456

00:18:08,710 --> 00:18:12,730

the discipline to do even more as part

457
00:18:10,929 --> 00:18:14,259
of your of your job because I would

458
00:18:12,730 --> 00:18:16,089
imagine that sometime you know you might

459
00:18:14,259 --> 00:18:17,440
want to go to bed early or something

460
00:18:16,089 --> 00:18:21,849
like that and you've got to sift through

461
00:18:17,440 --> 00:18:24,460
this data data the great weakness i have

462
00:18:21,849 --> 00:18:26,709
is proof reading things i just want to

463
00:18:24,460 --> 00:18:29,048
do the work i just want to get to the

464
00:18:26,710 --> 00:18:31,960
result i want to share it and present it

465
00:18:29,048 --> 00:18:33,849
but the time necessary to write the

466
00:18:31,960 --> 00:18:35,829
journal article that has all of the

467
00:18:33,849 --> 00:18:37,149
references to all of the literature to

468
00:18:35,829 --> 00:18:40,058
all the things that people have said in

469
00:18:37,150 --> 00:18:42,490
the past I hate it I hate it I would

470
00:18:40,058 --> 00:18:44,710
note in footnoting hey I I hate foot

471
00:18:42,490 --> 00:18:46,150
netting it's a required part of science

472
00:18:44,710 --> 00:18:48,130
and if you don't have enough references

473
00:18:46,150 --> 00:18:50,169
in your article it will be rejected I

474
00:18:48,130 --> 00:18:53,230
have learned this so it's not like

475
00:18:50,169 --> 00:18:55,390
Wikipedia no no sadly peer review

476
00:18:53,230 --> 00:18:58,298
requires you to actually cite who

477
00:18:55,390 --> 00:19:00,280
originated the ideas how the idea is

478
00:18:58,298 --> 00:19:02,710
evolved over time how what you're doing

479
00:19:00,279 --> 00:19:03,470
builds on the established ideas you

480
00:19:02,710 --> 00:19:04,940
can't just say

481
00:19:03,470 --> 00:19:08,419
look shiny you have to say you look

482
00:19:04,940 --> 00:19:10,610
shiny in context which is almost the

483
00:19:08,419 --> 00:19:11,900
it's the direct opposite of the creative

484
00:19:10,609 --> 00:19:13,428
process because with the creative

485

00:19:11,900 --> 00:19:15,530
process year you can build on stuff from

486
00:19:13,429 --> 00:19:17,120
the past but if it works it works if

487
00:19:15,529 --> 00:19:18,649
it's funny it's funny to a certain

488
00:19:17,119 --> 00:19:20,899
amount of people and you don't have to

489
00:19:18,650 --> 00:19:23,409
prove why it's funny that's

490
00:19:20,900 --> 00:19:26,570
unfortunately only true if you work in

491
00:19:23,409 --> 00:19:28,400
popular culture even academic artists

492
00:19:26,569 --> 00:19:30,859
are cursed with having to footnote and

493
00:19:28,400 --> 00:19:34,370
describe the intellectual creative

494
00:19:30,859 --> 00:19:36,678
legacy of their inspiration and what

495
00:19:34,369 --> 00:19:41,329
periods and things influence their work

496
00:19:36,679 --> 00:19:43,130
there's nothing that takes the art out

497
00:19:41,329 --> 00:19:45,439
of art more than reading someone's art

498
00:19:43,130 --> 00:19:47,929
master's thesis yeah whenever I hear the

499
00:19:45,440 --> 00:19:49,159

phrase fine arts that's I kind of run

500

00:19:47,929 --> 00:19:50,809

because that means none of these people

501

00:19:49,159 --> 00:19:52,039

are really good at writing essays and

502

00:19:50,808 --> 00:19:53,029

backing their stuff up so I'm not going

503

00:19:52,038 --> 00:19:54,769

to get an argument with them and

504

00:19:53,029 --> 00:19:57,109

scientists are even worse you guys can

505

00:19:54,769 --> 00:19:58,519

argue to the cows come home well at

506

00:19:57,109 --> 00:20:00,649

least we're trying to argue with facts

507

00:19:58,519 --> 00:20:02,750

rather than opinion EU you can't win

508

00:20:00,650 --> 00:20:04,340

when dealing with artists arguing over

509

00:20:02,750 --> 00:20:06,740

the shade of green I walked into the

510

00:20:04,339 --> 00:20:10,519

document once died laughing and they

511

00:20:06,740 --> 00:20:13,150

can't reach well it's it's it's funny

512

00:20:10,519 --> 00:20:16,668

when cultures collide I i was literally

513

00:20:13,150 --> 00:20:19,788

listening to two art majors argue over

514
00:20:16,669 --> 00:20:25,850
how to mix the perfect shade of green

515
00:20:19,788 --> 00:20:28,400
and it was a brilliant thing to watch

516
00:20:25,849 --> 00:20:30,230
and I'm thinking some sort of altered

517
00:20:28,400 --> 00:20:32,720
state would have made it even better but

518
00:20:30,230 --> 00:20:34,579
now I was completely sober and I just

519
00:20:32,720 --> 00:20:36,769
died laughing because that's so

520
00:20:34,579 --> 00:20:38,629
subjective in the way my eye perceives

521
00:20:36,769 --> 00:20:39,769
green could even be different physically

522
00:20:38,630 --> 00:20:41,390
let alone what I actually think

523
00:20:39,769 --> 00:20:44,298
emotionally about the color that going

524
00:20:41,390 --> 00:20:46,909
to get and and yet there are people who

525
00:20:44,298 --> 00:20:50,869
this is their academic study so that's

526
00:20:46,909 --> 00:20:52,700
what they do look being at the skeptical

527
00:20:50,869 --> 00:20:54,048
movement is is an outreach movement

528
00:20:52,700 --> 00:20:55,490
trying to get more people involved with

529
00:20:54,048 --> 00:20:57,168
it but I reckon it is the key to getting

530
00:20:55,490 --> 00:20:59,419
more people involved because whenever I

531
00:20:57,169 --> 00:21:01,549
think of science I think of hard work I

532
00:20:59,419 --> 00:21:04,100
think quadratics which I was terrible at

533
00:21:01,548 --> 00:21:06,470
at school I think of physics which

534
00:21:04,099 --> 00:21:08,480
physics to me is just really hard maths

535
00:21:06,470 --> 00:21:10,038
I know it has a practical thing I push

536
00:21:08,480 --> 00:21:12,230
the bell as some sort of thing going on

537
00:21:10,038 --> 00:21:14,509
there but you know the maths to explain

538
00:21:12,230 --> 00:21:15,180
that I really couldn't stay awake for so

539
00:21:14,509 --> 00:21:17,069
how is

540
00:21:15,180 --> 00:21:18,150
getting everybody into it gonna be a

541
00:21:17,069 --> 00:21:20,279
little bit easy we're going to make it

542

00:21:18,150 --> 00:21:22,350
sexy or interesting or will he make it

543
00:21:20,279 --> 00:21:23,700
compelling for them this is actually at

544
00:21:22,349 --> 00:21:25,859
the heart of what I do with my career I

545
00:21:23,700 --> 00:21:28,110
I work in a field called citizen science

546
00:21:25,859 --> 00:21:29,639
so to give you an example the lunar

547
00:21:28,109 --> 00:21:31,289
reconnaissance orbiter is this little

548
00:21:29,640 --> 00:21:33,180
tiny spacecraft that's going round and

549
00:21:31,289 --> 00:21:35,579
round the moon and it's taking images at

550
00:21:33,180 --> 00:21:37,710
such a high resolution that if your

551
00:21:35,579 --> 00:21:39,240
standard basketball player lay down on

552
00:21:37,710 --> 00:21:41,069
the surface of the Moon and assume the

553
00:21:39,240 --> 00:21:43,620
snow angel position with his arms and

554
00:21:41,069 --> 00:21:46,289
legs out you could actually see him as a

555
00:21:43,619 --> 00:21:48,509
speck in the images what does that mean

556
00:21:46,289 --> 00:21:50,220

we've got all the images of the Apollo

557

00:21:48,509 --> 00:21:52,470

missions and so we can prove that we

558

00:21:50,220 --> 00:21:54,299

went there we can see actually the

559

00:21:52,470 --> 00:21:56,430

trails left behind by the astronauts

560

00:21:54,299 --> 00:21:58,139

Rovers by their feet as they walked

561

00:21:56,430 --> 00:21:59,730

around we can see the missions

562

00:21:58,140 --> 00:22:02,250

themselves where the lem's got left

563

00:21:59,730 --> 00:22:03,839

behind is the resolution high after you

564

00:22:02,250 --> 00:22:05,309

can see the photos of the astronauts

565

00:22:03,839 --> 00:22:06,269

left of their families on the moon I

566

00:22:05,309 --> 00:22:08,129

think that's an interesting one because

567

00:22:06,269 --> 00:22:10,259

they put them in a it has sort of a glad

568

00:22:08,130 --> 00:22:11,910

wrap mylar bag and put them there and I

569

00:22:10,259 --> 00:22:13,529

mentioned that still be there although

570

00:22:11,910 --> 00:22:15,029

the only thing I thought was if it was

571
00:22:13,529 --> 00:22:16,649
close to where the blast was from the

572
00:22:15,029 --> 00:22:18,809
rocket that could have been blown away

573
00:22:16,650 --> 00:22:20,370
but yeah that's it immediately that's

574
00:22:18,809 --> 00:22:22,259
what I thought oh well the resolution on

575
00:22:20,369 --> 00:22:24,359
these images about half a half a meter

576
00:22:22,259 --> 00:22:26,490
per pixel so those are a little bit too

577
00:22:24,359 --> 00:22:28,500
small to be seen you'll get there well

578
00:22:26,490 --> 00:22:30,539
we'll get there and especially when we

579
00:22:28,500 --> 00:22:33,210
have Rovers starting to roam around and

580
00:22:30,539 --> 00:22:34,529
reach Splore the moon in the future now

581
00:22:33,210 --> 00:22:36,809
what's awesome with the Lunar

582
00:22:34,529 --> 00:22:38,460
Reconnaissance orbiters it's returning

583
00:22:36,809 --> 00:22:40,710
all this data that we're going to

584
00:22:38,460 --> 00:22:42,450
eventually use to figure out where do we

585
00:22:40,710 --> 00:22:44,789
want to put communication stations where

586
00:22:42,450 --> 00:22:46,710
are the safe places to build but there's

587
00:22:44,789 --> 00:22:50,099
so much data coming back that the

588
00:22:46,710 --> 00:22:52,860
scientists don't have time to handle all

589
00:22:50,099 --> 00:22:54,569
the data on their own so they tried

590
00:22:52,859 --> 00:22:56,429
programming computers do things like

591
00:22:54,569 --> 00:22:58,439
identify where craters are identify

592
00:22:56,430 --> 00:23:00,500
where Boulder fields art and we learned

593
00:22:58,440 --> 00:23:02,820
