

1
00:00:06,750 --> 00:00:12,679
welcome to the skeptic zone the podcast

2
00:00:09,939 --> 00:00:14,759
from Australia for science and reason

3
00:00:12,679 --> 00:00:17,660
[Music]

4
00:00:14,759 --> 00:00:23,609
[Applause]

5
00:00:17,660 --> 00:00:26,380
[Music]

6
00:00:23,609 --> 00:00:30,189
yes it's the skeptic zone podcast

7
00:00:26,379 --> 00:00:32,379
episode number 559 for the 7th of july

8
00:00:30,190 --> 00:00:35,109
2019 richardsaunders

9
00:00:32,380 --> 00:00:37,540
coming to you once more from the San

10
00:00:35,109 --> 00:00:39,969
Francisco Bay Area although I'll be

11
00:00:37,539 --> 00:00:42,189
heading home very soon coming up on this

12
00:00:39,969 --> 00:00:45,579
week's show a bit later on a special

13
00:00:42,189 --> 00:00:48,670
extended report live on the scene as it

14
00:00:45,579 --> 00:00:51,729
were I have a private tour of the Shabo

15
00:00:48,670 --> 00:00:54,309
space and Science Center which is in the

16
00:00:51,729 --> 00:00:58,419
Oakland Hills my friend Leonard Trammell

17
00:00:54,308 --> 00:01:00,369
is a volunteer tour guide at the center

18
00:00:58,420 --> 00:01:01,989
and I was lucky enough to get some of

19
00:01:00,369 --> 00:01:04,920
his time as he took me around and showed

20
00:01:01,988 --> 00:01:08,709
me the exhibits including the

21
00:01:04,920 --> 00:01:12,490
spectacular exhibit called luminous moon

22
00:01:08,709 --> 00:01:15,789
which is on until the 8th of September

23
00:01:12,489 --> 00:01:18,759
and this has photographs of the moon

24
00:01:15,790 --> 00:01:21,250
from the moon of the Moon at the moon

25
00:01:18,760 --> 00:01:21,579
around the moon that you have to see to

26
00:01:21,250 --> 00:01:24,430
believe

27
00:01:21,579 --> 00:01:27,840
and just glancing at the official blurb

28
00:01:24,430 --> 00:01:31,090
on the website here at Chabot space Torg

29

00:01:27,840 --> 00:01:33,460
this is our Moon as you've never seen it

30
00:01:31,090 --> 00:01:35,320
the only thing more extraordinary than

31
00:01:33,459 --> 00:01:39,069
the science we are learning about the

32
00:01:35,319 --> 00:01:41,679
moon is its incredible beauty Shabo

33
00:01:39,069 --> 00:01:44,199
stunning new photographic essay explores

34
00:01:41,680 --> 00:01:46,600
the moon's sweeping craters and once

35
00:01:44,200 --> 00:01:48,909
active volcanoes with photos by NASA

36
00:01:46,599 --> 00:01:52,269
astronauts who witnessed its beautiful

37
00:01:48,909 --> 00:01:54,250
desolation firsthand and images taken by

38
00:01:52,269 --> 00:01:58,179
a satellite that allow us to explore

39
00:01:54,250 --> 00:02:01,010
places we have not even yet visited

40
00:01:58,180 --> 00:02:03,230
yes it lives up to the hype folks and

41
00:02:01,010 --> 00:02:06,380
you'll hear more about that in the

42
00:02:03,230 --> 00:02:08,689
second half of today's skeptic zone rib

43
00:02:06,379 --> 00:02:10,399

coming up at the top of the show we have

44

00:02:08,689 --> 00:02:14,020

an interview with michael marshall from

45

00:02:10,399 --> 00:02:17,030

the good thinking society our regular

46

00:02:14,020 --> 00:02:18,980

correspondent in the UK and Marsh is

47

00:02:17,030 --> 00:02:21,469

going to tell us about a campaign by a

48

00:02:18,979 --> 00:02:22,969

good thinking about protecting people

49

00:02:21,469 --> 00:02:27,020

helping to protect people with autism

50

00:02:22,969 --> 00:02:28,490

from harmful homeopathic cures yes there

51

00:02:27,020 --> 00:02:30,560

are many people in the alternative

52

00:02:28,490 --> 00:02:33,170

medical community that think that autism

53

00:02:30,560 --> 00:02:35,959

is a disease that can be treated and

54

00:02:33,169 --> 00:02:38,179

cured Marsh will tell us more about this

55

00:02:35,959 --> 00:02:39,349

and the action they are taking and he's

56

00:02:38,180 --> 00:02:44,930

going to talk about something called

57

00:02:39,349 --> 00:02:48,139

cease therapy ceas ii and just quickly

58
00:02:44,930 --> 00:02:50,450
cease therapists claim they can cure

59
00:02:48,139 --> 00:02:54,589
autism based on the false belief that

60
00:02:50,449 --> 00:02:57,039
autism is caused by vaccines and the

61
00:02:54,590 --> 00:03:00,409
symptoms of autism can be cured with

62
00:02:57,039 --> 00:03:04,659
homeopathic treatments dangerously high

63
00:03:00,409 --> 00:03:07,549
dose vitamin C and dietary restriction

64
00:03:04,659 --> 00:03:09,500
many c s-- therapists are aligned with

65
00:03:07,550 --> 00:03:12,170
the extremely dangerous anti-vaccination

66
00:03:09,500 --> 00:03:14,680
movement which is gaining traction in

67
00:03:12,169 --> 00:03:18,458
the UK the National Autistic Society

68
00:03:14,680 --> 00:03:22,159
have described cease therapy as

69
00:03:18,459 --> 00:03:25,039
absolutely appalling always good to talk

70
00:03:22,159 --> 00:03:27,799
to Marsh and find out what action the

71
00:03:25,039 --> 00:03:29,209
good thinking society are taking well

72
00:03:27,799 --> 00:03:32,030
that's enough for me at the moment it's

73
00:03:29,209 --> 00:03:34,969
time for me to run upstairs and today is

74
00:03:32,030 --> 00:03:37,699
definitely a blue cheese and cracker day

75
00:03:34,969 --> 00:03:41,919
well I enjoy my blue cheese and crackers

76
00:03:37,699 --> 00:03:41,919
I hope you enjoy the skeptic zone

77
00:03:50,759 --> 00:03:58,439
[Music]

78
00:04:00,280 --> 00:04:04,849
joining me now all the way from

79
00:04:02,449 --> 00:04:06,859
Liverpool it's the project director at

80
00:04:04,849 --> 00:04:09,229
the good thinking society Michael

81
00:04:06,860 --> 00:04:10,700
Marshall hello Marsh hi Richard hi nice

82
00:04:09,229 --> 00:04:12,799
to be back on there on the sceptic zone

83
00:04:10,699 --> 00:04:15,229
I think it's it's been a little while

84
00:04:12,800 --> 00:04:17,720
but I'm semi-regular at this point

85
00:04:15,229 --> 00:04:20,449
absolutely over the years you certainly

86

00:04:17,720 --> 00:04:23,810
are you're always a welcome visitor to

87
00:04:20,449 --> 00:04:26,089
the skeptic zone now I've contacted you

88
00:04:23,810 --> 00:04:28,009
because some action that the good

89
00:04:26,089 --> 00:04:30,889
thinking society came to my attention

90
00:04:28,009 --> 00:04:34,370
and it's quite formal in a ways and it's

91
00:04:30,889 --> 00:04:37,219
a judicial review it involves homeopathy

92
00:04:34,370 --> 00:04:40,189
it involves autism can you wrap it up

93
00:04:37,220 --> 00:04:42,950
for us yeah so I'm sure your listeners

94
00:04:40,189 --> 00:04:44,540
will be aware of the anti-tax movement

95
00:04:42,949 --> 00:04:46,339
obviously in Australia

96
00:04:44,540 --> 00:04:47,840
skeptics all over Australia been doing

97
00:04:46,339 --> 00:04:50,689
fantastic work in countering the

98
00:04:47,839 --> 00:04:52,579
anti-vaccine what one aspect of the anti

99
00:04:50,689 --> 00:04:54,560
vex movement in the UK and also kind of

100
00:04:52,579 --> 00:04:57,169

in other parts of the world as well are

101

00:04:54,560 --> 00:05:00,350
the claims that not only does do

102

00:04:57,170 --> 00:05:02,480
vaccines cause autism but that the

103

00:05:00,350 --> 00:05:03,950
autism can be treated through a range of

104

00:05:02,480 --> 00:05:08,509
different treatments so things like

105

00:05:03,949 --> 00:05:11,449
homeopathy vitamin C intravenous vitamin

106

00:05:08,509 --> 00:05:13,219
C high dosage intravenous zinc things

107

00:05:11,449 --> 00:05:14,899
like that and so there are a group of

108

00:05:13,220 --> 00:05:17,360
homeopaths you practice something called

109

00:05:14,899 --> 00:05:21,079
ceased therapy cease therapy now that's

110

00:05:17,360 --> 00:05:24,290
I've I saw something about that that's C

111

00:05:21,079 --> 00:05:26,509
e a is e and that would stand for

112

00:05:24,290 --> 00:05:29,450
something I imagine it does it stands

113

00:05:26,509 --> 00:05:32,060
for a complete elimination of autism

114

00:05:29,449 --> 00:05:33,949
spectrum exhibition good it is very much

115
00:05:32,060 --> 00:05:36,050
meant to be a and autism cure and it

116
00:05:33,949 --> 00:05:38,569
involves homeopathy and hide hide or C

117
00:05:36,050 --> 00:05:40,850
supplementation and some dietary

118
00:05:38,569 --> 00:05:43,849
restriction as well no evidence that it

119
00:05:40,850 --> 00:05:45,980
has any positive effect on any of the

120
00:05:43,850 --> 00:05:47,689
symptoms associated with autism it

121
00:05:45,980 --> 00:05:50,840
certainly isn't an autism cure and the

122
00:05:47,689 --> 00:05:53,300
idea that a developmental issue that

123
00:05:50,839 --> 00:05:54,529
that comes to that comes to be part of

124
00:05:53,300 --> 00:05:56,478
how people see themselves you know

125
00:05:54,529 --> 00:05:58,269
something like autism is it's not an

126
00:05:56,478 --> 00:06:00,459
injury it's a neuro

127
00:05:58,269 --> 00:06:01,930
neurodiversity the idea that newer

128
00:06:00,459 --> 00:06:03,669
diversity in that way can be cured is

129
00:06:01,930 --> 00:06:05,740
something that's obviously a very

130
00:06:03,670 --> 00:06:07,150
dangerous and misleading claim yeah I'm

131
00:06:05,740 --> 00:06:09,250
for playing yeah absolutely

132
00:06:07,149 --> 00:06:13,479
and so there are maybe something in the

133
00:06:09,250 --> 00:06:15,339
region of 60 homeopaths in the UK who

134
00:06:13,480 --> 00:06:17,890
are actually members of the Society of

135
00:06:15,339 --> 00:06:19,959
homeopaths which is the UK's a kind of

136
00:06:17,889 --> 00:06:22,120
official accredited body of homeopaths

137
00:06:19,959 --> 00:06:22,750
it's the that the body the regulator of

138
00:06:22,120 --> 00:06:24,939
homeopaths

139
00:06:22,750 --> 00:06:26,470
and certainly the organization that to

140
00:06:24,939 --> 00:06:28,389
be part of it homeopathy will sort of

141
00:06:26,470 --> 00:06:31,390
point to the fact that they are members

142
00:06:28,389 --> 00:06:33,490
of an accredited organization accredited

143

00:06:31,389 --> 00:06:35,560
regulator they'll point to that as one

144
00:06:33,490 --> 00:06:37,000
of the reasons that the public can trust

145
00:06:35,560 --> 00:06:38,079
them you know we can't we have to be

146
00:06:37,000 --> 00:06:40,269
doing things the right way because we've

147
00:06:38,079 --> 00:06:42,250
got a formal official regulator that

148
00:06:40,269 --> 00:06:44,919
makes sure we're safe and trustworthy

149
00:06:42,250 --> 00:06:46,600
and all these kinds of things and that

150
00:06:44,920 --> 00:06:49,960
society of homeopaths that regulators

151
00:06:46,600 --> 00:06:51,640
actually regulated itself under under a

152
00:06:49,959 --> 00:06:54,849
body in the UK called professional

153
00:06:51,639 --> 00:06:56,769
standards authority and the PSA is the

154
00:06:54,850 --> 00:06:59,500
health care the health care regulator of

155
00:06:56,769 --> 00:07:01,389
regulators so they will regulate doctors

156
00:06:59,500 --> 00:07:03,220
you know the GMC the General Medical

157
00:07:01,389 --> 00:07:05,349

Council the regulator of doctors roles

158

00:07:03,220 --> 00:07:07,000

under the year the remit of the PSA the

159

00:07:05,350 --> 00:07:09,100

general den of Dental Council falls

160

00:07:07,000 --> 00:07:12,699

under the remit of the PSA so it's the

161

00:07:09,100 --> 00:07:14,080

regulator of regulators and in 2014 the

162

00:07:12,699 --> 00:07:16,959

Society Homa class were allowed to join

163

00:07:14,079 --> 00:07:19,060

that scheme and become voluntary members

164

00:07:16,959 --> 00:07:20,769

of this regulator and that means that

165

00:07:19,060 --> 00:07:22,629

members of the Society of homeopaths

166

00:07:20,769 --> 00:07:24,609

are allowed to put on their website a

167

00:07:22,629 --> 00:07:26,230

big tick like a government tick saying

168

00:07:24,610 --> 00:07:29,170

we are regulated by the government we

169

00:07:26,230 --> 00:07:30,460

are therefore safe and trustworthy and

170

00:07:29,170 --> 00:07:32,830

all those kinds of things

171

00:07:30,459 --> 00:07:34,299

yeah and yet there was a story in The

172
00:07:32,829 --> 00:07:36,879
Guardian last year and there's a follow

173
00:07:34,300 --> 00:07:38,710
up earlier in June about these

174
00:07:36,879 --> 00:07:40,509
homeopaths were practically practicing

175
00:07:38,709 --> 00:07:42,789
ceased therapy and as a result of that

176
00:07:40,509 --> 00:07:45,670
one of the things the PSA did was urge

177
00:07:42,790 --> 00:07:48,010
parents not to go to any old homeopathy

178
00:07:45,670 --> 00:07:49,240
but only or any old practitioner but to

179
00:07:48,009 --> 00:07:51,279
always look for a health care

180
00:07:49,240 --> 00:07:53,740
practitioner that is on their list of

181
00:07:51,279 --> 00:07:55,419
accredited regulators accredited members

182
00:07:53,740 --> 00:07:56,920
Jeong know that they've been sort of

183
00:07:55,420 --> 00:07:59,470
vetted and that they're regulated and

184
00:07:56,920 --> 00:08:01,930
that they are trustworthy but that list

185
00:07:59,470 --> 00:08:03,250
that the PSA have of accredited

186
00:08:01,930 --> 00:08:05,769
regulators that they were pointing

187
00:08:03,250 --> 00:08:06,339
parents to on that list of the society

188
00:08:05,769 --> 00:08:08,169
homeopaths

189
00:08:06,339 --> 00:08:09,819
and within the psy.d homeopaths are the

190
00:08:08,170 --> 00:08:11,559
very homeopaths that were the subject of

191
00:08:09,819 --> 00:08:13,389
those articles in the first pass for

192
00:08:11,559 --> 00:08:16,539
so we have this very strange situation

193
00:08:13,389 --> 00:08:19,088
so with all of this going on to be an

194
00:08:16,538 --> 00:08:21,188
accredited regulator every year you get

195
00:08:19,088 --> 00:08:22,509
reviewed by the PSA who do like an order

196
00:08:21,189 --> 00:08:24,119
to like an annual review to make sure

197
00:08:22,509 --> 00:08:26,439
that you're keeping up standards and

198
00:08:24,119 --> 00:08:28,719
maintaining protection of the public and

199
00:08:26,439 --> 00:08:30,909
all that kind of stuff so all of this

200

00:08:28,718 --> 00:08:32,708
went on in first of all 2017 at the end

201
00:08:30,908 --> 00:08:35,229
of their review in 2017 of the Society

202
00:08:32,708 --> 00:08:37,179
homeopaths the PSA highlighted their

203
00:08:35,229 --> 00:08:39,939
members who do cease therapy as a

204
00:08:37,179 --> 00:08:43,269
particular issue and a concern and they

205
00:08:39,938 --> 00:08:45,998
even said for example that the their

206
00:08:43,269 --> 00:08:48,159
members aren't allowed to tell to say on

207
00:08:45,999 --> 00:08:50,439
their website or to tell patients and

208
00:08:48,159 --> 00:08:51,610
parents that they do complete

209
00:08:50,438 --> 00:08:53,980
elimination of autism spectrum

210
00:08:51,610 --> 00:08:56,199
exhibition they can only say a cease

211
00:08:53,980 --> 00:08:58,240
they can't explain what cease means

212
00:08:56,198 --> 00:08:59,799
because if you explain the acronym you

213
00:08:58,240 --> 00:09:02,620
are making a claim about curing autism

214
00:08:59,799 --> 00:09:04,240

that the PSA we're happy to accept you

215

00:09:02,620 --> 00:09:05,679

weren't necessarily making if you just

216

00:09:04,240 --> 00:09:08,528

use the acronym oh yeah that sounds like

217

00:09:05,679 --> 00:09:11,258

something from Monty Python yeah it's

218

00:09:08,528 --> 00:09:12,759

it's we can you allow to say you offer a

219

00:09:11,259 --> 00:09:14,860

treatment as long as you don't tell them

220

00:09:12,759 --> 00:09:16,659

what that treatment means is a very

221

00:09:14,860 --> 00:09:18,970

curious position to be in and I think

222

00:09:16,659 --> 00:09:21,278

even even the PSA rocks at the time that

223

00:09:18,970 --> 00:09:22,899

they didn't they weren't fully confident

224

00:09:21,278 --> 00:09:24,879

they weren't fully convinced that this

225

00:09:22,899 --> 00:09:26,679

would actually protect the public but

226

00:09:24,879 --> 00:09:29,409

they accredited them in 2017 nonetheless

227

00:09:26,679 --> 00:09:31,179

and then it came around to reviewing

228

00:09:29,409 --> 00:09:34,058

them in 2018 ahead of their 2019

229
00:09:31,179 --> 00:09:36,818
accreditation and the PSA even again

230
00:09:34,058 --> 00:09:38,259
highlighted that that Society of

231
00:09:36,818 --> 00:09:40,659
homeopathy members were offering C's

232
00:09:38,259 --> 00:09:42,879
therapy that they were making claims to

233
00:09:40,659 --> 00:09:45,698
cure autism that they were making claims

234
00:09:42,879 --> 00:09:49,209
about vaccines that directly violated or

235
00:09:45,698 --> 00:09:50,649
directly contradicted NHS guidance about

236
00:09:49,208 --> 00:09:52,208
vaccines you know the best practice

237
00:09:50,649 --> 00:09:54,519
advice which is that vaccines are safe

238
00:09:52,208 --> 00:09:55,958
yet homeopaths he was saying vaccines

239
00:09:54,519 --> 00:09:57,610
aren't safe from vaccines are toxic and

240
00:09:55,958 --> 00:09:59,919