that computers are kind of bad at it and

594
00:23:00,500 --> 00:23:05,400
so what we've done is we've taken all of

595
00:23:02,819 --> 00:23:08,220
these images and we've put them online

596
00:23:05,400 --> 00:23:10,620
in a project called moon mappers at

597
00:23:08,220 --> 00:23:13,019
cosmic quest org and we're asking

598
00:23:10,619 --> 00:23:14,369
everyday people to help us map the

599

00:23:13,019 --> 00:23:15,990
surface of the Moon and we have our

600
00:23:14,369 --> 00:23:18,089
first science results coming out next

601
00:23:15,990 --> 00:23:19,980
week the lunar forms at NASA Ames and

602
00:23:18,089 --> 00:23:21,839
we're actually previewing that science

603
00:23:19,980 --> 00:23:23,880
here at tam no explain to be law

604
00:23:21,839 --> 00:23:25,740
computers are so bad at mapping it does

605
00:23:23,880 --> 00:23:28,620
it have trouble telling shadow from

606
00:23:25,740 --> 00:23:29,019
crater the problem with computers is

607
00:23:28,619 --> 00:23:30,729
they want

608
00:23:29,019 --> 00:23:35,019
everything to be the same all the time

609
00:23:30,730 --> 00:23:37,690
and the moon is made up of a thousand

610
00:23:35,019 --> 00:23:39,039
different shades of grey and so when

611
00:23:37,690 --> 00:23:41,440
you're looking at the surface of the

612
00:23:39,039 --> 00:23:44,319
moon that's 950 more than the book and

613
00:23:41,440 --> 00:23:47,799

that's nine yes yes it is and there's a

614

00:23:44,319 --> 00:23:51,099

lot less rope involved now when you look

615

00:23:47,799 --> 00:23:53,829

at the moon you're seeing bits of lava

616

00:23:51,099 --> 00:23:55,269

you're seeing bits of quartz you're

617

00:23:53,829 --> 00:23:57,849

seeing silicas you're seeing all these

618

00:23:55,269 --> 00:24:01,329

different minerals and when you see

619

00:23:57,849 --> 00:24:03,579

something go from grey to white white to

620

00:24:01,329 --> 00:24:05,470

black sometimes what you're seeing is

621

00:24:03,579 --> 00:24:09,250

shadow line sometimes what you're seeing

622

00:24:05,470 --> 00:24:12,069

is a difference in composition and all

623

00:24:09,250 --> 00:24:15,670

of that confuses a computer because a

624

00:24:12,069 --> 00:24:17,740

crater made in a dark area of soil and a

625

00:24:15,670 --> 00:24:19,930

crater made in a light area of soil are

626

00:24:17,740 --> 00:24:21,910

going to look different and then you

627

00:24:19,930 --> 00:24:23,230

have shadow angles to deal with because

628
00:24:21,910 --> 00:24:24,970
sometimes the Sun is straight overhead

629
00:24:23,230 --> 00:24:27,700
sometimes the Sun is at a steep angle

630
00:24:24,970 --> 00:24:29,799
depending on the image all of these

631
00:24:27,700 --> 00:24:32,580
different factors lead to computers

632
00:24:29,799 --> 00:24:35,859
being may be very good at finding one

633
00:24:32,579 --> 00:24:38,470
size of crater one type of Crater one

634
00:24:35,859 --> 00:24:41,799
type of Crater and one type of soil but

635
00:24:38,470 --> 00:24:43,509
they can't understand the diversity of

636
00:24:41,799 --> 00:24:47,619
all the different ways craters are

637
00:24:43,509 --> 00:24:49,900
shaped humans can't so how do you feel

638
00:24:47,619 --> 00:24:52,299
about hogeland's interpretation of

639
00:24:49,900 --> 00:24:54,280
certain moon images as being like

640
00:24:52,299 --> 00:24:56,079
ancient civilizations and that kind of

641
00:24:54,279 --> 00:24:58,389
thing from some photos that have come

642
00:24:56,079 --> 00:25:00,220
back his interpretation of those photos

643
00:24:58,390 --> 00:25:02,470
he really needs to get a look at the

644
00:25:00,220 --> 00:25:05,650
high-resolution images because really

645
00:25:02,470 --> 00:25:08,829
the moon is volcanoes craters fault

646
00:25:05,650 --> 00:25:10,450
lines rocks more rocks a few more rocks

647
00:25:08,829 --> 00:25:12,220
or a few more craters and that's really

648
00:25:10,450 --> 00:25:14,170
all that's there other than crashed and

649
00:25:12,220 --> 00:25:16,569
left behind spacecraft and there are

650
00:25:14,170 --> 00:25:18,070
spacecraft and Russian spacecraft yeah

651
00:25:16,569 --> 00:25:20,019
the Russian one that looks like a really

652
00:25:18,069 --> 00:25:23,919
big toilet with the solar thing that's

653
00:25:20,019 --> 00:25:25,960
really amazing I would never put it that

654
00:25:23,920 --> 00:25:27,340
way it does because it flips up like

655
00:25:25,960 --> 00:25:29,680
that looks like the toilet seat back

656

00:25:27,339 --> 00:25:31,869
it's true I wouldn't have put it that

657
00:25:29,680 --> 00:25:34,000
way but yes the the Russians did build

658
00:25:31,869 --> 00:25:35,139
things that flipped open and I can see

659
00:25:34,000 --> 00:25:37,990
why you would say that they look like

660
00:25:35,140 --> 00:25:39,280
toilets look where can people find out

661
00:25:37,990 --> 00:25:40,750
more about what you do and listen to

662
00:25:39,279 --> 00:25:42,160
your podcast and get some more of the

663
00:25:40,750 --> 00:25:43,839
straight juice although

664
00:25:42,160 --> 00:25:45,550
I think I prolly still will be watching

665
00:25:43,839 --> 00:25:48,279
william shedd as weird or what I just

666
00:25:45,549 --> 00:25:50,109
gotta think I'm a connoisseur of bad

667
00:25:48,279 --> 00:25:51,609
science myself but if you want to hear

668
00:25:50,109 --> 00:25:53,919
the good science you can check out

669
00:25:51,609 --> 00:25:56,079
astronomy cast at astronomy cast calm

670
00:25:53,920 --> 00:25:58,390

and if you want to do science we have a

671

00:25:56,079 --> 00:26:01,389

variety of different projects at cosmic

672

00:25:58,390 --> 00:26:02,620

west o RG and what's the litmus test for

673

00:26:01,390 --> 00:26:03,759

all of us when you think that

674

00:26:02,619 --> 00:26:05,649

something's not quite right or

675

00:26:03,759 --> 00:26:06,609

something's up in the astronomical world

676

00:26:05,650 --> 00:26:09,850

you know hang on that doesn't seem quite

677

00:26:06,609 --> 00:26:13,509

right what's a simple test for it can it

678

00:26:09,849 --> 00:26:15,519

be repeated and if you can't repeat it

679

00:26:13,509 --> 00:26:16,809

because let's face it sometimes you get

680

00:26:15,519 --> 00:26:20,349

lucky and you see a once-in-a-lifetime

681

00:26:16,809 --> 00:26:24,299

event can you explain it using physics

682

00:26:20,349 --> 00:26:26,319

of similar things otherwise be tight on

683

00:26:24,299 --> 00:26:28,919

otherwise you probably had a glitch in

684

00:26:26,319 --> 00:26:28,919

your system

685
00:26:33,460 --> 00:26:40,389
world ladies and gentlemen dr. Harriet

686
00:26:37,429 --> 00:26:43,129
Hall a Herod what he would talk to off i

687
00:26:40,388 --> 00:26:44,778
specialized in family practice and i was

688
00:26:43,128 --> 00:26:47,658
also a flight surgeon in the air force

689
00:26:44,778 --> 00:26:50,269
well is there a certain personality with

690
00:26:47,659 --> 00:26:53,659
guys that fly fighter planes as opposed

691
00:26:50,269 --> 00:26:55,489
to bombers are they much more aggressive

692
00:26:53,659 --> 00:26:58,539
is ever certain different personality

693
00:26:55,489 --> 00:27:01,548
with a fighter type there is certainly a

694
00:26:58,538 --> 00:27:06,200
mythology that there is they're famous

695
00:27:01,548 --> 00:27:07,579
for thinking there they can they can do

696
00:27:06,200 --> 00:27:10,249
anything and they're never going to die

697
00:27:07,579 --> 00:27:11,898
and there they take risks or I think

698
00:27:10,249 --> 00:27:14,179
there's a certain personality that goes

699

00:27:11,898 --> 00:27:16,038

for that sort of thing and what

700

00:27:14,179 --> 00:27:18,798

attracted you to doing flot medicine in

701

00:27:16,038 --> 00:27:20,628

the first place well I was already in

702

00:27:18,798 --> 00:27:26,179

the Air Force I had done an Air Force

703

00:27:20,628 --> 00:27:29,589

internship and I was in a family

704

00:27:26,179 --> 00:27:33,288

practice residency in the Air Force and

705

00:27:29,589 --> 00:27:34,999

a friend of mine had a small plane and

706

00:27:33,288 --> 00:27:36,919

he took me up in it one day let me take

707

00:27:34,999 --> 00:27:39,259

the controls and I got hooked I learned

708

00:27:36,919 --> 00:27:41,179

to fly and bought my own plane and then

709

00:27:39,259 --> 00:27:42,798

I found out that flight surgeons got to

710

00:27:41,179 --> 00:27:44,210

take care of people who flew and they

711

00:27:42,798 --> 00:27:46,638

got to right along an air force our

712

00:27:44,210 --> 00:27:48,739

plane so I said great i can combine two

713

00:27:46,638 --> 00:27:51,979
of my passions medicine and flying so i

714
00:27:48,739 --> 00:27:53,509
did and how many g's can you take with

715
00:27:51,980 --> 00:27:56,659
that squeezing thing haggle with you

716
00:27:53,509 --> 00:28:00,858
I've never been tested most most of my

717
00:27:56,659 --> 00:28:04,789
flight time was in helicopters and not

718
00:28:00,858 --> 00:28:07,428
doing maneuvers that would cause a lot

719
00:28:04,788 --> 00:28:11,058
of geez i did get to fly some in the FB

720
00:28:07,429 --> 00:28:12,710
111 which is a supersonic aircraft but

721
00:28:11,058 --> 00:28:15,019
we were not allowed to break the sound

722
00:28:12,710 --> 00:28:18,288
barrier was that the one with the

723
00:28:15,019 --> 00:28:19,548
swing-wing yes it was yes we had them in

724
00:28:18,288 --> 00:28:21,829
Australia as well I wish I could

725
00:28:19,548 --> 00:28:23,358
remember the name of the f-111 we called

726
00:28:21,829 --> 00:28:26,689
them but they have a nickname or

727
00:28:23,358 --> 00:28:28,730

anything oh it seems like it did but I

728

00:28:26,690 --> 00:28:31,460

can't remember now what it was the FB

729

00:28:28,730 --> 00:28:34,069

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