all this kind of stuff and even though

241
00:09:57,610 --> 00:10:03,730
the PSA highlighted these concerns and

242
00:09:59,919 --> 00:10:06,219
highlighted that that these C's therapy

243
00:10:03,730 --> 00:10:07,539
practitioners are harming the presenting

244
00:10:06,220 --> 00:10:09,879
a risk of harm to the public and

245
00:10:07,539 --> 00:10:12,039
specifically a risk of harm to autistic

246
00:10:09,879 --> 00:10:13,329
children within the public they decided

247
00:10:12,039 --> 00:10:14,980
to give them that rubber stamp all the

248
00:10:13,328 --> 00:10:16,388
same and they went ahead and they give

249
00:10:14,980 --> 00:10:17,740
them really credit ation which means the

250
00:10:16,389 --> 00:10:19,808
society home the offer members can carry

251
00:10:17,740 --> 00:10:21,339
on using that government stamp of

252
00:10:19,808 --> 00:10:24,039
authority and stamp of approval on their

253
00:10:21,339 --> 00:10:24,790
website it's it's quite staggering to me

254
00:10:24,039 --> 00:10:26,259
and and

255
00:10:24,789 --> 00:10:28,209
something we've I think we've discussed

256
00:10:26,259 --> 00:10:31,210
before that a lot of the people involved

257

00:10:28,210 --> 00:10:33,370
in the homeopathic industry are sincere

258
00:10:31,210 --> 00:10:35,470
and firm believers in not only

259
00:10:33,370 --> 00:10:37,899
homeopathy but they would certainly be

260
00:10:35,470 --> 00:10:40,870
sincere and firm believers that autism

261
00:10:37,899 --> 00:10:43,990
is caused by vaccinations yeah I I

262
00:10:40,870 --> 00:10:45,639
absolutely agree with you that I don't

263
00:10:43,990 --> 00:10:47,860
think and I've spoken to many many

264
00:10:45,639 --> 00:10:49,059
homeopaths I don't think I've spoken to

265
00:10:47,860 --> 00:10:50,320
homeopathy who I didn't think was

266
00:10:49,059 --> 00:10:52,349
completely sincere in what they're doing

267
00:10:50,320 --> 00:10:55,000
and the problem is what they're doing is

268
00:10:52,350 --> 00:10:56,920
incorrect and that's presenting it is

269
00:10:55,000 --> 00:10:58,870
presenting a risk because they genuinely

270
00:10:56,919 --> 00:11:00,459
believe in the in the stuff that happens

271
00:10:58,870 --> 00:11:02,679

to be incorrect and aren't following the

272

00:11:00,460 --> 00:11:04,330

evidence unfortunately so because this

273

00:11:02,679 --> 00:11:07,000

government body gives them that rubber

274

00:11:04,330 --> 00:11:09,190

stamp of authority again we decided will

275

00:11:07,000 --> 00:11:10,600

we looked at that that decision and we

276

00:11:09,190 --> 00:11:12,460

thought in our opinion that decision

277

00:11:10,600 --> 00:11:14,920

looks to be unlawful because if you're

278

00:11:12,460 --> 00:11:17,379

going to be a government body whose main

279

00:11:14,919 --> 00:11:19,209

remit is protecting the public making

280

00:11:17,379 --> 00:11:20,409

sure that practitioners of various

281

00:11:19,210 --> 00:11:22,450

health care including conventional

282

00:11:20,409 --> 00:11:24,819

health care and making sure that what

283

00:11:22,450 --> 00:11:26,440

they're doing is is trustworthy that

284

00:11:24,820 --> 00:11:28,300

it's safe that it's on the that it's

285

00:11:26,440 --> 00:11:30,370

looking out for people's best interests

286
00:11:28,299 --> 00:11:31,899
in terms of health if that's your remit

287
00:11:30,370 --> 00:11:34,810
which it is the remit of the PSE it

288
00:11:31,899 --> 00:11:37,059
seems contradictory to that remit to

289
00:11:34,809 --> 00:11:39,099
then a creditor body that you recognize

290
00:11:37,059 --> 00:11:40,839
is posing a potential risk and

291
00:11:39,100 --> 00:11:43,659
specifically a pet potential risk to

292
00:11:40,840 --> 00:11:45,040
disabled people and autistic people yeah

293
00:11:43,659 --> 00:11:47,049
it makes about as much sense as

294
00:11:45,039 --> 00:11:50,169
homeopathy in general I think yeah

295
00:11:47,049 --> 00:11:53,289
exactly so because this was a decision

296
00:11:50,169 --> 00:11:56,469
made by a government body it is subject

297
00:11:53,289 --> 00:11:58,870
to being challenged yeah if if you if

298
00:11:56,470 --> 00:12:00,160
you are able to get together a legal

299
00:11:58,870 --> 00:12:01,960
case to do that you can challenge this

300
00:12:00,159 --> 00:12:03,699
decision so we actually filed our legal

301
00:12:01,960 --> 00:12:05,560
cases judicial review is the name of the

302
00:12:03,700 --> 00:12:07,629
type of legal challenge that you would

303
00:12:05,559 --> 00:12:09,429
make to a decision UK made by a

304
00:12:07,629 --> 00:12:12,429
government body and so we filed that

305
00:12:09,429 --> 00:12:14,529
judicial review on Friday the 28th so a

306
00:12:12,429 --> 00:12:16,689
couple of days ago as of recording this

307
00:12:14,529 --> 00:12:19,179
and what we're trying to do is point out

308
00:12:16,690 --> 00:12:21,010
that this decision by the PSA in our

309
00:12:19,179 --> 00:12:22,449
opinion is unlawful and we've made laid

310
00:12:21,009 --> 00:12:25,450
out our case as to why we believe that's

311
00:12:22,450 --> 00:12:28,030
unlawful and if the court grants

312
00:12:25,450 --> 00:12:31,030
permission for this to go ahead we can

313
00:12:28,029 --> 00:12:34,809
have this have this essentially out in

314

00:12:31,029 --> 00:12:36,490
court and as a result the gtps a may

315
00:12:34,809 --> 00:12:38,528
have to go back and remake that decision

316
00:12:36,490 --> 00:12:40,600
with - while taking a

317
00:12:38,528 --> 00:12:42,188
a close look at protecting the public in

318
00:12:40,600 --> 00:12:44,290
the areas that we've highlighted are

319
00:12:42,188 --> 00:12:48,219
particularly concerned and so what we're

320
00:12:44,289 --> 00:12:50,198
hoping is the PSA either recognize that

321
00:12:48,220 --> 00:12:52,120
the decision they made is unlawful we

322
00:12:50,198 --> 00:12:53,438
think it's unlawful we think a

323
00:12:52,120 --> 00:12:55,149
reasonable argument for that we're

324
00:12:53,438 --> 00:12:56,769
hoping the PSA recognize that and

325
00:12:55,149 --> 00:12:58,240
reverse that decision can go back to the

326
00:12:56,769 --> 00:12:59,828
drawing board and say we're going to now

327
00:12:58,240 --> 00:13:01,089
take another look at that accreditation

328
00:12:59,828 --> 00:13:03,938

and see where the saying we should have

329

00:13:01,089 --> 00:13:05,559

done differently and if not then it'll

330

00:13:03,938 --> 00:13:07,240

end up in court and we're hoping that a

331

00:13:05,558 --> 00:13:09,578

court will make that decision so we're

332

00:13:07,240 --> 00:13:11,350

hoping at the end of this there we will

333

00:13:09,578 --> 00:13:14,409

be in a position where people who have

334

00:13:11,350 --> 00:13:18,639

autism are not being subjected to these

335

00:13:14,409 --> 00:13:21,308

these unproven harmful treatments with

336

00:13:18,639 --> 00:13:24,579

the tacit endorsement or a certain leave

337

00:13:21,308 --> 00:13:26,860

you're the the authority and kite mark

338

00:13:24,578 --> 00:13:29,229

of the government's official health care

339

00:13:26,860 --> 00:13:30,519

regulator in doing so that it's that if

340

00:13:29,230 --> 00:13:32,438

they're going to do this and we're going

341

00:13:30,519 --> 00:13:34,089

to try to try and demonstrate why they

342

00:13:32,438 --> 00:13:35,769

why these honkers should not be doing

343
00:13:34,089 --> 00:13:37,329
these therapies they absolutely should

344
00:13:35,769 --> 00:13:39,278
not be doing them with the government on

345
00:13:37,328 --> 00:13:41,528
they're effectively on their side in

346
00:13:39,278 --> 00:13:43,750
terms of how it looks yeah absolutely

347
00:13:41,528 --> 00:13:46,659
now the good thinking Society is known

348
00:13:43,750 --> 00:13:48,339
for this sort of being on the front foot

349
00:13:46,659 --> 00:13:50,259
so to speak taking action

350
00:13:48,339 --> 00:13:52,750
how can people how can our listeners

351
00:13:50,259 --> 00:13:54,789
help your cause well there's two things

352
00:13:52,750 --> 00:13:56,350
that listeners can really do the first

353
00:13:54,789 --> 00:13:59,409
thing is unfortunately a judicial review

354
00:13:56,350 --> 00:14:01,720
is quite an expensive procedure it's

355
00:13:59,409 --> 00:14:03,759
incredibly in it's incredibly in-depth

356
00:14:01,720 --> 00:14:05,319
we have to have expert lawyers who are

357
00:14:03,759 --> 00:14:07,600
experts in this area and we work with an

358
00:14:05,318 --> 00:14:09,429
excellent law firm who we've worked with

359
00:14:07,600 --> 00:14:11,110
for many many years who've done a huge

360
00:14:09,429 --> 00:14:14,169
amount of excellent skeptical work with

361
00:14:11,110 --> 00:14:16,480
us and and are very very on the on the

362
00:14:14,169 --> 00:14:19,479
side of good in that area but they also

363
00:14:16,480 --> 00:14:20,949
have to turn they say this into into

364
00:14:19,480 --> 00:14:24,069
paid work otherwise they can't be doing

365
00:14:20,948 --> 00:14:25,028
a skeptical work full time so because

366
00:14:24,068 --> 00:14:27,308
this is quite expensive we've actually

367
00:14:25,028 --> 00:14:28,568
launched a crowdfunding campaign where

368
00:14:27,308 --> 00:14:29,860
we're saying to people if you believe in

369
00:14:28,568 --> 00:14:31,269
this work if you think this is a real

370
00:14:29,860 --> 00:14:34,300
good thing for us to do if you think

371

00:14:31,269 --> 00:14:35,980
this will help protect autistic people

372
00:14:34,299 --> 00:14:37,899
from these types of pseudo therapies and

373
00:14:35,980 --> 00:14:39,688
certainly from having the these given

374
00:14:37,899 --> 00:14:43,448
these pseudo therapies the veneer of

375
00:14:39,688 --> 00:14:45,639
government or sment you can help fund

376
00:14:43,448 --> 00:14:47,378
our legal fees we want to try and raise

377
00:14:45,639 --> 00:14:50,308
up to 36 thousand pounds we think that's

378
00:14:47,379 --> 00:14:52,269
what the legal fees should cost at most

379
00:14:50,308 --> 00:14:54,459
we just anything

380
00:14:52,269 --> 00:14:56,019
people who do to help us meet at least

381
00:14:54,460 --> 00:14:59,139
some of that would be hugely hugely

382
00:14:56,019 --> 00:15:01,269
appreciated and we have a sight upon on

383
00:14:59,139 --> 00:15:01,779
crowd justice comm where people can do

384
00:15:01,269 --> 00:15:03,549
that

385
00:15:01,779 --> 00:15:05,110

and the other side of it is you can put

386

00:15:03,549 --> 00:15:07,509

the money in and help us if you could if

387

00:15:05,110 --> 00:15:09,039

you also want to if you can't do that or

388

00:15:07,509 --> 00:15:10,419

if you want to do as well you can spread

389

00:15:09,039 --> 00:15:11,860

this information as far as possible you

390

00:15:10,419 --> 00:15:14,079

can tell people about this you can post

391

00:15:11,860 --> 00:15:16,180

it to social media and you can highlight

392

00:15:14,080 --> 00:15:17,920

this issue because the more attention we

393

00:15:16,179 --> 00:15:19,449

can draw to this crowd funder the more

394

00:15:17,919 --> 00:15:21,459

attention we can draw to this legal

395

00:15:19,450 --> 00:15:23,680

challenge the more likely we are of

396

00:15:21,460 --> 00:15:26,080

being able to meet some of our legal

397

00:15:23,679 --> 00:15:28,750

costs and also the more likely we are

398

00:15:26,080 --> 00:15:30,340

being demonstrate to people that they

399

00:15:28,750 --> 00:15:32,529

ceased therapy starts being promoted by

400
00:15:30,340 --> 00:15:34,660
people in lots different areas is not

401
00:15:32,529 --> 00:15:36,610
effective so the the other side of this

402
00:15:34,659 --> 00:15:38,409
really is that we're hoping this case

403
00:15:36,610 --> 00:15:40,629
will shed light on the fact that ceased

404
00:15:38,409 --> 00:15:43,089
therapy is out there so that parents you

405
00:15:40,629 --> 00:15:45,100
do have autistic children who might come

406
00:15:43,090 --> 00:15:46,930
across this therapy they might also come

407
00:15:45,100 --> 00:15:49,000
across our story and recognize and

408
00:15:46,929 --> 00:15:50,949
actually there's some genuine harms and

409
00:15:49,000 --> 00:15:52,929
risks of harms going on here so if you

410
00:15:50,950 --> 00:15:55,150
can share this story far and wide and if

411
00:15:52,929 --> 00:15:56,649
you can and you think it's worth it's

412
00:15:55,149 --> 00:15:58,840
worth us doing this if you can got the

413
00:15:56,649 --> 00:16:00,939
crowd fund and put even a little bit of

414
00:15:58,840 --> 00:16:02,830
money in there the more people who do

415
00:16:00,940 --> 00:16:05,860
that the better we'll all be and we can

416
00:16:02,830 --> 00:16:07,960
really make this a success we hope yes

417
00:16:05,860 --> 00:16:10,389
folks there will be a link directly to

418
00:16:07,960 --> 00:16:12,970
the page in question where you can help

419
00:16:10,389 --> 00:16:14,590
help out chip in with the the

420
00:16:12,970 --> 00:16:16,870
crowdfunding there and it's the case

421
00:16:14,590 --> 00:16:18,790
Michael Marshall of cease therapy should

422
00:16:16,870 --> 00:16:21,159
cease I think you could say it

423
00:16:18,789 --> 00:16:23,469
absolutely is absolutely air correct

424
00:16:21,159 --> 00:16:25,059
Richard absolutely oh it took me a long

425
00:16:23,470 --> 00:16:28,360
time to come up with that one now before

426
00:16:25,059 --> 00:16:31,869
we before we go I've just today as it

427
00:16:28,360 --> 00:16:33,789
happens I was being very healthy also on

428

00:16:31,870 --> 00:16:36,039
the treadmill listening to one of my

429
00:16:33,789 --> 00:16:38,230
favorite podcasts be reasonable in the

430
00:16:36,039 --> 00:16:39,939
latest episode is it about homeopathy

431
00:16:38,230 --> 00:16:42,730
you interviewer homeopathy which is

432
00:16:39,940 --> 00:16:45,070
deeply fascinating folks it was a good

433
00:16:42,730 --> 00:16:47,110
timing in a way Marsh that that stories

434
00:16:45,070 --> 00:16:48,460
come out now yeah it was a surprise

435
00:16:47,110 --> 00:16:50,950
actually because I actually recorded

436
00:16:48,460 --> 00:16:52,780
this interview a couple of months ago

437
00:16:50,950 --> 00:16:54,490
and for listeners who aren't aware of

438
00:16:52,779 --> 00:16:56,529
what be reasonable is I interview

439
00:16:54,490 --> 00:16:58,539
someone that I disagree with but instead

440
00:16:56,529 --> 00:17:00,220
of being antagonistic instead of being

441
00:16:58,539 --> 00:17:02,169
aggressive instead of trying to win the

442
00:17:00,220 --> 00:17:04,600

conversation and win the debate I try to

443

00:17:02,169 --> 00:17:05,710
have a civil discussion and try to

444

00:17:04,599 --> 00:17:07,029
genuinely understand

445

00:17:05,710 --> 00:17:09,190
the other side's point of view I think

446

00:17:07,029 --> 00:17:10,869
that's a valuable thing to do because it

447

00:17:09,190 --> 00:17:12,430
means we've heard the arguments that are

448

00:17:10,869 --> 00:17:13,839
being used to persuade the people we

449

00:17:12,430 --> 00:17:15,190
disagree with and once you've heard

450

00:17:13,839 --> 00:17:17,109
those arguments we could be much much

451

00:17:15,190 --> 00:17:19,120
better at counteracting them so it's the

452

00:17:17,109 --> 00:17:21,009
kind of show that you listen to and I'm

453

00:17:19,119 --> 00:17:22,359
not gonna tell anyone that they're

454

00:17:21,009 --> 00:17:23,529
completely wrong about things I'm not

455

00:17:22,359 --> 00:17:25,689
going to go for the jugular I'm just

456

00:17:23,529 --> 00:17:27,309
going to try and introduce sense checks

457
00:17:25,690 --> 00:17:29,650
and try and get as much information as

458
00:17:27,309 --> 00:17:31,659
possible and the the show that's out

459
00:17:29,650 --> 00:17:34,000
that was out at the end of June was with

460
00:17:31,660 --> 00:17:36,400
Kate Burch who is a HomePath who

461
00:17:34,000 --> 00:17:37,779
actually practices ceased therapy and so

462
00:17:36,400 --> 00:17:40,269
the story that was published in The

463
00:17:37,779 --> 00:17:42,369
Guardian that started June one of the

464
00:17:40,269 --> 00:17:44,109
the homeopaths they talked about as

465
00:17:42,369 --> 00:17:46,059
practicing ceased therapy was kay perch

466
00:17:44,109 --> 00:17:47,769
so it was really surprising to me to see

467
00:17:46,059 --> 00:17:48,909
that this interview that I did in sort

468
00:17:47,769 --> 00:17:50,950
of February or March kind of time

469
00:17:48,910 --> 00:17:52,029
certainly had a relevance to not just

470
00:17:50,950 --> 00:17:54,069
what was in the media at the time but

471
00:17:52,029 --> 00:17:55,509
then the the legal case that we will

472
00:17:54,069 --> 00:17:57,579
we've been working on in the subsequent

473
00:17:55,509 --> 00:17:58,569
months so it all sort of came back

474
00:17:57,579 --> 00:18:01,269
together so if you want to hear

475
00:17:58,569 --> 00:18:02,980
firsthand what what a homeopath you who

476
00:18:01,269 --> 00:18:04,389
promotes cease therapy who also believes

477
00:18:02,980 --> 00:18:06,009
that homeopathy can be used to treat

478
00:18:04,390 --> 00:18:08,259
AIDS and many many other things as well

479
00:18:06,009 --> 00:18:10,750
if you want to hear firsthand what they

480
00:18:08,259 --> 00:18:12,430
say and how they explain their position

481
00:18:10,750 --> 00:18:14,140
how they justify to themselves in to

482
00:18:12,430 --> 00:18:15,549
their patients that position you can

483
00:18:14,140 --> 00:18:17,230
check out the latest episode of be

484
00:18:15,549 --> 00:18:19,359
reasonable and you can hear it straight

485

00:18:17,230 --> 00:18:21,610
from the homie cat's mouth straight from

486
00:18:19,359 --> 00:18:23,679
the homeopaths mouth again a link will

487
00:18:21,609 --> 00:18:25,959
be in this week's show notes and I'll

488
00:18:23,680 --> 00:18:29,529
probably press you mosh to send me a new

489
00:18:25,960 --> 00:18:30,670
little audio promo for be reasonable

490
00:18:29,529 --> 00:18:34,180
it's certainly one of the most

491
00:18:30,670 --> 00:18:36,519
fascinating skeptical podcasts out there

492
00:18:34,180 --> 00:18:39,009
well Michael Marshall thanks again for

493
00:18:36,519 --> 00:18:40,240
your time and thanks for taking this

494
00:18:39,009 --> 00:18:42,549
sort of action I think it's very

495
00:18:40,240 --> 00:18:44,289
important and people can follow the

496
00:18:42,549 --> 00:18:46,299
links and help you out but for now

497
00:18:44,289 --> 00:18:47,859
Michael Marshall from Liverpool thank

498
00:18:46,299 --> 00:18:49,419
you very much thanks you meet Richard

499
00:18:47,859 --> 00:18:50,589

and also thanks to all the skeptics or

500

00:18:49,420 --> 00:18:52,240

listeners who've been listening to your

501

00:18:50,589 --> 00:18:52,750

show for so long it's a really great

502

00:18:52,240 --> 00:18:54,160

show

503

00:18:52,750 --> 00:18:55,390

a really great for an important thing

504

00:18:54,160 --> 00:18:56,890

that's happening in the in the skeptical

505

00:18:55,390 --> 00:18:58,910

movement so yeah thanks to all the

506

00:18:56,890 --> 00:19:04,400

listeners as well

507

00:18:58,910 --> 00:19:04,400

[Music]

508

00:19:10,660 --> 00:19:15,410

be reasonable is the interview show from

509

00:19:13,160 --> 00:19:16,670

the Merseyside skeptic society where

510

00:19:15,410 --> 00:19:18,890

each month I speak to someone about

511

00:19:16,670 --> 00:19:21,289

their fringe beliefs of the Earth's have

512

00:19:18,890 --> 00:19:23,300

spoken to psychics UFO believers moon

513

00:19:21,289 --> 00:19:25,190

landing and ayahs flat earthers Hollow

514
00:19:23,299 --> 00:19:27,019
Earth as an all manner of unusual

515
00:19:25,190 --> 00:19:28,820
conspiracy theorists but I've also

516
00:19:27,019 --> 00:19:31,190
talked to aids denialists white

517
00:19:28,819 --> 00:19:32,689
supremacists gay conversion therapies

518
00:19:31,190 --> 00:19:34,580
I even interviewed Jim Humble the

519
00:19:32,690 --> 00:19:36,170
inventor of miracle mineral supplement a

520
00:19:34,579 --> 00:19:37,849
form of industrial police that he and

521
00:19:36,170 --> 00:19:40,640
his followers used to treat cancer and

522
00:19:37,849 --> 00:19:42,769
HIV this isn't a debate show my aim

523
00:19:40,640 --> 00:19:45,080
isn't to win an argument but when we

524
00:19:42,769 --> 00:19:47,240
listen to how people promote and justify

525
00:19:45,079 --> 00:19:49,250
the ideas that we disagree with even the

526
00:19:47,240 --> 00:19:50,960
dangerous ones I think you become much

527
00:19:49,250 --> 00:19:52,789
more effective at countering those ideas

528
00:19:50,960 --> 00:19:54,829
if that sounds like something you'd be

529
00:19:52,789 --> 00:19:56,839
interested in look for be reasonable on

530
00:19:54,829 --> 00:19:57,720
Apple podcasts and everywhere else the

531
00:19:56,839 --> 00:20:16,319
podcast

532
00:19:57,720 --> 00:20:19,620
[Music]

533
00:20:16,319 --> 00:20:21,929
jabo space and Science Center is a

534
00:20:19,619 --> 00:20:25,019
non-profit institution and community

535
00:20:21,930 --> 00:20:27,720
resource located on thirteen trail laced

536
00:20:25,019 --> 00:20:28,379
acres in Redwood Regional Park in

537
00:20:27,720 --> 00:20:31,620
Oakland

538
00:20:28,380 --> 00:20:33,110
amid the largest stand of coastal

539
00:20:31,619 --> 00:20:36,779
redwoods in the East Bay

540
00:20:33,109 --> 00:20:39,839
Chabot features a 241 seat full dome

541
00:20:36,779 --> 00:20:43,170
planetarium interactive and hands-on

542

00:20:39,839 --> 00:20:45,959
exhibits space artifacts a giant screen

543
00:20:43,170 --> 00:20:48,269
theater a Challenger Learning Center and

544
00:20:45,960 --> 00:20:50,610
the early research level telescopes

545
00:20:48,269 --> 00:20:53,700
regularly available to the public for

546
00:20:50,609 --> 00:20:56,849
weekly live viewing in the western

547
00:20:53,700 --> 00:20:59,130
United States shahboz mission is to

548
00:20:56,849 --> 00:21:05,909
inspire and educate learners of all ages

549
00:20:59,130 --> 00:21:07,470
about the universe and planet Earth it

550
00:21:05,910 --> 00:21:10,590
was my great pleasure to visit the

551
00:21:07,470 --> 00:21:13,710
center in June 2019 and have a personal

552
00:21:10,589 --> 00:21:25,889
tour by my friend Leonard Trammell who

553
00:21:13,710 --> 00:21:28,950
volunteers at the center surrounded by

554
00:21:25,890 --> 00:21:31,060
this beautiful forest countryside that

555
00:21:28,950 --> 00:21:35,049
sits in the middle of a

556
00:21:31,059 --> 00:21:36,639

I can tell that can tell and you look

557

00:21:35,049 --> 00:21:39,369

the part you're all decked out in your

558

00:21:36,640 --> 00:21:41,380

volunteer shirt with your space and

559

00:21:39,369 --> 00:21:43,059

science and a hat on looks alright it

560

00:21:41,380 --> 00:21:45,130

looks great I'm official

561

00:21:43,059 --> 00:21:47,950

you are official good to see you again

562

00:21:45,130 --> 00:21:50,200

yes and I can't wait to have a look at

563

00:21:47,950 --> 00:21:52,289

the exhibition and the rest of the

564

00:21:50,200 --> 00:21:58,670

center oh absolutely

565

00:21:52,289 --> 00:22:02,579

[Music]