730

00:28:31,460 --> 00:28:36,048

with bombs so it's the same airplane but

731

00:28:34,069 --> 00:28:37,608

it carries bummed did you ever go to any

732

00:28:36,048 --> 00:28:39,858

theater where there was any actual

733

00:28:37,608 --> 00:28:42,699

action whether it was fighting no

734

00:28:39,858 --> 00:28:45,309

because back then during

735

00:28:42,700 --> 00:28:48,640

I was in during Vietnam and they

736

00:28:45,309 --> 00:28:51,909

wouldn't send women to combat zones so

737

00:28:48,640 --> 00:28:54,870

it was okay for nurses but physicians no

738

00:28:51,910 --> 00:28:58,120

yes and I never understood that because

739

00:28:54,869 --> 00:29:00,849

doctors didn't go out on the battlefield

740

00:28:58,119 --> 00:29:04,209

they were working in hospitals in the

741

00:29:00,849 --> 00:29:06,039

theater I know a nurse who took up a gun

742
00:29:04,210 --> 00:29:08,380
and defended her patients when her

743
00:29:06,039 --> 00:29:10,509
hospital was attacked in Vietnam so I

744
00:29:08,380 --> 00:29:12,220
doesn't didn't make any sense to me that

745
00:29:10,509 --> 00:29:14,049
they couldn't send me over there to work

746
00:29:12,220 --> 00:29:16,680
in a hospital but if they wanted to keep

747
00:29:14,049 --> 00:29:20,019
me safe that was all right with me and

748
00:29:16,680 --> 00:29:22,240
as dark as a doctor and I get this with

749
00:29:20,019 --> 00:29:23,740
a lot of professionals that are deeply

750
00:29:22,240 --> 00:29:25,990
involved with various sorts of Medicine

751
00:29:23,740 --> 00:29:28,420
what really annoys you in the world of

752
00:29:25,990 --> 00:29:29,950
blue and the world of alternative

753
00:29:28,420 --> 00:29:34,180
medicine mozzarella really annoys you

754
00:29:29,950 --> 00:29:38,890
the most when you see it well it's hard

755
00:29:34,180 --> 00:29:40,810
to say I guess maybe homeopathy because

756
00:29:38,890 --> 00:29:43,840
that's the most ridiculous thing of all

757
00:29:40,809 --> 00:29:46,359
the idea that you can dilute everything

758
00:29:43,839 --> 00:29:48,099
out of out of a remedy and have the

759
00:29:46,359 --> 00:29:49,569
water remember something that it's

760
00:29:48,099 --> 00:29:53,199
supposed to remember is just so

761
00:29:49,569 --> 00:29:54,759
completely illogical and stupid yes not

762
00:29:53,200 --> 00:29:56,650
at that annoys me but I don't think it

763
00:29:54,759 --> 00:29:58,750
does much harm I think the most of the

764
00:29:56,650 --> 00:30:00,540
harm is in the people who are against

765
00:29:58,750 --> 00:30:06,759
vaccines and some of the other areas

766
00:30:00,539 --> 00:30:10,509
what about Bach Flower Remedies they

767
00:30:06,759 --> 00:30:12,400
smell good no I wrote an article about

768
00:30:10,509 --> 00:30:13,809
that on the science-based medicine blog

769
00:30:12,400 --> 00:30:16,380
recently there's not a shred of evidence

770

00:30:13,809 --> 00:30:18,369
to support them it's just total

771
00:30:16,380 --> 00:30:20,440
imagination but there are people who

772
00:30:18,369 --> 00:30:22,239
swear by them I'm trying to say that to

773
00:30:20,440 --> 00:30:24,519
work to one or two girls at work and

774
00:30:22,240 --> 00:30:26,230
they swear by Rescue Remedy now is

775
00:30:24,519 --> 00:30:29,230
rescue remedy and homeopathy thing I was

776
00:30:26,230 --> 00:30:33,190
at a bar what is that way it's a Bach

777
00:30:29,230 --> 00:30:35,799
Flower Remedies our system is a sort of

778
00:30:33,190 --> 00:30:39,390
a subdivision of homeopathy because the

779
00:30:35,799 --> 00:30:42,759
flower essences are highly diluted and

780
00:30:39,390 --> 00:30:46,360
rescue remedy works because placebo is

781
00:30:42,759 --> 00:30:48,009
work if if you're not feeling well and

782
00:30:46,359 --> 00:30:50,079
you take something that you think is

783
00:30:48,009 --> 00:30:53,140
going to help you you're likely to think

784
00:30:50,079 --> 00:30:55,569

you feel better now is there any with

785

00:30:53,140 --> 00:30:57,490

you condom subscribe to do you ever

786

00:30:55,569 --> 00:30:59,139

my peeps have a casual glance at your

787

00:30:57,490 --> 00:31:00,910

horoscope do you ever take more vitamins

788

00:30:59,140 --> 00:31:03,820

when you don't really need to is there

789

00:31:00,910 --> 00:31:06,790

anything you you fall prey to yourself

790

00:31:03,819 --> 00:31:08,649

well the closest I could come is that I

791

00:31:06,789 --> 00:31:13,299

used to take a multivitamin for

792

00:31:08,650 --> 00:31:15,100

psychotherapy how much surely LSD or

793

00:31:13,299 --> 00:31:17,369

ecstasy would be as effective as that

794

00:31:15,099 --> 00:31:21,339

wouldn't it well what I mean is that I

795

00:31:17,369 --> 00:31:23,709

don't always eat in the most healthy

796

00:31:21,339 --> 00:31:25,539

foods so i would take a multivitamin and

797

00:31:23,710 --> 00:31:27,370

say well now i don't have to worry about

798

00:31:25,539 --> 00:31:28,950

it because I got my vitamin so I can eat

799

00:31:27,369 --> 00:31:32,199

eat things that I shouldn't be eating

800

00:31:28,950 --> 00:31:34,960

but I knew it really wasn't rational and

801

00:31:32,200 --> 00:31:37,779

finally one day I saw some research that

802

00:31:34,960 --> 00:31:40,779

said that with postmenopausal women were

803

00:31:37,779 --> 00:31:42,759

more likely to have fractures if they

804

00:31:40,779 --> 00:31:44,740

took vitamin A which is in all the

805

00:31:42,759 --> 00:31:46,900

multivitamins so I stopped taking it

806

00:31:44,740 --> 00:31:48,670

right then and there and how are your

807

00:31:46,900 --> 00:31:51,310

bones anyway but had any scans Harley

808

00:31:48,670 --> 00:31:53,350

I've had a scan and I'm fine and of

809

00:31:51,309 --> 00:31:55,269

course I would out to everybody they get

810

00:31:53,349 --> 00:31:56,439

your pelvic floor muscle going as early

811

00:31:55,269 --> 00:31:58,329

as possible is that a good thing for

812

00:31:56,440 --> 00:32:01,559

women like it should be me their 20s be

813
00:31:58,329 --> 00:32:04,829
working on it that the Kegel exercises I

814
00:32:01,559 --> 00:32:07,809
don't I have never seen any evidence of

815
00:32:04,829 --> 00:32:10,059
studies on women who did it in their 20s

816
00:32:07,809 --> 00:32:11,679
so I really can't comment and what is

817
00:32:10,059 --> 00:32:13,599
the one thing we can do is a preventive

818
00:32:11,680 --> 00:32:15,250
thing that's very easy that we overlook

819
00:32:13,599 --> 00:32:17,439
all the time that you think I'm silly

820
00:32:15,250 --> 00:32:19,839
people you should be doing that tell you

821
00:32:17,440 --> 00:32:21,519
what I overlooked exercise I'm a couch

822
00:32:19,839 --> 00:32:23,289
potato and I know it would be good for

823
00:32:21,519 --> 00:32:25,809
me but I just can't make myself do it

824
00:32:23,289 --> 00:32:27,549
look I I want to say this on this first

825
00:32:25,809 --> 00:32:30,700
I actually bought a pair of Spanx this

826
00:32:27,549 --> 00:32:32,859
week for men and they pulled you in a

827

00:32:30,700 --> 00:32:34,960
bit like William Shatner yeah and I

828
00:32:32,859 --> 00:32:36,669
think that's kind of cool but you know

829
00:32:34,960 --> 00:32:38,019
I'll look good but I'll still die 5

830
00:32:36,670 --> 00:32:40,480
years early because I'm not exercising

831
00:32:38,019 --> 00:32:43,809
is just walking around simple exercising

832
00:32:40,480 --> 00:32:47,980
yes so any activity is good in fact a

833
00:32:43,809 --> 00:32:50,829
lot of the exercise advice now is just

834
00:32:47,980 --> 00:32:52,779
do more go out and garden do your

835
00:32:50,829 --> 00:32:54,490
housework walk around the house client

836
00:32:52,779 --> 00:32:56,410
take the stairs instead of the elevator

837
00:32:54,490 --> 00:32:58,420
just simple little things anything that

838
00:32:56,410 --> 00:33:01,930
increases your activity level is on the

839
00:32:58,420 --> 00:33:03,610
good side and dr. Harriet whole um I can

840
00:33:01,930 --> 00:33:04,960
call your doctor even a retired is that

841
00:33:03,609 --> 00:33:08,699

is it like the president I can still

842

00:33:04,960 --> 00:33:10,680

clear dr. afterwards yes um what makes

843

00:33:08,700 --> 00:33:12,299

shake your fist at the television I mean

844

00:33:10,680 --> 00:33:14,100

because there's Fox News there's all

845

00:33:12,299 --> 00:33:15,750

sorts of things on CNN they have their

846

00:33:14,099 --> 00:33:18,119

little medicine moment what's the one

847

00:33:15,750 --> 00:33:19,829

that really you throw the foam brick at

848

00:33:18,119 --> 00:33:23,689

the television and make your husband

849

00:33:19,829 --> 00:33:28,529

angry and PBS public broadcasting

850

00:33:23,690 --> 00:33:30,750

station it puts up all kinds of quack

851

00:33:28,529 --> 00:33:32,160

programs that are really infomercials

852

00:33:30,750 --> 00:33:33,839

for the people that want to sell their

853

00:33:32,160 --> 00:33:36,090

books and the one that I've been

854

00:33:33,839 --> 00:33:37,980

particularly involved with is dr. ayman

855

00:33:36,089 --> 00:33:41,399

I've written about him for Clark watch

856
00:33:37,980 --> 00:33:45,150
and for the the science-based medicine

857
00:33:41,400 --> 00:33:47,880
blog he does these beautiful brain scans

858
00:33:45,150 --> 00:33:50,310
and he gets pretty colored pictures and

859
00:33:47,880 --> 00:33:53,840
he tells people he can see things that

860
00:33:50,309 --> 00:33:57,210
are causing their ADHD or their various

861
00:33:53,839 --> 00:33:59,099
psychological problems or addiction

862
00:33:57,210 --> 00:34:01,380
disorders he says look there's a red

863
00:33:59,099 --> 00:34:03,719
spot on the scan that that's where your

864
00:34:01,380 --> 00:34:06,660
problem is is he looking to certain part

865
00:34:03,720 --> 00:34:09,000
of the brain was he doing well he's

866
00:34:06,660 --> 00:34:11,849
doing a legitimate scan but he's reading

867
00:34:09,000 --> 00:34:13,860
things into them that he has no evidence

868
00:34:11,849 --> 00:34:15,719
for and he's charging people thousands

869
00:34:13,860 --> 00:34:17,550
of dollars and he's telling them the

870
00:34:15,719 --> 00:34:19,739
same things that you could have told him

871
00:34:17,550 --> 00:34:21,210
without doing the scans and how does he

872
00:34:19,739 --> 00:34:22,739
allegedly cue them as he's selling

873
00:34:21,210 --> 00:34:24,269
something as well or was he got some

874
00:34:22,739 --> 00:34:27,989
little alternative treatment what's he's

875
00:34:24,269 --> 00:34:30,269
what's his line he pushes a lot of diet

876
00:34:27,989 --> 00:34:33,479
supplements that have not been tested

877
00:34:30,269 --> 00:34:35,849
and proven and do you think in the

878
00:34:33,480 --> 00:34:39,510
psychiatric realm diet supplements are

879
00:34:35,849 --> 00:34:42,630
kind of useful or at the worst harmless

880
00:34:39,510 --> 00:34:44,970
or can they do more damage in that well

881
00:34:42,630 --> 00:34:46,950
there is no evidence for them there's

882
00:34:44,969 --> 00:34:49,099
there's a lot of claims out there for

883
00:34:46,949 --> 00:34:51,029
everything you can think of and

884

00:34:49,099 --> 00:34:53,219
particularly with something like autism

885
00:34:51,030 --> 00:34:55,340
where there isn't a good simple medical

886
00:34:53,219 --> 00:34:57,419
treatment there are some effective

887
00:34:55,340 --> 00:34:59,750
psychological treatments educational

888
00:34:57,420 --> 00:35:01,800
treatments that have been devised but

889
00:34:59,750 --> 00:35:03,599
everybody has jumped on the autism

890
00:35:01,800 --> 00:35:07,769
bandwagon and they're they're trying to

891
00:35:03,599 --> 00:35:11,549
sell this that everything to autistic

892
00:35:07,769 --> 00:35:13,199
kids was all kinds of claims and if you

893
00:35:11,550 --> 00:35:14,970
could with some sort of magic wand at

894
00:35:13,199 --> 00:35:16,949
the amazing meeting here is there's one

895
00:35:14,969 --> 00:35:19,139
thing you could cure what would it be

896
00:35:16,949 --> 00:35:20,269
there's so many illnesses out there what

897
00:35:19,139 --> 00:35:22,219
would be the one if you

898
00:35:20,269 --> 00:35:25,300

to pick one it's very difficult as a

899

00:35:22,219 --> 00:35:28,179

doctor because you see them all time

900

00:35:25,300 --> 00:35:30,800

again it would be really hard to choose

901

00:35:28,179 --> 00:35:33,440

diabetes would be a good candidate I

902

00:35:30,800 --> 00:35:34,730

won't say cancer because cancer is many

903

00:35:33,440 --> 00:35:37,400

different illnesses there are so many

904

00:35:34,730 --> 00:35:40,550

different kinds but diabetic diabetes is

905

00:35:37,400 --> 00:35:41,690

a big problem and a growing problem do

906

00:35:40,550 --> 00:35:43,519

you think though that is because we

907

00:35:41,690 --> 00:35:45,380

aren't exercising evading too much sugar

908

00:35:43,519 --> 00:35:48,110

is that it or is it not as simple as

909

00:35:45,380 --> 00:35:50,720

that it's not as simple as that but if

910

00:35:48,110 --> 00:35:52,130

people ate right and didn't gain too

911

00:35:50,719 --> 00:35:53,480

much weight it would go a long ways

912

00:35:52,130 --> 00:35:55,550

towards cutting the incidence of

913
00:35:53,480 --> 00:35:57,079
diabetes down and what are you gonna be

914
00:35:55,550 --> 00:35:59,269
doing here at Tim what are you up to you

915
00:35:57,079 --> 00:36:01,880
of doing this some stand-up comedy some

916
00:35:59,269 --> 00:36:05,929
mime what he got to I'm going to be

917
00:36:01,880 --> 00:36:08,539
participating in a workshop oh and we

918
00:36:05,929 --> 00:36:10,219
call it dr. Google about people people

919
00:36:08,539 --> 00:36:13,070
who google for medical information

920
00:36:10,219 --> 00:36:17,689
you're on there with dr. Richie now my

921
00:36:13,070 --> 00:36:20,269
dad he's about 83 85 and he really

922
00:36:17,690 --> 00:36:21,950
really forced me to go online and get a

923
00:36:20,269 --> 00:36:23,449
book for him there's some American

924
00:36:21,949 --> 00:36:25,099
doctor she has a thing about a liver

925
00:36:23,449 --> 00:36:26,449
diet or something I don't know what her

926
00:36:25,099 --> 00:36:28,670
name is but he forced me to go on an

927
00:36:26,449 --> 00:36:31,399
order her book which was 36 Australian I

928
00:36:28,670 --> 00:36:33,200
was delivered and he was thinking he was

929
00:36:31,400 --> 00:36:35,329
really concerned about his bilirubin

930
00:36:33,199 --> 00:36:37,250
level now if my dad was listening to

931
00:36:35,329 --> 00:36:38,779
this is the bilirubin level in the liver

932
00:36:37,250 --> 00:36:41,000
something you should be obsessed with

933
00:36:38,780 --> 00:36:43,880
like my daddy's or is it an indicator of

934
00:36:41,000 --> 00:36:46,130
something else bilirubin can be a sign

935
00:36:43,880 --> 00:36:48,890
of liver disease but there is a range of

936
00:36:46,130 --> 00:36:50,539
normal and I haven't heard of that diet

937
00:36:48,889 --> 00:36:52,609
you're talking about I don't know what

938
00:36:50,539 --> 00:36:54,170
what that's a new one for me I'll have

939
00:36:52,610 --> 00:36:55,880
to look that up when I get home oh you

940
00:36:54,170 --> 00:36:57,289
know it doc doc doc dr. ride she was

941

00:36:55,880 --> 00:36:59,210
into that going I'll just tell your dad

942
00:36:57,289 --> 00:37:00,769
to exercise a bit more and eat carefully

943
00:36:59,210 --> 00:37:02,329
but you know he just wants to know he's

944
00:37:00,769 --> 00:37:04,009
obsessed with his bilirubin level for

945
00:37:02,329 --> 00:37:06,110
some reason none of the other indicators

946
00:37:04,010 --> 00:37:07,940
just that particular one for some reason

947
00:37:06,110 --> 00:37:09,110
but when you're 85 I imagine you know

948
00:37:07,940 --> 00:37:12,139
you Lee would be taken with a knock

949
00:37:09,110 --> 00:37:14,210
anyway wouldn't yes and if you if you do

950
00:37:12,139 --> 00:37:15,739
20 lab tests on a perfectly normal

951
00:37:14,210 --> 00:37:17,690
person one of them will come out outside

952
00:37:15,739 --> 00:37:19,459
the normal range just because of the way

953
00:37:17,690 --> 00:37:21,920
we determine normal ranges there is a

954
00:37:19,460 --> 00:37:23,809
bell curve and just like some people are

955
00:37:21,920 --> 00:37:25,700

very tall and some people are very short

956

00:37:23,809 --> 00:37:27,500

some people have levels that are at the

957

00:37:25,699 --> 00:37:31,189

extremes but there's still perfectly

958

00:37:27,500 --> 00:37:32,300

normal so just having having a lab tests

959

00:37:31,190 --> 00:37:34,099

show something

960

00:37:32,300 --> 00:37:35,450

is meaningless by itself you have to put

961

00:37:34,099 --> 00:37:38,360

it in context with all the other

962

00:37:35,449 --> 00:37:40,089

information because my dad has a hobby

963

00:37:38,360 --> 00:37:42,620

it's called going to the doctor and

964

00:37:40,090 --> 00:37:44,450

because of that I've gone a bit the

965

00:37:42,619 --> 00:37:48,039

other way like my dad's hassling me

966

00:37:44,449 --> 00:37:50,389

about is it psi for the prostate cancer

967

00:37:48,039 --> 00:37:53,329

you know there's prostitute specific

968

00:37:50,389 --> 00:37:55,519

antigen PSA yeah and he's hounding me to

969

00:37:53,329 --> 00:37:57,559

get that done I'm not 58 I'm going it's

970
00:37:55,519 --> 00:37:59,840
okay dad i won't i won't he hounded me

971
00:37:57,559 --> 00:38:04,099
to get a bowel scan and i went to a

972
00:37:59,840 --> 00:38:05,600
specialist he met why are you here so

973
00:38:04,099 --> 00:38:07,460
yes because there's no history that kind

974
00:38:05,599 --> 00:38:09,889
of thing in the family so uh my dad is

975
00:38:07,460 --> 00:38:12,679
um yeah so I'm worried that I won't go

976
00:38:09,889 --> 00:38:14,599
to the doctor but I have to know the PSA

977
00:38:12,679 --> 00:38:16,159
is a very useful test but it's not

978
00:38:14,599 --> 00:38:19,009
useful for screening the general

979
00:38:16,159 --> 00:38:21,559
population because it picks up a lot of

980
00:38:19,010 --> 00:38:23,180
early cancers it picks up some cancers

981
00:38:21,559 --> 00:38:24,889
that would never have developed into

982
00:38:23,179 --> 00:38:26,440
anything that would hurt the person and

983
00:38:24,889 --> 00:38:28,940
there are some pretty serious

984
00:38:26,440 --> 00:38:30,980
consequences to prostate surgery and

985
00:38:28,940 --> 00:38:33,230
there have been some good studies of

986
00:38:30,980 --> 00:38:35,990
this and some major medical groups have

987
00:38:33,230 --> 00:38:38,719
come out and said it does more harm than

988
00:38:35,989 --> 00:38:41,059
good to screen the general population so

989
00:38:38,719 --> 00:38:42,859
it's not a good screening test and it's

990
00:38:41,059 --> 00:38:44,900
also not good to go looking up on google

991
00:38:42,860 --> 00:38:46,160
i remember when i had a sinus problem i

992
00:38:44,900 --> 00:38:47,510
had to have an operation to block some

993
00:38:46,159 --> 00:38:49,069
sort of some blockage there i looked it

994
00:38:47,510 --> 00:38:52,310
up and of course i thought i had sinus

995
00:38:49,070 --> 00:38:54,050
cancer which is particularly nasty and I

996
00:38:52,309 --> 00:38:56,179
thought for a day or two I was I was

997
00:38:54,050 --> 00:38:57,769
going to die until the you nose and

998

00:38:56,179 --> 00:38:59,839
throat man said no and I would just do

999
00:38:57,769 --> 00:39:02,420
that that's fine dr. Google is a bit

1000
00:38:59,840 --> 00:39:04,039
dangerous isn't it it certainly is and

1001
00:39:02,420 --> 00:39:08,869
that's what our workshop is going to be