566

00:21:58,670 --> 00:22:05,700

now we've walked inside here and we are

567

00:22:02,579 --> 00:22:07,829

presented with a giant I guess it's like

568

00:22:05,700 --> 00:22:10,590

an inflatable ball isn't it yeah of the

569

00:22:07,829 --> 00:22:12,809

moon and you're just telling me that

570

00:22:10,589 --> 00:22:15,599

it's as it's sitting here above this

571
00:22:12,809 --> 00:22:18,990
it's upside down to your eye right and

572
00:22:15,599 --> 00:22:23,579
it should be right side up to yours yeah

573
00:22:18,990 --> 00:22:26,759
I'm trying to yes yes I I'm trying to

574
00:22:23,579 --> 00:22:29,819
recognize it because it's a bit it's a

575
00:22:26,759 --> 00:22:32,940
bit disconcerting because it's the whole

576
00:22:29,819 --> 00:22:34,649
moon and I'm trying to find the the near

577
00:22:32,940 --> 00:22:37,080
side that this decided the places us

578
00:22:34,650 --> 00:22:40,070
yeah yeah this is the new science video

579
00:22:37,079 --> 00:22:42,449
because I think I recognized that

580
00:22:40,069 --> 00:22:43,829
particular crater over there although I

581
00:22:42,450 --> 00:22:46,650
could be kidding myself

582
00:22:43,829 --> 00:22:48,929
that's fascinating we can walk right

583
00:22:46,650 --> 00:22:54,090
around it so I'm walking around the moon

584
00:22:48,930 --> 00:22:56,519
now it's about oh it's about three

585
00:22:54,089 --> 00:23:00,449
meters off the ground it's about two

586
00:22:56,519 --> 00:23:02,789
meters in diameter well we come around

587
00:23:00,450 --> 00:23:06,000
to the far side of the Moon here which

588
00:23:02,789 --> 00:23:09,039
is sometimes called the dark side which

589
00:23:06,000 --> 00:23:10,900
isn't really the dark side

590
00:23:09,039 --> 00:23:14,289
and that's quite a different viewers

591
00:23:10,900 --> 00:23:17,769
nodes it's a lot less patchy in a way

592
00:23:14,289 --> 00:23:19,899
yeah the most ironic thing about the

593
00:23:17,769 --> 00:23:22,750
Dark Side of the Moon is it's actually

594
00:23:19,900 --> 00:23:24,490
much lighter yeah it is and I don't

595
00:23:22,750 --> 00:23:27,039
think I've ever seen it seen something

596
00:23:24,490 --> 00:23:30,089
like this now let's look at the the pole

597
00:23:27,039 --> 00:23:33,420
here and this is the North Pole

598
00:23:30,089 --> 00:23:36,609
okay we're directly under the North Pole

599

00:23:33,420 --> 00:23:39,100
wow that's fascinating so that's been

600
00:23:36,609 --> 00:23:42,039
some fantastic images in the exhibit

601
00:23:39,099 --> 00:23:43,480
upstairs of the north and south poles of

602
00:23:42,039 --> 00:23:45,909
the Moon and this has been stitched

603
00:23:43,480 --> 00:23:50,920
together with thousands of photographs I

604
00:23:45,910 --> 00:23:54,810
imagine it looks I want one have you

605
00:23:50,920 --> 00:23:57,420
ever seen a moon pebble no

606
00:23:54,809 --> 00:23:59,940
I'm walking over to a little display

607
00:23:57,420 --> 00:24:04,320
here that's a part of the moon it's a

608
00:23:59,940 --> 00:24:07,019
lunar sample returned by Apollo 16 and

609
00:24:04,319 --> 00:24:08,099
look and it's not very big of course

610
00:24:07,019 --> 00:24:10,170
it's you know it's less than a

611
00:24:08,099 --> 00:24:12,359
centimeter that's all right a centimeter

612
00:24:10,170 --> 00:24:13,769
but it's a part of the moon and right

613
00:24:12,359 --> 00:24:19,289

there in front of us

614

00:24:13,769 --> 00:24:22,859

wow it's pretty that looks great well

615

00:24:19,289 --> 00:24:26,609

this is fun yeah around here it's

616

00:24:22,859 --> 00:24:30,229

getting very dark oh so this is a model

617

00:24:26,609 --> 00:24:34,859

of a 50 by 50 by 50 Lightyear cube

618

00:24:30,230 --> 00:24:37,049

centered on the Sun and shows 200 or so

619

00:24:34,859 --> 00:24:40,859

of the closest stars

620

00:24:37,049 --> 00:24:44,430

this is absolutely gobsmacked invokes

621

00:24:40,859 --> 00:24:47,459

it's a giant cube with little points of

622

00:24:44,430 --> 00:24:52,350

light dotted through it to represent our

623

00:24:47,460 --> 00:24:54,509

galactic neighborhood right and I can

624

00:24:52,349 --> 00:24:58,859

just move from side to side up and down

625

00:24:54,509 --> 00:25:01,769

and I can see how the stars situated

626

00:24:58,859 --> 00:25:05,129

with respect to each other what a great

627

00:25:01,769 --> 00:25:09,569

idea that weren't dark you'd see that

628
00:25:05,130 --> 00:25:10,830
it's made of fiber-optic oh it's shining

629
00:25:09,569 --> 00:25:12,539
a little light we can see that although

630
00:25:10,829 --> 00:25:14,159
the fiber-optic so you take that away

631
00:25:12,539 --> 00:25:17,879
and you just see the little points of

632
00:25:14,160 --> 00:25:19,529
light that is what what a wonderful idea

633
00:25:17,880 --> 00:25:22,380
and I think that would work if it was

634
00:25:19,529 --> 00:25:25,230
four or five six times as big so the

635
00:25:22,380 --> 00:25:28,410
first one of these that I saw was at the

636
00:25:25,230 --> 00:25:31,950
McLaughlin planetarium in Toronto at the

637
00:25:28,410 --> 00:25:33,450
Royal Ontario Museum and that one is

638
00:25:31,950 --> 00:25:35,850
large enough that you can actually walk

639
00:25:33,450 --> 00:25:38,799
through it

640
00:25:35,849 --> 00:25:40,899
it I think this is a terrific idea

641
00:25:38,799 --> 00:25:43,389
because it really gives especially

642
00:25:40,900 --> 00:25:45,970
children yeah the concept in their head

643
00:25:43,390 --> 00:25:48,190
you have the three-dimensional nature's

644
00:25:45,970 --> 00:25:51,549
base so there's the son in the middle

645
00:25:48,190 --> 00:25:54,009
there we are yep and this is our closest

646
00:25:51,549 --> 00:25:57,369
neighbor and it's a triple star system

647
00:25:54,009 --> 00:25:59,140
as you can see yeah and most people

648
00:25:57,369 --> 00:26:03,009
don't know this but the second closest

649
00:25:59,140 --> 00:26:05,140
star system to the earth is a red dwarf

650
00:26:03,009 --> 00:26:08,819
too faint to be seen with the naked eye

651
00:26:05,140 --> 00:26:12,850
really and that's that one oh yes yes

652
00:26:08,819 --> 00:26:15,429
yeah and it's actually brighter here

653
00:26:12,849 --> 00:26:18,719
than it would be in in actually so this

654
00:26:15,430 --> 00:26:21,370
is 50 by 50 by 50 light yet right Wow

655
00:26:18,720 --> 00:26:23,079
line snapping absolutely brilliant and

656

00:26:21,369 --> 00:26:25,750
in there is the brightest star in the

657
00:26:23,079 --> 00:26:27,429
night sky Sirius yeah it's it's gorgeous

658
00:26:25,750 --> 00:26:31,299
that's gorgeous that what a great idea

659
00:26:27,430 --> 00:26:33,850
folks I it's it's just hard to relay

660
00:26:31,299 --> 00:26:36,629
what what a fantastic thing that is to

661
00:26:33,849 --> 00:26:41,589
give people the concept of

662
00:26:36,630 --> 00:26:44,080
three-dimensional space ooh hello we've

663
00:26:41,589 --> 00:26:47,829
got a gravity well let me pick up a few

664
00:26:44,079 --> 00:26:49,509
planets here and it's like those things

665
00:26:47,829 --> 00:26:51,009
you see in some shopping centers where

666
00:26:49,509 --> 00:26:54,809
you put a coin in and they right roll

667
00:26:51,009 --> 00:26:54,809
down so it goes

668
00:27:02,230 --> 00:27:06,890
little spheres representing little

669
00:27:05,359 --> 00:27:15,559
Marvel type things representing planet

670
00:27:06,890 --> 00:27:17,090

Oh God

671

00:27:15,559 --> 00:27:20,779

fortunately that doesn't happen in

672

00:27:17,089 --> 00:27:28,449

actual solar systems the orbits go decay

673

00:27:20,779 --> 00:27:33,710

and fall into the Sun is this real yes

674

00:27:28,450 --> 00:27:38,930

cccc it's a it says sawyers an actual

675

00:27:33,710 --> 00:27:40,430

Soyuz descent module good heavens it's

676

00:27:38,930 --> 00:27:43,490

smaller than you think

677

00:27:40,430 --> 00:27:46,250

in real life you just let me climb up

678

00:27:43,490 --> 00:27:49,700

this little viewing platform we can look

679

00:27:46,250 --> 00:27:52,609

through the window here if it's three oh

680

00:27:49,700 --> 00:27:54,799

it does too so you go in there with two

681

00:27:52,609 --> 00:27:58,879

of you are literally closest to here

682

00:27:54,799 --> 00:28:00,919

friends and from what I've read it's a

683

00:27:58,880 --> 00:28:03,320

bumpy landing when these things come up

684

00:28:00,920 --> 00:28:09,200

well they'll end on the ground ground

685
00:28:03,319 --> 00:28:13,490
yeah it's it's about the same impact as

686
00:28:09,200 --> 00:28:14,480
a moderate traffic accident so you get

687
00:28:13,490 --> 00:28:17,569
get smacked

688
00:28:14,480 --> 00:28:19,670
get smacked yeah so i've understand beep

689
00:28:17,569 --> 00:28:23,389
in here and see this poor little

690
00:28:19,670 --> 00:28:25,460
cosmonauts all bunched up boy and these

691
00:28:23,390 --> 00:28:28,100
are all their legs are wrapped around

692
00:28:25,460 --> 00:28:31,069
it's amazing wow that's that's a great

693
00:28:28,099 --> 00:28:34,909
thing to have here now we come across

694
00:28:31,069 --> 00:28:37,970
another model here of the planet Mars is

695
00:28:34,910 --> 00:28:40,490
this to scale it's the scale except the

696
00:28:37,970 --> 00:28:43,730
vertical has been exaggerated by about a

697
00:28:40,490 --> 00:28:46,549
factor of 25 course this is at this

698
00:28:43,730 --> 00:28:49,160
scale correctly Marge would look like a

699

00:28:46,549 --> 00:28:51,289

billiard ball very very smooth of course

700

00:28:49,160 --> 00:28:52,640

it would so it's exaggerated to show us

701

00:28:51,289 --> 00:28:56,450

where the mountains are this is olympus

702

00:28:52,640 --> 00:28:58,040

mons for examples and when i saw i mean

703

00:28:56,450 --> 00:29:01,490

what we're looking at folks is a giant

704

00:28:58,039 --> 00:29:03,950

globe of mars with that Valles Marianas

705

00:29:01,490 --> 00:29:05,990

here we've got Olympus Mons and we can

706

00:29:03,950 --> 00:29:07,940

walk right round the whole planet which

707

00:29:05,990 --> 00:29:10,460

is about a meter and

708

00:29:07,940 --> 00:29:11,660

there's a North Pole but yes that the

709

00:29:10,460 --> 00:29:13,190

mountains have been exaggerated because

710

00:29:11,660 --> 00:29:15,230

when Isis or olympus mons i thought it

711

00:29:13,190 --> 00:29:17,059

can't be that we can't extend that far

712

00:29:15,230 --> 00:29:19,130

out from the planet but it's a great it

713

00:29:17,059 --> 00:29:21,730
gives people a great idea that the

714
00:29:19,130 --> 00:29:25,580
craters in the mountains of mars and

715
00:29:21,730 --> 00:29:28,220
it's nice and red yeah and you can touch

716
00:29:25,579 --> 00:29:31,250
it and you can feel the the craters and

717
00:29:28,220 --> 00:29:33,799
the bumps and everything I want one of

718
00:29:31,250 --> 00:29:35,599
these two now I absolutely want one of

719
00:29:33,799 --> 00:29:40,279
these and just behind us here behind

720
00:29:35,599 --> 00:29:41,990
this glass panel is a big representation

721
00:29:40,279 --> 00:29:46,099
of the surface of Mars a little Rover

722
00:29:41,990 --> 00:29:48,440
little Rover in one of the stations over

723
00:29:46,099 --> 00:29:50,209
that you noticed earlier you can

724
00:29:48,440 --> 00:29:51,650
actually won't control this and drive it

725
00:29:50,210 --> 00:29:54,200
around I'd say you can drive around this

726
00:29:51,650 --> 00:29:56,240
track okay and there's a camera above

727
00:29:54,200 --> 00:29:58,390

that shows you and a camera in the front

728

00:29:56,240 --> 00:30:01,730

of it that shows you where it's pointing

729

00:29:58,390 --> 00:30:04,100

what fun what a fun place this is folks

730

00:30:01,730 --> 00:30:07,430

I can't tell you it's fantastic fun

731

00:30:04,099 --> 00:30:10,119

stuff Oh 3d let me put on my little 3d

732

00:30:07,430 --> 00:30:14,000

glasses here and recognize that it's the

733

00:30:10,119 --> 00:30:17,089

red-blue method of 3d pop these on and

734

00:30:14,000 --> 00:30:22,069

oh look at that big crater on the

735

00:30:17,089 --> 00:30:23,809

surface of Mars fantastic oh now we're

736

00:30:22,069 --> 00:30:26,750

walking across to another section down

737

00:30:23,809 --> 00:30:28,159

at my feet look up first artificial

738

00:30:26,750 --> 00:30:30,019

satellite the silver sphere is a

739

00:30:28,160 --> 00:30:34,400

full-scale model of the Soviet Union's

740

00:30:30,019 --> 00:30:36,470

of NIP one Sputnik one the first

741

00:30:34,400 --> 00:30:38,450

man-made object to up the earth 1957

742
00:30:36,470 --> 00:30:41,420
there it is directly above our heads

743
00:30:38,450 --> 00:30:44,390
there's a scale model of love beep beep

744
00:30:41,420 --> 00:30:44,900
beep yes but it's going to Dickens other

745
00:30:44,390 --> 00:30:47,960
people

746
00:30:44,900 --> 00:30:51,740
and here's a Saturn 5 and we're coming

747
00:30:47,960 --> 00:30:53,720
up a 1/10 scale model of a Saturn 5 and

748
00:30:51,740 --> 00:30:56,900
it's still huge once again take a look

749
00:30:53,720 --> 00:30:59,960
at the top you'll see the escape tower

750
00:30:56,900 --> 00:31:03,030
on an actual Saturn 5 the escape tower

751
00:30:59,960 --> 00:31:07,829
is the size of this model

752
00:31:03,029 --> 00:31:09,240
Wow and we're viewing this from about

753
00:31:07,829 --> 00:31:11,519
three-quarters of the way up up some

754
00:31:09,240 --> 00:31:13,370
stairs here it's a long way down to the

755
00:31:11,519 --> 00:31:15,720
bottom where the base of this rocket is

756
00:31:13,369 --> 00:31:18,989
I'm quite a long way up and it's only

757
00:31:15,720 --> 00:31:21,240
one-tenth scale model it's it's big so

758
00:31:18,990 --> 00:31:23,640
there are two remaining Saturn 5s in

759
00:31:21,240 --> 00:31:27,359
existence oh yeah one at the Kennedy

760
00:31:23,640 --> 00:31:29,550
Space Center in Florida the other at the

761
00:31:27,359 --> 00:31:33,119
Johnson Space Center in Texas and you

762
00:31:29,549 --> 00:31:36,000
can go and and see them pretty good as

763
00:31:33,119 --> 00:31:38,549
you can see it's large there's a scale

764
00:31:36,000 --> 00:31:39,990
model of it get her to a giraffe yeah

765
00:31:38,549 --> 00:31:42,480
and the Statue of Liberty doesn't even

766
00:31:39,990 --> 00:31:45,140
come up to halfway yeah yeah how long

767
00:31:42,480 --> 00:31:49,259
does this mean this facility been here

768
00:31:45,140 --> 00:31:52,770
19 years opened in August of 2000 so

769
00:31:49,259 --> 00:31:55,589
this is that our newest exhibit it's a

770

00:31:52,769 --> 00:31:57,990
just for this summer called luminous

771
00:31:55,589 --> 00:32:00,799
moon done in partnership with the NASA

772
00:31:57,990 --> 00:32:03,839
Ames Research Center and they are

773
00:32:00,799 --> 00:32:07,139
exquisitely high-resolution beautifully

774
00:32:03,839 --> 00:32:08,970
printed images from of the moon most

775
00:32:07,140 --> 00:32:11,460
from the Lunar Reconnaissance Orbiter

776
00:32:08,970 --> 00:32:13,289
they're they're stunning all right

777
00:32:11,460 --> 00:32:18,019
that's exciting we're just walking up

778
00:32:13,289 --> 00:32:20,579
these stairs now to have a look we are

779
00:32:18,019 --> 00:32:24,269
immediately presented with the giant

780
00:32:20,579 --> 00:32:30,089
photograph of the moon properly with

781
00:32:24,269 --> 00:32:31,740
North up okay buta we are in the

782
00:32:30,089 --> 00:32:34,199
northern hemisphere all right I'll give

783
00:32:31,740 --> 00:32:36,960
you that and and what I find is

784
00:32:34,200 --> 00:32:38,370

fascinating is when we look here to the

785

00:32:36,960 --> 00:32:40,230

edge of the moon we can see the

786

00:32:38,369 --> 00:32:43,259

mountains and the craters yeah

787

00:32:40,230 --> 00:32:45,089

against the blackness of space and this

788

00:32:43,259 --> 00:32:47,420

is a this is a good shot that's a very

789

00:32:45,089 --> 00:32:47,419

good shot

790

00:32:47,529 --> 00:32:56,750

so this exhibit is set up mostly like an

791

00:32:53,058 --> 00:33:00,288

art gallery uh-huh because the pictures

792

00:32:56,750 --> 00:33:02,089

are just exquisitely gorgeous this is

793

00:33:00,288 --> 00:33:06,408

exciting we're looking into the big hole

794

00:33:02,089 --> 00:33:08,980

here take a look to your right another

795

00:33:06,409 --> 00:33:14,870

picture of the moon the backside ah

796

00:33:08,980 --> 00:33:17,690

right yeah yeah it's it's very different

797

00:33:14,869 --> 00:33:19,939

very different I mean I wouldn't

798

00:33:17,690 --> 00:33:21,470

immediately recognize that as the moon

799

00:33:19,940 --> 00:33:24,169
because we're so used to seeing the

800

00:33:21,470 --> 00:33:26,990
right mottle pattern this is very

801

00:33:24,169 --> 00:33:29,530
consistent like mercury yeah yeah as a

802

00:33:26,990 --> 00:33:32,240
few dark areas but basically it's it's

803

00:33:29,529 --> 00:33:35,750
the contrast isn't there that's a

804

00:33:32,240 --> 00:33:39,919
picture taken by a handheld camera huh

805

00:33:35,750 --> 00:33:41,599
if you happen to be on Apollo 12 okay so

806

00:33:39,919 --> 00:33:44,030
close up to the side of the edge of the

807

00:33:41,599 --> 00:33:46,459
moon here we can see the craters like

808

00:33:44,029 --> 00:33:49,089
quite close to the surface yeah it was

809

00:33:46,460 --> 00:33:54,769
probably while they were coming back up

810

00:33:49,089 --> 00:33:57,798
now this take pictures this looks like

811

00:33:54,769 --> 00:34:00,379
it's can't be real yeah doesn't it moon

812

00:33:57,798 --> 00:34:04,220
scene from the but no that's real that's

813
00:34:00,380 --> 00:34:09,648
real yeah so this is a composite

814
00:34:04,220 --> 00:34:13,398
photograph taken with data from the

815
00:34:09,648 --> 00:34:16,819
Lunar Reconnaissance Orbiter the detail

816
00:34:13,398 --> 00:34:19,039
was from the narrow angle camera which

817
00:34:16,820 --> 00:34:21,710
is black-and-white and then they

818
00:34:19,039 --> 00:34:24,349
colorized it with simultaneous data

819
00:34:21,710 --> 00:34:26,119
taken by the wide-angle camera which is

820
00:34:24,349 --> 00:34:28,789
how you get the color of Earth what

821
00:34:26,119 --> 00:34:30,829
we're looking at folks is a view looking

822
00:34:28,789 --> 00:34:32,389
down upon the moon from an orbiter I

823
00:34:30,829 --> 00:34:36,648
could see some mountains here some

824
00:34:32,389 --> 00:34:40,190
shadows being cast and then looming over

825
00:34:36,648 --> 00:34:43,190
the horizon is a giant earth with Africa

826
00:34:40,190 --> 00:34:45,858
prominently displayed here the Sun fully

827

00:34:43,190 --> 00:34:48,440
on this side of the planet and it's huge

828
00:34:45,858 --> 00:34:50,418
it's absolutely enormous in the then the

829
00:34:48,440 --> 00:34:53,240
print is large and the resolution is

830
00:34:50,418 --> 00:34:55,359
amazing and it's real that's mine

831
00:34:53,239 --> 00:34:59,469
snapping that's amazing

832
00:34:55,360 --> 00:35:02,800
is a composite of images from Apollo 16

833
00:34:59,469 --> 00:35:05,349
that's gorgeous we could the little the

834
00:35:02,800 --> 00:35:08,650
famous lunar rover lunar buggy here with

835
00:35:05,349 --> 00:35:10,480
an astronaut just buy it and we can see

836
00:35:08,650 --> 00:35:13,809
right across the lunar surface to a deep

837
00:35:10,480 --> 00:35:15,909
crater filled with rocks Wow it's

838
00:35:13,809 --> 00:35:18,670
exquisite Wow and just look at the

839
00:35:15,909 --> 00:35:21,789
resolution of these ah gets better folks

840
00:35:18,670 --> 00:35:24,909
oh that's insane this is a giant crater

841
00:35:21,789 --> 00:35:27,909

we'll hear it in fine detail with the

842

00:35:24,909 --> 00:35:29,319

shadow being cast going deep inside we

843

00:35:27,909 --> 00:35:33,159

can see all the little rocks around the

844

00:35:29,320 --> 00:35:36,220

rim of the crater the ejecta oh my

845

00:35:33,159 --> 00:35:39,519

goodness yeah it's it's amazing it's

846

00:35:36,219 --> 00:35:43,299

amazing and more mountains and craters

847

00:35:39,519 --> 00:35:48,900

here we are looking at in giant

848

00:35:43,300 --> 00:35:52,480

photographs you look up close and the oh

849

00:35:48,900 --> 00:35:56,530

my goodness a detail is just absolutely

850

00:35:52,480 --> 00:36:00,550

right this is more than a meter across

851

00:35:56,530 --> 00:36:01,690

yeah yeah and you can stand up you're

852

00:36:00,550 --> 00:36:04,810

close enough that you think you need a

853

00:36:01,690 --> 00:36:07,300

magnifying glass yes and there still yes

854

00:36:04,809 --> 00:36:09,789

intricate detail yes that's that's

855

00:36:07,300 --> 00:36:11,380

stunning I had no idea but the closer I

856
00:36:09,789 --> 00:36:12,969
get in my eyes to study and go out of

857
00:36:11,380 --> 00:36:15,220
focus no because I can't get any closer

858
00:36:12,969 --> 00:36:18,449
there's still detail there to be seen

859
00:36:15,219 --> 00:36:21,549
Wow Wow now here's an interesting one

860
00:36:18,449 --> 00:36:25,289
another huge sort of panorama here from

861
00:36:21,550 --> 00:36:28,060
the moon it gives you an idea of the

862
00:36:25,289 --> 00:36:30,099
scale I guess in this in and also the

863
00:36:28,059 --> 00:36:32,469
way the the the mountain ranges and so

864
00:36:30,099 --> 00:36:34,089
forth on the moon so a lot of these most

865
00:36:32,469 --> 00:36:37,119
of the pictures here were taken from a