1002
00:39:04,039 --> 00:39:11,059
talking about how to find a believable

1003
00:39:08,869 --> 00:39:13,039
information and not fall for all of the

1004
00:39:11,059 --> 00:39:15,289
misinformation that dr. Google would

1005
00:39:13,039 --> 00:39:18,079
like to give you is the one website we

1006
00:39:15,289 --> 00:39:20,420
could go to in fact when I saw what was

1007
00:39:18,079 --> 00:39:23,630
it the movie made in America which was

1008
00:39:20,420 --> 00:39:25,400
about autism they were saying go to

1009
00:39:23,630 --> 00:39:26,840
PubMed and look up all these studies and

1010
00:39:25,400 --> 00:39:28,430
you'll see that mercury is incredibly

1011
00:39:26,840 --> 00:39:30,110
bad and all these things are this going

1012
00:39:28,429 --> 00:39:32,480

on so after the movie i went to pubmed

1013

00:39:30,110 --> 00:39:34,910

and i was very confused because that's

1014

00:39:32,480 --> 00:39:36,769

designed for doctors and I rang dr. Rach

1015

00:39:34,909 --> 00:39:38,480

I was going and what does this mean she

1016

00:39:36,769 --> 00:39:40,400

said no that means the exact opposite of

1017

00:39:38,480 --> 00:39:41,780

what you think it means and that's not a

1018

00:39:40,400 --> 00:39:43,760

good study this study over here is a

1019

00:39:41,780 --> 00:39:44,470

good one so just going to pubmed for the

1020

00:39:43,760 --> 00:39:45,849

lame

1021

00:39:44,469 --> 00:39:47,980

there's not a good idea you can end up

1022

00:39:45,849 --> 00:39:49,840

getting much more confused got you you

1023

00:39:47,980 --> 00:39:51,789

certainly can but one thing you can look

1024

00:39:49,840 --> 00:39:53,740

for is the Cochrane reviews which are

1025

00:39:51,789 --> 00:39:57,480

all listed among all the other things on

1026

00:39:53,739 --> 00:39:59,589

PubMed if the cochrane group takes

1027
00:39:57,480 --> 00:40:01,150
everything that's been published and

1028
00:39:59,590 --> 00:40:02,890
tries to make sense out of it and come

1029
00:40:01,150 --> 00:40:05,980
to a conclusion so they're usually

1030
00:40:02,889 --> 00:40:07,480
pretty trustworthy so apart from dealing

1031
00:40:05,980 --> 00:40:08,590
with our physician where is the place on

1032
00:40:07,480 --> 00:40:09,969
the web we should go to is that a

1033
00:40:08,590 --> 00:40:12,309
website you just spoke about them we

1034
00:40:09,969 --> 00:40:14,889
should check out you should go to quack

1035
00:40:12,309 --> 00:40:17,858
watch and you should go to science-based

1036
00:40:14,889 --> 00:40:19,299
medicine and where can we engage you in

1037
00:40:17,858 --> 00:40:21,819
conversation are you blogging away

1038
00:40:19,300 --> 00:40:24,220
they're fighting the good fight no I

1039
00:40:21,820 --> 00:40:26,530
haven't even joined facebook but I do I

1040
00:40:24,219 --> 00:40:28,419
write an article about that history

1041
00:40:26,530 --> 00:40:30,010
there's all those photos of you from the

1042
00:40:28,420 --> 00:40:33,119
70s that you know we really don't want

1043
00:40:30,010 --> 00:40:35,710
to see them now I write an article on

1044
00:40:33,119 --> 00:40:37,150
science-based medicine every week and we

1045
00:40:35,710 --> 00:40:41,019
have a lot of conversations in the

1046
00:40:37,150 --> 00:40:44,410
comments there and I have a website info

1047
00:40:41,019 --> 00:40:46,980
website I'm also active in the quack

1048
00:40:44,409 --> 00:40:49,239
watch health fraud discussion group so I

1049
00:40:46,980 --> 00:40:51,820
talked to people a lot in all those

1050
00:40:49,239 --> 00:40:53,169
places and you don't do too many have

1051
00:40:51,820 --> 00:40:54,609
used this been okay I haven't been like

1052
00:40:53,170 --> 00:40:56,588
to weed or anything it was my shirt okay

1053
00:40:54,608 --> 00:40:58,659
it's a like a Playboy shirt I don't

1054
00:40:56,588 --> 00:41:01,480
guess yeah is that okay that's fine with

1055

00:40:58,659 --> 00:41:03,279
me and you know you know I got in

1056
00:41:01,480 --> 00:41:05,320
trouble a couple of years ago because i

1057
00:41:03,280 --> 00:41:08,320
gave a talk on the anti-vaccine movement

1058
00:41:05,320 --> 00:41:10,950
and I mentioned Jenny McCarthy who was a

1059
00:41:08,320 --> 00:41:13,750
former Playboy and she's been

1060
00:41:10,949 --> 00:41:15,848
publicizing the vaccines are dangerous

1061
00:41:13,750 --> 00:41:18,309
and talking people out of out of getting

1062
00:41:15,849 --> 00:41:19,720
vaccinated so I picked a picture off the

1063
00:41:18,309 --> 00:41:22,259
internet and it showed her in a bathing

1064
00:41:19,719 --> 00:41:25,299
suit I got criticized for being sexist

1065
00:41:22,260 --> 00:41:26,410
that's kind of what she does I I quite

1066
00:41:25,300 --> 00:41:28,119
like the photo of her sitting on the

1067
00:41:26,409 --> 00:41:30,069
toilet that's kind of a cute one other

1068
00:41:28,119 --> 00:41:31,900
and tell me does Jim Carrey still push

1069
00:41:30,070 --> 00:41:33,760

the anti-vaccination mine now he's not

1070

00:41:31,900 --> 00:41:35,410

going out with it I've wondered that

1071

00:41:33,760 --> 00:41:37,020

myself I don't know I haven't heard

1072

00:41:35,409 --> 00:41:39,159

anything from him since they split up

1073

00:41:37,019 --> 00:41:40,719

well thank you very much for your time

1074

00:41:39,159 --> 00:41:42,549

y'all me upstairs and really enjoy

1075

00:41:40,719 --> 00:41:44,489

myself and this is my first time at tam

1076

00:41:42,550 --> 00:41:46,810

what do you think I should look out for

1077

00:41:44,489 --> 00:41:48,699

just talk to people are some fascinating

1078

00:41:46,809 --> 00:41:52,599

people here it's great to get to know

1079

00:41:48,699 --> 00:41:54,909

strangers and one last question I'm like

1080

00:41:52,599 --> 00:41:56,230

to do a special the music of tan now

1081

00:41:54,909 --> 00:41:57,710

what music do you listen to i'm not

1082

00:41:56,230 --> 00:41:59,449

interested in particularly scare

1083

00:41:57,710 --> 00:42:01,639

tickle music but what's music you think

1084
00:41:59,449 --> 00:42:03,529
hey that gets me in the right mood for

1085
00:42:01,639 --> 00:42:05,598
being skeptical or just music you enjoy

1086
00:42:03,530 --> 00:42:08,150
is there something that's rather top of

1087
00:42:05,599 --> 00:42:10,550
that list when I'm in the car I let it

1088
00:42:08,150 --> 00:42:12,440
listen to country music now I have come

1089
00:42:10,550 --> 00:42:14,810
across some hilarious country music

1090
00:42:12,440 --> 00:42:18,289
songs that I just love like I want you

1091
00:42:14,809 --> 00:42:20,599
to love me like my dog does what about

1092
00:42:18,289 --> 00:42:24,320
my baby thinks my tractor's sexy that's

1093
00:42:20,599 --> 00:42:27,740
pretty good and there's one that we get

1094
00:42:24,320 --> 00:42:30,050
a kick out of because it's about a girl

1095
00:42:27,739 --> 00:42:31,549
and high school going out on a date and

1096
00:42:30,050 --> 00:42:34,310
her father is sitting there cleaning his

1097
00:42:31,550 --> 00:42:36,230
gun and talking to the boy and he's in

1098
00:42:34,309 --> 00:42:37,670
there he says it's a daddy thing and

1099
00:42:36,230 --> 00:42:40,909
that's what my daughter's say about my

1100
00:42:37,670 --> 00:42:44,210
husband's and so that's a daddy thing is

1101
00:42:40,909 --> 00:42:45,920
he going on globes of a 12-gauge yet he

1102
00:42:44,210 --> 00:42:48,230
has quite a gun collection he's a gun

1103
00:42:45,920 --> 00:42:51,530
enthusiast but he's never used them on

1104
00:42:48,230 --> 00:42:53,119
any boyfriend's yet yeah yeah dr. Harry

1105
00:42:51,530 --> 00:42:54,650
told thank you very much now look have a

1106
00:42:53,119 --> 00:42:56,390
great time here at Taman what's my

1107
00:42:54,650 --> 00:43:00,670
suggestion just yak to people isn't it

1108
00:42:56,389 --> 00:43:00,670
yes exactly have fun

1109
00:43:18,768 --> 00:43:23,008
astronomy cast it takes a fact space

1110
00:43:21,088 --> 00:43:24,900
journey through the cosmos as it offers

1111
00:43:23,009 --> 00:43:27,568
listeners weekly discussions on

1112

00:43:24,900 --> 00:43:30,509
astronomical topics ranging from planets

1113
00:43:27,568 --> 00:43:32,788
to cosmology hosted by Fraser Cain of

1114
00:43:30,509 --> 00:43:33,778
Universe Today and myself dr. Pamela

1115
00:43:32,789 --> 00:43:36,479
gave southern illinois university

1116
00:43:33,778 --> 00:43:38,338
edwardsville this show brings the

1117
00:43:36,478 --> 00:43:40,768
questions of an avid astronomy lover

1118
00:43:38,338 --> 00:43:42,869
directly to an astronomer together

1119
00:43:40,768 --> 00:43:44,429
Fraser and I explore what is known and

1120
00:43:42,869 --> 00:43:47,160
being discovered about the universe

1121
00:43:44,429 --> 00:43:49,259
around us join us each week as we take a

1122
00:43:47,159 --> 00:43:58,649
fax space journey through the cosmos at

1123
00:43:49,259 --> 00:44:01,079
astronomy cast calm the Australian

1124
00:43:58,650 --> 00:44:04,349
skeptics National Convention for 2012

1125
00:44:01,079 --> 00:44:06,089
starts on Friday November the 30th with

1126
00:44:04,349 --> 00:44:08,609

a cocktail evening and Melvin's

1127

00:44:06,088 --> 00:44:10,650

immigration Museum where you can meet

1128

00:44:08,608 --> 00:44:12,328

and mingle with free and critical

1129

00:44:10,650 --> 00:44:15,739

thinkers and some of your favorite

1130

00:44:12,329 --> 00:44:18,410

skeptics the convention theme is active

1131

00:44:15,739 --> 00:44:20,940

skepticism changing for the better and

1132

00:44:18,409 --> 00:44:23,639

continues over the first and second at

1133

00:44:20,940 --> 00:44:26,130

this stunning spot theater at the

1134

00:44:23,639 --> 00:44:30,420

University of Melbourne the lineup so

1135

00:44:26,130 --> 00:44:33,539

far includes James Randi DJ Grothe Brian

1136

00:44:30,420 --> 00:44:37,440