866
00:36:34,090 --> 00:36:40,059
fairly oblique angle so that you can see

867
00:36:37,119 --> 00:36:42,789
the topology yeah yeah that really

868
00:36:40,059 --> 00:36:45,639
brings it out into stark detail well the

869
00:36:42,789 --> 00:36:47,139
one thing I must say that I remember

870
00:36:45,639 --> 00:36:49,389
reading about in the seeing is that the

871
00:36:47,139 --> 00:36:51,250
astronauts on the moon really didn't

872
00:36:49,389 --> 00:36:53,170
have a concept of distance right because

873
00:36:51,250 --> 00:36:54,880
they our eyes don't work that way where

874
00:36:53,170 --> 00:36:57,909
there's no atmosphere we can't tell how

875
00:36:54,880 --> 00:36:59,170
far something is away right and you get

876
00:36:57,909 --> 00:37:01,929
that impression here by looking at these

877
00:36:59,170 --> 00:37:03,909
photographs too we move along a

878
00:37:01,929 --> 00:37:04,869
beautiful photograph of another crater

879
00:37:03,909 --> 00:37:07,179
these rills

880
00:37:04,869 --> 00:37:09,099
yeah particularly this these are

881
00:37:07,179 --> 00:37:11,589
probably collapsed lava tubes

882
00:37:09,099 --> 00:37:13,900
oh wow that's fascinating look at them

883
00:37:11,590 --> 00:37:16,690
there's like a meandering River yeah

884

00:37:13,900 --> 00:37:19,950
going across there that's fascinating

885
00:37:16,690 --> 00:37:22,960
with the vulcanization caused by

886
00:37:19,949 --> 00:37:27,279
eruption of magma or whatever the right

887
00:37:22,960 --> 00:37:30,960
word is for lunar magma after the impact

888
00:37:27,280 --> 00:37:35,110
of a meteor forming the crater yeah yeah

889
00:37:30,960 --> 00:37:37,570
some undetermined time in the distant

890
00:37:35,110 --> 00:37:40,780
past long time a long time ago

891
00:37:37,570 --> 00:37:42,970
so lunar orbiter Lunar Reconnaissance

892
00:37:40,780 --> 00:37:46,510
Orbiter picture and then a couple of

893
00:37:42,969 --> 00:37:51,250
photographs taken here at Chabot for

894
00:37:46,510 --> 00:37:55,540
context okay nice pictures nice pictures

895
00:37:51,250 --> 00:37:56,920
but that one again gives you an idea of

896
00:37:55,539 --> 00:37:59,440
how many craters there must be on the

897
00:37:56,920 --> 00:38:04,750
moon going into the billions must be a

898
00:37:59,440 --> 00:38:06,760

couple yeah oh my goodness it's so this

899

00:38:04,750 --> 00:38:10,210

is the one that I took a picture of as a

900

00:38:06,760 --> 00:38:12,670

no that's on my on my Facebook feed okay

901

00:38:10,210 --> 00:38:14,920

you're responding yeah yeah and I said

902

00:38:12,670 --> 00:38:17,829

that the image that the Facebook image

903

00:38:14,920 --> 00:38:19,869

does it no just it's just it's this

904

00:38:17,829 --> 00:38:22,869

again you walk up to this yeah and it's

905

00:38:19,869 --> 00:38:25,980

got the same levels about two meter long

906

00:38:22,869 --> 00:38:28,420

panoramas here folks of a crater with

907

00:38:25,980 --> 00:38:29,949

mountains in it and again I can't

908

00:38:28,420 --> 00:38:31,900

understand the scale I don't know if

909

00:38:29,949 --> 00:38:33,789

what I'm looking at is two three four or

910

00:38:31,900 --> 00:38:37,539

five six ten kilometers across or

911

00:38:33,789 --> 00:38:40,500

whatever it is it's some 53 miles which

912

00:38:37,539 --> 00:38:43,900

makes it about 60 km

913
00:38:40,500 --> 00:38:45,670
so this is scale yes that's 53 miles

914
00:38:43,900 --> 00:38:47,910
across so these these are big mountains

915
00:38:45,670 --> 00:38:47,909
yes

916
00:38:49,548 --> 00:38:55,199
he's breathtaking yeah I just I when I

917
00:38:53,278 --> 00:38:57,150
first saw these pictures I just yeah

918
00:38:55,199 --> 00:39:00,239
just stood here without the gape yeah

919
00:38:57,150 --> 00:39:02,608
yeah let's and this is the most

920
00:39:00,239 --> 00:39:04,769
spectacular okay

921
00:39:02,608 --> 00:39:07,409
physics now we're looking at a mountain

922
00:39:04,768 --> 00:39:10,798
range with the the shadow of these

923
00:39:07,409 --> 00:39:13,710
mountains cast it must be well again I

924
00:39:10,798 --> 00:39:16,739
who knows what scale is the size of

925
00:39:13,710 --> 00:39:19,469
about fast up in yeah yeah so it's a

926
00:39:16,739 --> 00:39:22,829
couple of miles high okay so this is

927
00:39:19,469 --> 00:39:24,690
actually the central peak of one of the

928
00:39:22,829 --> 00:39:26,190
most prominent craters on the front side

929
00:39:24,690 --> 00:39:30,599
of the moon and I'll show it to you on

930
00:39:26,190 --> 00:39:33,749
the on the big image so when a object

931
00:39:30,599 --> 00:39:37,349
comes in slams into the moon it forms an

932
00:39:33,748 --> 00:39:42,028
explosion a shockwave radiates out when

933
00:39:37,349 --> 00:39:46,910
that shockwave slows when the rock can

934
00:39:42,028 --> 00:39:49,588
resist its expansion it reflects and it

935
00:39:46,909 --> 00:39:51,509
concentrates back in the center and it

936
00:39:49,588 --> 00:39:53,248
pushes a mountain up in the middle

937
00:39:51,509 --> 00:39:56,159
that's how these central Peaks are

938
00:39:53,248 --> 00:39:58,679
formed but that's a violent action and

939
00:39:56,159 --> 00:40:01,679
stuff gets thrown up so here is a

940
00:39:58,679 --> 00:40:03,629
boulder that went up and came back down

941

00:40:01,679 --> 00:40:05,489
and landed right on the top of the right

942
00:40:03,630 --> 00:40:09,358
hip hop right on the top of the peak

943
00:40:05,489 --> 00:40:10,639
good grief and again it's got incredible

944
00:40:09,358 --> 00:40:15,389
detail yeah

945
00:40:10,639 --> 00:40:17,400
stunning stunning stunning stunning Wow

946
00:40:15,389 --> 00:40:19,578
what it would be like to just fly over

947
00:40:17,400 --> 00:40:24,389
this this terrain yeah

948
00:40:19,579 --> 00:40:28,349
the effect of solar ultraviolet is to

949
00:40:24,389 --> 00:40:30,409
darken the rock so new craters are

950
00:40:28,349 --> 00:40:34,349
brighter because they haven't been

951
00:40:30,409 --> 00:40:37,078
darkened so you can see something came

952
00:40:34,349 --> 00:40:40,759
slamming in here and those light stuff

953
00:40:37,079 --> 00:40:43,109
that's blast over is the ejecta yeah

954
00:40:40,759 --> 00:40:45,989
that's very beautiful isn't it it's

955
00:40:43,108 --> 00:40:47,548

black and white well these are blocking

956

00:40:45,989 --> 00:40:49,259

one black and white but it's beautiful I

957

00:40:47,548 --> 00:40:51,088

mean the moon is more or less black and

958

00:40:49,259 --> 00:40:52,710

white like this so these are the

959

00:40:51,088 --> 00:40:55,318

pictures I told you about of the North

960

00:40:52,710 --> 00:40:58,228

and South Pole okay here we go and these

961

00:40:55,318 --> 00:41:00,599

are constructed so that you're seeing

962

00:40:58,228 --> 00:41:01,348

each spot when it was under maximum

963

00:41:00,599 --> 00:41:04,019

illumination

964

00:41:01,349 --> 00:41:05,759

okay yeah that makes sense YUM it

965

00:41:04,018 --> 00:41:07,768

wouldn't look like normally ever yeah

966

00:41:05,759 --> 00:41:09,690

Dex light here now right in the middle

967

00:41:07,768 --> 00:41:11,669

here there's never gets like the Sun

968

00:41:09,690 --> 00:41:13,499

never shines the Sun never shines and

969

00:41:11,670 --> 00:41:14,940

there's ice at the bottom yes I

970
00:41:13,498 --> 00:41:16,379
understand this is the South Pole

971
00:41:14,940 --> 00:41:17,969
yes South Pole here we are looking at

972
00:41:16,380 --> 00:41:21,469
the South Pole and depending on where

973
00:41:17,969 --> 00:41:21,469
you're looking at from of course I know

974
00:41:23,028 --> 00:41:28,739
all right and this is the North Pole

975
00:41:25,588 --> 00:41:32,900
right yeah here we go looks like a giant

976
00:41:28,739 --> 00:41:36,599
cookie it may not be that tasty yeah

977
00:41:32,900 --> 00:41:39,449
it's a whole string of panoramas here

978
00:41:36,599 --> 00:41:42,690
like get up nice and close and the first

979
00:41:39,449 --> 00:41:44,309
one shows us one of the lunar landers

980
00:41:42,690 --> 00:41:48,329
I'm not sure which one it is but this is

981
00:41:44,309 --> 00:41:50,369
power 15 or 15 okay sort of landed

982
00:41:48,329 --> 00:41:53,068
slightly on an angle as far as I can

983
00:41:50,369 --> 00:41:54,630
tell here and we can scan right across

984
00:41:53,068 --> 00:41:56,278
and see the mountains nearby and the

985
00:41:54,630 --> 00:41:58,079
lunar buggy tracks going everywhere

986
00:41:56,278 --> 00:42:00,929
right but the lunar lander is

987
00:41:58,079 --> 00:42:03,539
brilliantly colored this gold foil there

988
00:42:00,929 --> 00:42:05,129
and the rest of the American flag and as

989
00:42:03,539 --> 00:42:08,699
soon as we leave that it's just black

990
00:42:05,130 --> 00:42:13,039
and white and and look at this you know

991
00:42:08,699 --> 00:42:16,048
snow stars no switch is one of the

992
00:42:13,039 --> 00:42:17,729
conspiracy theories yes oldest's gripes

993
00:42:16,048 --> 00:42:20,309
of course there are no star and we know

994
00:42:17,728 --> 00:42:21,838
why we won't go into it now why there

995
00:42:20,309 --> 00:42:23,249
are no stars in photographs from the

996
00:42:21,838 --> 00:42:25,318
moon but you can look that up folks if

997
00:42:23,248 --> 00:42:26,669
you're not sure and again we come across

998

00:42:25,318 --> 00:42:28,528
and there's another one another

999
00:42:26,670 --> 00:42:31,289
astronaut by some boulders here with the

1000
00:42:28,528 --> 00:42:33,838
buggy parked on the other side oh I want

1001
00:42:31,289 --> 00:42:36,959
these in my house I want gorgeous it's

1002
00:42:33,838 --> 00:42:40,170
just beautiful it's I can't do these

1003
00:42:36,958 --> 00:42:42,629
justice by talking about them but I love

1004
00:42:40,170 --> 00:42:45,959
this one another panorama but this time

1005
00:42:42,630 --> 00:42:47,489
the what is that that's the buggy okay

1006
00:42:45,958 --> 00:42:50,669
with a little satellite dish and an

1007
00:42:47,489 --> 00:42:53,309
astronaut just buy it but there on the

1008
00:42:50,670 --> 00:42:55,409
horizon there on the top right so there

1009
00:42:53,309 --> 00:42:56,800
you can see space directly behind the

1010
00:42:55,409 --> 00:42:59,859
buggy in the astronaut

1011
00:42:56,800 --> 00:43:02,200
a 3d printed model is another display

1012
00:42:59,860 --> 00:43:04,480

here we've got a crater with a little

1013

00:43:02,199 --> 00:43:07,119

mat is that the same mountain ranges

1014

00:43:04,480 --> 00:43:10,690

nope no it's not but what we do have

1015

00:43:07,119 --> 00:43:13,210

next to this 3d printed oh it is printed

1016

00:43:10,690 --> 00:43:14,320

look at that in sections and it's I

1017