Thompson rebecca watson lawrence loom

1137

00:44:33,539 --> 00:44:41,219

ken harvey rachel dunlop richardsaunders

1138

00:44:37,440 --> 00:44:45,088

adam van langenberg chrissy wilson lynn

1139

00:44:41,219 --> 00:44:46,769

kelly and many more a gala dinner will

1140

00:44:45,088 --> 00:44:49,679

be held on the saturday night at

1141
00:44:46,768 --> 00:44:54,439
melbourne iconic art setter for more

1142
00:44:49,679 --> 00:44:54,440
details and ticketing information visit

1143
00:44:54,768 --> 00:45:01,978
www.fcj and click on the blue button

1144
00:44:58,248 --> 00:45:04,159
labeled convention details here you'll

1145
00:45:01,978 --> 00:45:07,078
find more information on speakers

1146
00:45:04,159 --> 00:45:09,808
accommodation transport and a photo

1147
00:45:07,079 --> 00:45:11,880
gallery of the various venues

1148
00:45:09,809 --> 00:45:13,979
you can keep up with more details at the

1149
00:45:11,880 --> 00:45:16,289
facebook page curiously labeled

1150
00:45:13,978 --> 00:45:19,018
Australian skeptics national convention

1151
00:45:16,289 --> 00:45:23,249
2012 and don't forget to follow us on

1152
00:45:19,018 --> 00:45:26,578
twitter at oz skep com the Australian

1153
00:45:23,248 --> 00:45:30,468
skeptics national convention 2012 your

1154
00:45:26,579 --> 00:45:30,469
chance to meet James Randi

1155
00:45:48,019 --> 00:45:52,800
now I've come here today to the

1156
00:45:50,338 --> 00:45:54,299
University of Sydney in a glorious day

1157
00:45:52,800 --> 00:45:56,339
what a beautiful day it is outside the

1158
00:45:54,300 --> 00:45:58,530
burden singing out there in the

1159
00:45:56,338 --> 00:46:01,980
courtyards but we've come in here to a

1160
00:45:58,530 --> 00:46:04,619
lecture room which is empty thankfully

1161
00:46:01,980 --> 00:46:07,440
for us I've come here to attract depart

1162
00:46:04,619 --> 00:46:09,559
from that truck driver out the window

1163
00:46:07,440 --> 00:46:12,920
that I've come here to talk to the

1164
00:46:09,559 --> 00:46:17,579
people from the young scientists of

1165
00:46:12,920 --> 00:46:19,889
Australia we have June that thank you

1166
00:46:17,579 --> 00:46:22,139
and Charlotte on a shower right now

1167
00:46:19,889 --> 00:46:25,348
Charlotte let me let's start with you

1168
00:46:22,139 --> 00:46:28,019
you're the science liaison officer for

1169

00:46:25,349 --> 00:46:31,410
this group and i met you just the other

1170
00:46:28,019 --> 00:46:32,550
day at the Australian Museum where I was

1171
00:46:31,409 --> 00:46:34,559
there to take part in the mystery

1172
00:46:32,550 --> 00:46:37,410
investigators quite a few weeks ago now

1173
00:46:34,559 --> 00:46:38,699
and during a little gap between shows i

1174
00:46:37,409 --> 00:46:41,250
was wandering around looking at some of

1175
00:46:38,699 --> 00:46:43,169
the other stands and exhibitions and

1176
00:46:41,250 --> 00:46:45,179
there you were and you were busily

1177
00:46:43,170 --> 00:46:48,329
making or doing or demonstrating

1178
00:46:45,179 --> 00:46:50,190
something what was happening i was what

1179
00:46:48,329 --> 00:46:52,170
was I making i was making mathematical

1180
00:46:50,190 --> 00:46:55,820
flip wallets that's where entitle for

1181
00:46:52,170 --> 00:46:58,680
them mathematical flip wallets mmm and

1182
00:46:55,820 --> 00:47:02,580
if anyone's familiar with the field of

1183
00:46:58,679 --> 00:47:05,338

topology an area of matts focusing on

1184

00:47:02,579 --> 00:47:07,710

surfaces and how they interact and these

1185

00:47:05,338 --> 00:47:11,039

are those wallets where you can open it

1186

00:47:07,710 --> 00:47:13,500

up and put a note on top of a piece of

1187

00:47:11,039 --> 00:47:14,550

ribbon and then close it and open it in

1188

00:47:13,500 --> 00:47:16,650

the other direction and it suddenly

1189

00:47:14,550 --> 00:47:18,930

trapped that's a nice i've seen those

1190

00:47:16,650 --> 00:47:21,150

that the kids have them know that and

1191

00:47:18,929 --> 00:47:22,980

there are glasses cases as well and you

1192

00:47:21,150 --> 00:47:26,430

may say you're showing kids how to make

1193

00:47:22,980 --> 00:47:28,050

them yes Wow yes and it's nice to show

1194

00:47:26,429 --> 00:47:29,699

them something which they might be

1195

00:47:28,050 --> 00:47:31,920

familiar with but don't necessarily know

1196

00:47:29,699 --> 00:47:33,960

how it works that's interesting so

1197

00:47:31,920 --> 00:47:36,599

you're here at the University studying

1198
00:47:33,960 --> 00:47:39,519
science naturally what of course what

1199
00:47:36,599 --> 00:47:41,949
what made you interested in joining the

1200
00:47:39,519 --> 00:47:44,199
young scientists of Australian more

1201
00:47:41,949 --> 00:47:45,819
importantly what's it all about the

1202
00:47:44,199 --> 00:47:48,009
young scientists of Australia is an

1203
00:47:45,820 --> 00:47:51,400
organization our model is promoting

1204
00:47:48,010 --> 00:47:53,590
science to the youth of Australia and to

1205
00:47:51,400 --> 00:47:56,680
that end we spend a lot of time involved

1206
00:47:53,590 --> 00:47:59,710
with them science camps and holiday

1207
00:47:56,679 --> 00:48:03,009
science schools run at universities all

1208
00:47:59,710 --> 00:48:05,199
around Australia in my case I attended a

1209
00:48:03,010 --> 00:48:06,880
couple of these science camps one of

1210
00:48:05,199 --> 00:48:09,250
them the international science school

1211
00:48:06,880 --> 00:48:12,160
run by the school of physics here at the

1212
00:48:09,250 --> 00:48:13,599
University of Sydney and the young

1213
00:48:12,159 --> 00:48:17,409
scientists of Australia were running a

1214
00:48:13,599 --> 00:48:20,589
socials program the so two weeks running

1215
00:48:17,409 --> 00:48:23,379
socials all the time and what they did

1216
00:48:20,590 --> 00:48:27,030
seem to be what I was interested in

1217
00:48:23,380 --> 00:48:30,730
there the cause of promoting science to

1218
00:48:27,030 --> 00:48:33,190
young people I I find quite an important

1219
00:48:30,730 --> 00:48:35,650
one and so I joined and I haven't looked

1220
00:48:33,190 --> 00:48:37,420
back well I can identify with what

1221
00:48:35,650 --> 00:48:38,920
you're saying absolutely because that's

1222
00:48:37,420 --> 00:48:40,389
something there's my listeners know that

1223
00:48:38,920 --> 00:48:43,420
something very dear to my heart is

1224
00:48:40,389 --> 00:48:45,489
promoting science and critical thinking

1225
00:48:43,420 --> 00:48:48,039
to the younger generation now what I

1226

00:48:45,489 --> 00:48:50,319
guess you're more primarily interested

1227
00:48:48,039 --> 00:48:54,789
in more University students would that

1228
00:48:50,320 --> 00:48:57,400
be right our main intake is from 15 year

1229
00:48:54,789 --> 00:49:02,349
olds and who attend science camps our

1230
00:48:57,400 --> 00:49:04,059
age range is sort of 14 to 26 so we sort

1231
00:49:02,349 --> 00:49:07,989
of cover the transition period between

1232
00:49:04,059 --> 00:49:09,340
school and I guess working life and so

1233
00:49:07,989 --> 00:49:12,059
we really get people when they're

1234
00:49:09,340 --> 00:49:14,620
starting to think for themselves i guess

1235
00:49:12,059 --> 00:49:17,230
and provide people with opportunities to

1236
00:49:14,619 --> 00:49:19,269
sort of spread what they know and what

1237
00:49:17,230 --> 00:49:22,000
they're interested in and in parts of

1238
00:49:19,269 --> 00:49:23,710
science and scientific method because a

1239
00:49:22,000 --> 00:49:25,780
lot of people get confused I think

1240
00:49:23,710 --> 00:49:27,909

science is just it's just a series of

1241

00:49:25,780 --> 00:49:30,280

facts where of course in the heart of

1242

00:49:27,909 --> 00:49:34,000

science is more how you go about doing

1243

00:49:30,280 --> 00:49:35,980

things of course and you I was just

1244

00:49:34,000 --> 00:49:37,509

hearing just before you've been involved

1245

00:49:35,980 --> 00:49:39,969

in this organization and your

1246

00:49:37,509 --> 00:49:41,769

the color in the secretary but you've

1247

00:49:39,969 --> 00:49:45,278

been just about everything else I PDF

1248

00:49:41,768 --> 00:49:48,578

I've had every every almost every title

1249

00:49:45,278 --> 00:49:50,918

I can possibly get my hands on Charlotte

1250

00:49:48,579 --> 00:49:52,599

is actually it's actually the last one I

1251

00:49:50,918 --> 00:49:54,998

haven't I haven't done it's a bit like

1252

00:49:52,599 --> 00:49:58,179

Roger Federer not getting that finer

1253

00:49:54,998 --> 00:49:59,978

French Open titles and science liaison

1254

00:49:58,179 --> 00:50:01,838

to the final frontier and what's your

1255
00:49:59,978 --> 00:50:05,518
background well what gave you the

1256
00:50:01,838 --> 00:50:08,708
interest so I funnily enough we both

1257
00:50:05,518 --> 00:50:12,548
went to the same to Holliday side

1258
00:50:08,708 --> 00:50:14,798
schools but we didn't meet there so I I

1259
00:50:12,548 --> 00:50:17,259
joined after having gone to the first

1260
00:50:14,798 --> 00:50:19,559
holiday science school when I was hit

1261
00:50:17,259 --> 00:50:22,659
when I was 15 when I was in high school

1262
00:50:19,559 --> 00:50:24,669
and no these these guys they're being

1263
00:50:22,659 --> 00:50:26,229
the mentor has been the staff and they

1264
00:50:24,668 --> 00:50:27,908
were doing some science shows too and

1265
00:50:26,228 --> 00:50:29,918
they were called the young scientist of

1266
00:50:27,909 --> 00:50:31,989
Australia and it will give out

1267
00:50:29,918 --> 00:50:34,388
membership form saying if you'd like to

1268
00:50:31,989 --> 00:50:36,249
be with like minded people or if you'd

1269
00:50:34,389 --> 00:50:38,108
like to hear from people who are in

1270
00:50:36,248 --> 00:50:40,178
university studying sites and if that

1271
00:50:38,108 --> 00:50:43,838
sort of thing appeals to you then you

1272
00:50:40,179 --> 00:50:46,269
should you should join us and I did and

1273
00:50:43,838 --> 00:50:49,028
the thing that stands out most about

1274
00:50:46,268 --> 00:50:51,879
science is that it's the most fun filled

1275
00:50:49,028 --> 00:50:54,518
I think it's most enjoyable field in

1276
00:50:51,880 --> 00:50:58,989
academia a lot of your listeners would

1277
00:50:54,518 --> 00:51:03,698
be would be very aware of the charlatans

1278
00:50:58,989 --> 00:51:06,278
claims of um you know so pseudoscience

1279
00:51:03,699 --> 00:51:08,349
oh my listeners are very sure that I

1280
00:51:06,278 --> 00:51:11,409
could assure you everything I'm fine I

1281
00:51:08,349 --> 00:51:13,568
find really interesting is to is how

1282
00:51:11,409 --> 00:51:15,729
they how they like to promote themselves

1283

00:51:13,568 --> 00:51:18,608
as being very romantic as being very

1284
00:51:15,728 --> 00:51:19,989
classical anything well it gives I'm not

1285
00:51:18,608 --> 00:51:22,119
interested you should say that because

1286
00:51:19,989 --> 00:51:23,829
we have the situation where so often

1287
00:51:22,119 --> 00:51:25,778
someone will come along saying that

1288
00:51:23,829 --> 00:51:27,519
they're the Maverick you know they've

1289
00:51:25,778 --> 00:51:29,259
got this new science but the rest of the

1290
00:51:27,518 --> 00:51:32,168
scientific community don't want you to

1291
00:51:29,259 --> 00:51:35,019
know all things that this effect now

1292
00:51:32,168 --> 00:51:37,509
history has shown us that once in a very

1293
00:51:35,018 --> 00:51:39,698
great while these people are actually on

1294
00:51:37,509 --> 00:51:40,989
to something but of course ninety-nine

1295
00:51:39,699 --> 00:51:44,259
point nine percent of the time they're

1296
00:51:40,989 --> 00:51:47,048
either deluded or just charlatans and as

1297
00:51:44,259 --> 00:51:49,358

you say that's an interesting i spent

1298

00:51:47,048 --> 00:51:52,179

more the danger of that is that they

1299

00:51:49,358 --> 00:51:53,828

they might give off the view to people

1300

00:51:52,179 --> 00:51:55,778

who may be ignorant or two children who

1301

00:51:53,829 --> 00:51:58,449

may not know better that science is

1302

00:51:55,778 --> 00:52:00,548

somehow a dull and boring pursuit that

1303

00:51:58,449 --> 00:52:04,539

it's all numbers and facts and figures

1304

00:52:00,548 --> 00:52:07,869

or as you know where pseudoscience likes

1305

00:52:04,539 --> 00:52:10,149

to to hold a property of romance and of

1306

00:52:07,869 --> 00:52:13,149

enchantment north of things that are

1307

00:52:10,148 --> 00:52:15,788

beyond the possible which is completely

1308

00:52:13,148 --> 00:52:17,858

ridiculous if if anyone there is

1309

00:52:15,789 --> 00:52:19,869

anything to begin with biology or

1310

00:52:17,858 --> 00:52:22,418

physics or chemistry will know that

1311

00:52:19,869 --> 00:52:25,059

science is the most romantic academic

1312
00:52:22,418 --> 00:52:28,538
field you can possibly go in that if you

1313
00:52:25,059 --> 00:52:31,389
want to see things i want to be be be

1314
00:52:28,539 --> 00:52:33,849
used or enchanted by the world and

1315
00:52:31,389 --> 00:52:35,709
scientists be on sale anybody looking at

1316
00:52:33,849 --> 00:52:40,059
the recent videos coming back from

1317
00:52:35,708 --> 00:52:43,648
master you know it's breathtaking stuff

1318
00:52:40,059 --> 00:52:48,099
but it's also next to a magic priceless

1319
00:52:43,648 --> 00:52:50,048
what has that got to you of course one

1320
00:52:48,099 --> 00:52:51,579
thing that we've come across in the

1321
00:52:50,048 --> 00:52:53,108
australian skeptics for many many years

1322
00:52:51,579 --> 00:52:55,179
is that the people promoting

1323
00:52:53,108 --> 00:52:57,728
pseudoscience don't have to obey any any

1324
00:52:55,179 --> 00:52:59,168
particular laws of physics today i mean

1325
00:52:57,728 --> 00:53:02,318
i could just make things up as they go

1326
00:52:59,168 --> 00:53:03,938
along to suit them you know we see that

1327
00:53:02,318 --> 00:53:05,648
we see that all the time now this

1328
00:53:03,938 --> 00:53:08,469
organization the young scientists of

1329
00:53:05,648 --> 00:53:11,679
australia how far and wide are you

1330
00:53:08,469 --> 00:53:14,769
spread we have branches in sydney

1331
00:53:11,679 --> 00:53:17,679
melbourne brisbane and adelaide at the

1332
00:53:14,768 --> 00:53:20,078
moment and we've had interest in

1333
00:53:17,679 --> 00:53:23,259
canberra but it's just not big enough to

1334
00:53:20,079 --> 00:53:24,939
sustain anything as yet i think i think

1335
00:53:23,259 --> 00:53:27,938
for the moment Adelaide Brisbane

1336
00:53:24,938 --> 00:53:30,278
Melbourne and Sydney in if you have a if

1337
00:53:27,938 --> 00:53:33,788
you have a child about 15 years old 15

1338
00:53:30,278 --> 00:53:35,300
to 25 and live in one of those cities

1339
00:53:33,789 --> 00:53:38,330
one of the lucky ones

1340

00:53:35,300 --> 00:53:40,190
I think so again as I say I was very

1341
00:53:38,329 --> 00:53:42,349
impressed when I happened across your

1342
00:53:40,190 --> 00:53:44,530
stand your table there at the Australian

1343
00:53:42,349 --> 00:53:46,699
Museum you were having enormous fun

1344
00:53:44,530 --> 00:53:49,100
definitely well I knew had children

1345
00:53:46,699 --> 00:53:51,549
surrounding you actually all busily

1346
00:53:49,099 --> 00:53:54,679
making this is this is this one of the

1347
00:53:51,550 --> 00:53:56,570
ID I hate to use these terms this is one

1348
00:53:54,679 --> 00:54:00,049
of the mission statements that you need

1349
00:53:56,570 --> 00:54:02,960
to get out there and be seen I would say

1350
00:54:00,050 --> 00:54:04,610
definitely I think having the motto

1351
00:54:02,960 --> 00:54:06,650
promoting science to the youth of

1352
00:54:04,610 --> 00:54:07,940
Australia we definitely have to well

1353
00:54:06,650 --> 00:54:12,019
definitely getting out there and being

1354
00:54:07,940 --> 00:54:14,360

seen for me it's so much fun doing it I

1355

00:54:12,019 --> 00:54:17,840

had a set up with a board balanced on

1356

00:54:14,360 --> 00:54:21,890

four eggs I should all know exactly and

1357

00:54:17,840 --> 00:54:23,780

and I said are you sure I weigh about 90

1358

00:54:21,889 --> 00:54:25,400

kilos and she and you said yes down on

1359

00:54:23,780 --> 00:54:27,140

the eggs and I thought this is it I was

1360

00:54:25,400 --> 00:54:30,260

associated on I was just waiting for the

1361

00:54:27,139 --> 00:54:33,259

party didn't have it I was quite amazing

1362

00:54:30,260 --> 00:54:35,510

and when a kid stands on that and you

1363

00:54:33,260 --> 00:54:37,340

see the look on their face when you say

1364

00:54:35,510 --> 00:54:39,920

there are four eggs holding you up

1365

00:54:37,340 --> 00:54:42,470

that's just the best look on my the best

1366

00:54:39,920 --> 00:54:44,269

or yours yes or any of the other

1367

00:54:42,469 --> 00:54:47,779

exhibitors actually everyone seemed

1368

00:54:44,269 --> 00:54:51,889

quite impressed with it yeah and so it's

1369
00:54:47,780 --> 00:54:54,620
fun for us as well as as you know our PI

1370
00:54:51,889 --> 00:54:56,719
mighty cause or whatever it's just plain

1371
00:54:54,619 --> 00:55:01,609
fun and that's the other thing that why

1372
00:54:56,719 --> 00:55:03,319
i say offers i think is as well as sort

1373
00:55:01,610 --> 00:55:06,890
of opening up a world of opportunity in

1374
00:55:03,320 --> 00:55:09,740
science communication and allowing us to

1375
00:55:06,889 --> 00:55:12,319
sort of promote our our views and our

1376
00:55:09,739 --> 00:55:14,599
causes it's just a nice place for like

1377
00:55:12,320 --> 00:55:17,539
minded people to be you'd think would be

1378
00:55:14,599 --> 00:55:20,420
a bunch of people who might be classed

1379
00:55:17,539 --> 00:55:23,029
as nerds at school but surprisingly

1380
00:55:20,420 --> 00:55:27,139
we're actually very very socially

1381
00:55:23,030 --> 00:55:29,970
competent no service to me I must say

1382
00:55:27,139 --> 00:55:32,250
you two gonna have the most fun anyway

1383
00:55:29,969 --> 00:55:35,279
we sort of offer somewhere both the

1384
00:55:32,250 --> 00:55:40,469
people who might not who might be a

1385
00:55:35,280 --> 00:55:42,930
little too academically inclined to it's

1386
00:55:40,469 --> 00:55:45,689
really difficult to phrase this people

1387
00:55:42,929 --> 00:55:49,589
who yeah the people who might be a bit

1388
00:55:45,690 --> 00:55:50,970
more science or uninterested we provide

1389
00:55:49,590 --> 00:55:53,820
a place for people to come out of their

1390
00:55:50,969 --> 00:55:55,919
shells or people to just as you there

1391
00:55:53,820 --> 00:55:58,680
are stones not always the best place for

1392
00:55:55,920 --> 00:56:00,180
everyone ya feel like they belong but we

1393
00:55:58,679 --> 00:56:01,858
have some real social butterflies as

1394
00:56:00,179 --> 00:56:04,739
well that's we've got it we've got a

1395
00:56:01,858 --> 00:56:07,319
really wide variety of members which i

1396
00:56:04,739 --> 00:56:10,379
think is great yeah and I guess school

1397

00:56:07,320 --> 00:56:13,410
as with with the world at large anyway

1398
00:56:10,380 --> 00:56:16,108
that there's always a place for is a big

1399
00:56:13,409 --> 00:56:18,269
place of sports people people who are no

1400
00:56:16,108 --> 00:56:19,679
greater physical feats but if you I

1401
00:56:18,269 --> 00:56:21,719
think we could hear some of them out the

1402
00:56:19,679 --> 00:56:23,899
window right now actually doing this

1403
00:56:21,719 --> 00:56:26,129
boarding things in but you're if you're

1404
00:56:23,900 --> 00:56:28,260
particularly in high school there there

1405
00:56:26,130 --> 00:56:31,019
isn't really an outlet for for

1406
00:56:28,260 --> 00:56:33,000
scientific endeavor and so if you if I

1407
00:56:31,019 --> 00:56:34,858
guess if you have a high school child

1408
00:56:33,000 --> 00:56:35,909
who's quite interested in science but

1409
00:56:34,858 --> 00:56:38,460
doesn't know what a channel that

1410
00:56:35,909 --> 00:56:40,199
enthusiasm and where we're sort of there

1411
00:56:38,460 --> 00:56:42,389

for that niche market well some of the

1412

00:56:40,199 --> 00:56:45,000

greatest social gatherings I've ever

1413

00:56:42,389 --> 00:56:47,338

been to our the the mega conventions in

1414

00:56:45,000 --> 00:56:49,829

the United States based around science

1415

00:56:47,338 --> 00:56:51,299

and skepticism in Las Vegas I go to on

1416

00:56:49,829 --> 00:56:54,150

every year called the amazing meeting

1417

00:56:51,300 --> 00:56:55,830

it's got over a thousand people as they

1418

00:56:54,150 --> 00:56:57,389

say you come to this meeting and spend

1419

00:56:55,829 --> 00:56:59,819

time with a thousand of your closest

1420

00:56:57,389 --> 00:57:02,039

friends attendance it's a fantastic to

1421

00:56:59,820 --> 00:57:03,630

everybody has a really great time apart

1422

00:57:02,039 --> 00:57:06,269

from their wonderful things we learn as

1423

00:57:03,630 --> 00:57:08,640

the social aspect on we call it drinking

1424

00:57:06,269 --> 00:57:10,230

skeptically and speaking of which I was

1425

00:57:08,639 --> 00:57:12,750

just telling you earlier before the

1426
00:57:10,230 --> 00:57:14,429
microphone went on that we have skeptics

1427
00:57:12,750 --> 00:57:18,088
in the pub of course and I can see the

1428
00:57:14,429 --> 00:57:19,429
twinkle in your eye which is a in many

1429
00:57:18,088 --> 00:57:20,960
cities around the world

1430
00:57:19,429 --> 00:57:23,179
in fact many cities around the world

1431
00:57:20,960 --> 00:57:25,818
have and towns have skeptics in the pub

1432
00:57:23,179 --> 00:57:27,500
and the one in Sydney is every month so

1433
00:57:25,818 --> 00:57:30,019
I hope that you might come along and

1434
00:57:27,500 --> 00:57:32,539
have a look because as you know I'll be

1435
00:57:30,019 --> 00:57:34,969
a pleasure to mmm definitely I think

1436
00:57:32,539 --> 00:57:37,239
you'd enjoy it I think it enjoyed now if

1437
00:57:34,969 --> 00:57:39,379
people want to know more young

1438
00:57:37,239 --> 00:57:40,939
scientists and interested people

1439
00:57:39,380 --> 00:57:43,220
especially if you're going to university

1440
00:57:40,940 --> 00:57:45,858
where can people go what's the website

1441
00:57:43,219 --> 00:57:51,649
people should be looking at our website

1442
00:57:45,858 --> 00:57:54,920
is why I say ok you / Sydney replace

1443
00:57:51,650 --> 00:57:57,050
Sydney with your city of interest if you

1444
00:57:54,920 --> 00:57:58,970
don't happen to be local here I guess if

1445
00:57:57,050 --> 00:58:00,470
you're if you have children or if you

1446
00:57:58,969 --> 00:58:02,899
have friends or children who might be

1447
00:58:00,469 --> 00:58:04,730
interested in getting their foot in the

1448
00:58:02,900 --> 00:58:07,789
door in the scientific community and

1449
00:58:04,730 --> 00:58:09,679
where were the people for you also if

1450
00:58:07,789 --> 00:58:11,690
you have if you're a teacher and if

1451
00:58:09,679 --> 00:58:14,029
you'd like us to visit and show you

1452
00:58:11,690 --> 00:58:17,088
actually how fun signs can be this

1453
00:58:14,030 --> 00:58:19,369
morning as that sounds then let us know

1454

00:58:17,088 --> 00:58:24,409
but it's more of a place for us than

1455
00:58:19,369 --> 00:58:26,088
ever before because scientific literacy

1456
00:58:24,409 --> 00:58:30,348
is something we don't seem to value

1457
00:58:26,088 --> 00:58:32,599
enough and I i paid for people to think

1458
00:58:30,349 --> 00:58:36,109
that we're somehow political always

1459
00:58:32,599 --> 00:58:38,480
somehow somehow ever have hidden their

1460
00:58:36,108 --> 00:58:40,480
gender of some sort and when we're

1461
00:58:38,480 --> 00:58:44,690
really what we're really here for is to

1462
00:58:40,480 --> 00:58:47,269
expose the scientific community to the

1463
00:58:44,690 --> 00:58:50,358
youth of Australia and I think it's a

1464
00:58:47,269 --> 00:58:52,818
advice motion it's it's incredibly

1465
00:58:50,358 --> 00:58:55,909
important for us to be scientific lips I

1466
00:58:52,818 --> 00:58:58,099
until a literate for two reasons one is

1467
00:58:55,909 --> 00:59:00,828
to to see through the to really

1468
00:58:58,099 --> 00:59:02,990

see through what what people are trying

1469

00:59:00,829 --> 00:59:06,440

to get to know when someone's trying to

1470

00:59:02,989 --> 00:59:09,048

sell you a vacuum cleaner on radio Alan

1471

00:59:06,440 --> 00:59:10,849

Jones loves to bang on about how climate

1472

00:59:09,048 --> 00:59:13,400

change is a sham

1473

00:59:10,849 --> 00:59:15,440

and lots of lots of politicians have

1474

00:59:13,400 --> 00:59:16,880

trouble being just scientifically

1475

00:59:15,440 --> 00:59:19,340

literate and I think it's really

1476

00:59:16,880 --> 00:59:23,140

important for us to to sort this mess

1477

00:59:19,340 --> 00:59:25,940

out and the second reason is science is

1478

00:59:23,139 --> 00:59:28,099

scientists has all the wonder of fiction

1479

00:59:25,940 --> 00:59:31,880

or the Wonder a fantasy wrapped up in

1480

00:59:28,099 --> 00:59:33,829

reality and so if I guess if you'd like

1481

00:59:31,880 --> 00:59:37,059

to see something you haven't seen before

1482

00:59:33,829 --> 00:59:39,319

or if you have children who want to

1483
00:59:37,059 --> 00:59:41,539
explore the world at large then where

1484
00:59:39,320 --> 00:59:43,220
where the people for you sound like just

1485
00:59:41,539 --> 00:59:45,619
the people absolutely just the people

1486
00:59:43,219 --> 00:59:47,209
well young the scientists of Australia

1487
00:59:45,619 --> 00:59:49,069
thank you very much for sparing some

1488
00:59:47,210 --> 00:59:50,860
time for the skeptic zone and as a

1489
00:59:49,070 --> 00:59:53,750
little thank you I'll just reach it back

1490
00:59:50,860 --> 00:59:55,610
and from Australian skeptics for your

1491
00:59:53,750 --> 00:59:59,119
organization here's a copy of the great

1492
00:59:55,610 --> 01:00:01,220
water divining DVD lots of scientific

1493
00:59:59,119 --> 01:00:03,889
investigations of strange things on

1494
01:00:01,219 --> 01:00:06,919
there I'm sure you'll enjoy looking at

1495
01:00:03,889 --> 01:00:08,989
Cerritos Dodgers top shelf chicken that

1496
01:00:06,920 --> 01:00:11,150
looks like fun starring the one and only

1497
01:00:08,989 --> 01:00:14,629
james randi I'm sure you'll enjoy that

1498
01:00:11,150 --> 01:00:18,050
and I hope people run to your website

1499
01:00:14,630 --> 01:00:19,670
check it out and I really really am a

1500
01:00:18,050 --> 01:00:22,820
fan of what you're trying to do because

1501
01:00:19,670 --> 01:00:24,260
I do that myself outreach encouraging

1502
01:00:22,820 --> 01:00:26,090
young people to get interested in

1503
01:00:24,260 --> 01:00:28,640
science and maybe look for a career in

1504
01:00:26,090 --> 01:00:31,220
this sort of thing so young scientists

1505
01:00:28,639 --> 01:00:33,849
of Australia thank you very much thank

1506
01:00:31,219 --> 01:00:33,849
you for having us

1507
01:00:43,139 --> 01:00:49,809
hi this is brian dunning from the

1508
01:00:45,699 --> 01:00:52,869
sceptile podcast ATS kept ID com for 15

1509
01:00:49,809 --> 01:00:55,630
years now dr. Bob's trivia quiz has been

1510
01:00:52,869 --> 01:00:58,089
a part of Australian skeptics each month

1511

01:00:55,630 --> 01:01:00,970
the mysterious dr. Bob comes up with

1512
01:00:58,090 --> 01:01:04,120
questions that defy all logic and reason

1513
01:01:00,969 --> 01:01:06,369
only the best of the best dare attempt

1514
01:01:04,119 --> 01:01:09,579
to answer these brain twisters and no

1515
01:01:06,369 --> 01:01:15,150
google won't help you visit dr. Bob's

1516
01:01:09,579 --> 01:01:18,549
quiz wordpress.com that's dr be OBS quiz

1517
01:01:15,150 --> 01:01:21,490
wordpress.com to take part and to see

1518
01:01:18,550 --> 01:01:24,519
the complete archive of dr. bob's trivia

1519
01:01:21,489 --> 01:01:27,149
quiz i'm brian dunning from sceptile

1520
01:01:24,519 --> 01:01:27,150
calm

1521
01:01:39,840 --> 01:01:46,750
thank you for listening to the skeptic

1522
01:01:42,400 --> 01:01:48,849
zone I'll just shut this fridge and go

1523
01:01:46,750 --> 01:01:52,889
back to the recording studio up the

1524
01:01:48,849 --> 01:01:52,889
stairs I hope you enjoyed that episode

1525
01:01:57,659 --> 01:02:04,269

that's better coming up on next week's

1526

01:02:01,090 --> 01:02:07,360

show more interviews from Tam with may

1527

01:02:04,269 --> 01:02:09,940

not of course I think am hmm Brian

1528

01:02:07,360 --> 01:02:12,039

Dunning or Ben Radford or both one or

1529

01:02:09,940 --> 01:02:15,700

the other or both we'll see we'll see

1530

01:02:12,039 --> 01:02:16,960

next week on next week's show as ever

1531

01:02:15,699 --> 01:02:19,329

thank you to all those people who

1532

01:02:16,960 --> 01:02:22,750

subscribe to the skeptics own less than

1533

01:02:19,329 --> 01:02:27,219

a dollar a week or who chip in and you

1534

01:02:22,750 --> 01:02:30,880

can do that via visiting ww skeptic zone

1535

01:02:27,219 --> 01:02:33,759

TV but for now until next week's show

1536

01:02:30,880 --> 01:02:40,510

this is Richard Saunders signing off

1537

01:02:33,760 --> 01:02:43,780

from Sydney Australia you've been

1538

01:02:40,510 --> 01:02:48,310

listening to the skeptic zone visit our

1539

01:02:43,780 --> 01:02:50,800

website at www skeptics on TV for

1540
01:02:48,309 --> 01:02:53,429
comments contacts and extra video

1541
01:02:50,800 --> 01:02:53,430
reports