00:43:13,210 --> 00:43:16,030

suppose this as an accurate

1018

00:43:14,320 --> 00:43:18,519

representation of part of the moon we've

1019

00:43:16,030 --> 00:43:21,360

got a light source here we can move to

1020

00:43:18,519 --> 00:43:24,940

give you a scale that's the Bay Area

1021

00:43:21,360 --> 00:43:27,130

okay to scale so it's huge yeah it's a

1022

00:43:24,940 --> 00:43:30,159

huge crater and with this light we can

1023

00:43:27,130 --> 00:43:33,130

move it across noisily don't see how

1024

00:43:30,159 --> 00:43:34,449

different it looks at different yeah so

1025

00:43:33,130 --> 00:43:35,980

the sun's over here we can see the

1026

00:43:34,449 --> 00:43:41,879

shadows being cast by the mountains in

1027
00:43:35,980 --> 00:43:41,880
the middle that's great noisy noisy Sun

1028
00:43:42,989 --> 00:43:49,089
step outside here now we go to my

1029
00:43:46,780 --> 00:43:51,730
favorite part of this once that wasn't

1030
00:43:49,090 --> 00:43:54,070
your favorite part no whoa that is

1031
00:43:51,730 --> 00:43:55,510
magnificent that is magnificent amazing

1032
00:43:54,070 --> 00:43:58,240
that's one of the best displays I've

1033
00:43:55,510 --> 00:44:00,160
ever seen I just stood and gaped at

1034
00:43:58,239 --> 00:44:02,199
those pictures I could go back in Cape

1035
00:44:00,159 --> 00:44:07,109
for another two hours and we will go

1036
00:44:02,199 --> 00:44:10,960
back but these our these are our

1037
00:44:07,110 --> 00:44:14,680
telescopes ah suddenly I'm surrounded by

1038
00:44:10,960 --> 00:44:17,619
by domes tell us telescope domes so

1039
00:44:14,679 --> 00:44:20,469
Anthony Shabo the benefactor of this

1040
00:44:17,619 --> 00:44:25,539
good morning the benefactor of this

1041
00:44:20,469 --> 00:44:28,119
facility back in 1883 purchased a

1042
00:44:25,539 --> 00:44:32,920
telescope for the Oakland School

1043
00:44:28,119 --> 00:44:35,789
District and it's in the dome here

1044
00:44:32,920 --> 00:44:38,800
okay so we're walking across a little

1045
00:44:35,789 --> 00:44:40,509
middle of down to look down to carefully

1046
00:44:38,800 --> 00:44:43,330
five it's about ten meters down and

1047
00:44:40,510 --> 00:44:43,870
we're entering a wonderful little dome

1048
00:44:43,329 --> 00:44:47,110
here

1049
00:44:43,869 --> 00:44:50,589
here we go inside and there it is

1050
00:44:47,110 --> 00:44:52,769
there's a beautiful telescope how old is

1051
00:44:50,590 --> 00:44:59,440
this telescope

1052
00:44:52,769 --> 00:45:03,880
griefed on the back 1883 1883

1053
00:44:59,440 --> 00:45:05,710
yeah and like all these telescopes are

1054
00:45:03,880 --> 00:45:07,360
the domes you get this weird acoustic

1055

00:45:05,710 --> 00:45:09,309
effect yeah depending on where you stand

1056
00:45:07,360 --> 00:45:12,400
you're not sure where they the sounds

1057
00:45:09,309 --> 00:45:16,420
coming from it's brilliant

1058
00:45:12,400 --> 00:45:20,019
yeah so it's a beautiful telescope it's

1059
00:45:16,420 --> 00:45:23,680
a magnificent telescope so it's one of

1060
00:45:20,019 --> 00:45:28,960
the directors of this facility back in

1061
00:45:23,679 --> 00:45:31,199
the 1920s named the the two refractors

1062
00:45:28,960 --> 00:45:34,329
you'll see the other large ones soon

1063
00:45:31,199 --> 00:45:47,019
after the sisters in the Bible Rachel

1064
00:45:34,329 --> 00:45:51,309
and Leah hmm so this is this is the

1065
00:45:47,019 --> 00:45:56,429
school months we will have a couple of

1066
00:45:51,309 --> 00:46:00,759
hundred kids a day now I've picked up a

1067
00:45:56,429 --> 00:46:03,399
sun viewing device here I can look

1068
00:46:00,760 --> 00:46:08,620
directly at the Sun through special

1069
00:46:03,400 --> 00:46:10,940

tinted glass Wow there it is a disco and

1070

00:46:08,619 --> 00:46:14,239
not on my eyes

1071

00:46:10,940 --> 00:46:17,630
it's beautiful it's just a white round

1072

00:46:14,239 --> 00:46:20,629
light somewhat distorted through the

1073

00:46:17,630 --> 00:46:22,119
cloud but there it is looking directly

1074

00:46:20,630 --> 00:46:25,160
at the Sun I'll put that down

1075

00:46:22,119 --> 00:46:27,289
that's very good and in a few years when

1076

00:46:25,159 --> 00:46:29,118
we're back at a active part of the

1077

00:46:27,289 --> 00:46:30,829
sunspot cycle you'll be able to do that

1078

00:46:29,119 --> 00:46:34,490
and occasionally actually see a sunspot

1079

00:46:30,829 --> 00:46:39,619
oh wow cool very cool probably no

1080

00:46:34,489 --> 00:46:43,308
sunspots at all today this is unexpected

1081

00:46:39,619 --> 00:46:44,450
but it is a space and science facility

1082

00:46:43,309 --> 00:46:47,530
of course and we've come across a

1083

00:46:44,449 --> 00:46:50,169
display here Archaeopteryx

1084
00:46:47,530 --> 00:46:52,369
these are a whole bunch of dinosaurs and

1085
00:46:50,170 --> 00:46:54,889
we've got some local high school

1086
00:46:52,369 --> 00:46:57,170
students and yeah I'm doing a podcast

1087
00:46:54,889 --> 00:47:00,019
from Australia a scientific podcast and

1088
00:46:57,170 --> 00:47:01,970
you're in here today to explain what

1089
00:47:00,019 --> 00:47:04,219
exactly so we're over here we're talking

1090
00:47:01,969 --> 00:47:06,919
about cladistics which is the study of

1091
00:47:04,219 --> 00:47:09,048
how the person of the visual and

1092
00:47:06,920 --> 00:47:11,269
physical traits of different animals can

1093
00:47:09,048 --> 00:47:12,920
help identify what they are based on

1094
00:47:11,269 --> 00:47:15,349
their schools are other parts of the

1095
00:47:12,920 --> 00:47:17,990
animal so over here we have a variety of

1096
00:47:15,349 --> 00:47:20,380
schools from different creatures some of

1097
00:47:17,989 --> 00:47:23,149
them are very modern features others are

1098
00:47:20,380 --> 00:47:25,940
prehistoric such as the ear after there

1099
00:47:23,150 --> 00:47:27,980
we have them all laid out here but the

1100
00:47:25,940 --> 00:47:30,679
they are scrambled with respect to their

1101
00:47:27,980 --> 00:47:33,710
cards so the objective here is to try to

1102
00:47:30,679 --> 00:47:36,528
match their cards to the skulls based on

1103
00:47:33,710 --> 00:47:38,179
the very characteristic I know I

1104
00:47:36,528 --> 00:47:40,699
understand okay we got the photographs

1105
00:47:38,179 --> 00:47:42,949
here we've got various animals going

1106
00:47:40,699 --> 00:47:45,649
back to prehistory of course dinosaurs

1107
00:47:42,949 --> 00:47:47,149
and whatever and models of the skulls

1108
00:47:45,650 --> 00:47:49,190
behind them you have to swap them around

1109
00:47:47,150 --> 00:47:51,318
- well I'm not going to make a fool out

1110
00:47:49,190 --> 00:47:53,289
of myself and try it right now but that

1111
00:47:51,318 --> 00:47:56,909
that makes a fascinating exhibition

1112

00:47:53,289 --> 00:47:59,400
that's a great model of a skull -

1113
00:47:56,909 --> 00:48:01,558
so you can use that it's a very spongy

1114
00:47:59,400 --> 00:48:03,660
school that came in school and that's

1115
00:48:01,559 --> 00:48:05,069
one way that you can identify it I have

1116
00:48:03,659 --> 00:48:07,078
something which floats in the water a

1117
00:48:05,068 --> 00:48:09,179
lot because I have so much air it helps

1118
00:48:07,079 --> 00:48:13,349
it stay boy am i right

1119
00:48:09,179 --> 00:48:14,940
it also has a characteristic nose that

1120
00:48:13,349 --> 00:48:17,460
bumps up as you can see on the store it

1121
00:48:14,940 --> 00:48:23,150
here as well as large eyes and of course

1122
00:48:17,460 --> 00:48:25,528
very pointy together great exhibition

1123
00:48:23,150 --> 00:48:28,079
wonder it's good and we're traveling to

1124
00:48:25,528 --> 00:48:30,719
space with a weight and mass exhibition

1125
00:48:28,079 --> 00:48:32,759
here or a little table with little

1126
00:48:30,719 --> 00:48:34,818

suitcases each suitcase is labeled with

1127

00:48:32,759 --> 00:48:39,778

the name of a planet Saturn Uranus

1128

00:48:34,818 --> 00:48:42,000

Neptune Venus Mars Mercury Pluto the

1129

00:48:39,778 --> 00:48:44,009

moon Pluto snuck in there somehow but

1130

00:48:42,000 --> 00:48:46,079

that's alright we'll let that have we'll

1131

00:48:44,009 --> 00:48:48,240

call these worlds instead of planets all

1132

00:48:46,079 --> 00:48:51,298

right I'm with you so pick up the moon

1133

00:48:48,239 --> 00:48:53,278

moves quite light really but let me

1134

00:48:51,298 --> 00:48:58,409

attempt to fade here and go for

1135

00:48:53,278 --> 00:49:00,000

something like Saturn blimey it's the

1136

00:48:58,409 --> 00:49:02,940

same size they're all the same size and

1137

00:49:00,000 --> 00:49:05,130

we can check out oh that's quite heavy

1138

00:49:02,940 --> 00:49:07,519

surprisingly heavy we can check out

1139

00:49:05,130 --> 00:49:10,829

Neptune's heavy the relative weight as

1140

00:49:07,518 --> 00:49:14,250

Mars it's like Mars is very light

1141
00:49:10,829 --> 00:49:17,759
Mercury's light and Pluto nearly floats

1142
00:49:14,250 --> 00:49:20,329
away by itself and you guys are here to

1143
00:49:17,759 --> 00:49:23,009
help explain the difference or the

1144
00:49:20,329 --> 00:49:25,259
difference in weight and the difference

1145
00:49:23,009 --> 00:49:27,028
between weight and mass yes so the idea

1146
00:49:25,259 --> 00:49:29,608
here is that each two case holds the

1147
00:49:27,028 --> 00:49:32,250
same mass but the way you feel is on

1148
00:49:29,608 --> 00:49:34,409
different planets so you have a good

1149
00:49:32,250 --> 00:49:36,298
sense for earth as this earth yeah you

1150
00:49:34,409 --> 00:49:38,940
have a good sense of earth for scale and

1151
00:49:36,298 --> 00:49:41,420
then you get to feel what your anus

1152
00:49:38,940 --> 00:49:44,150
would be and Saturn

1153
00:49:41,420 --> 00:49:47,059
and you're able to tell how gravity

1154
00:49:44,150 --> 00:49:49,430
affects mass or mass and gravity affect

1155
00:49:47,059 --> 00:49:51,079
weight rather right so if you were to

1156
00:49:49,429 --> 00:49:53,119
happen to carry that suitcase to a

1157
00:49:51,079 --> 00:49:57,079
different planet or world would it took

1158
00:49:53,119 --> 00:50:00,109
this suitcase to mercury it would be

1159
00:49:57,079 --> 00:50:03,019
like that so the earth is the base level

1160
00:50:00,110 --> 00:50:06,800
I guess you'd say and who came up with

1161
00:50:03,019 --> 00:50:08,869
this idea it was a an older gas Explorer

1162
00:50:06,800 --> 00:50:11,900
volunteer they're not here anymore but

1163
00:50:08,869 --> 00:50:13,519
they created this demo and so it's

1164
00:50:11,900 --> 00:50:14,869
beyond the fluorescence I love it I

1165
00:50:13,519 --> 00:50:20,000
think that's a terrific idea

1166
00:50:14,869 --> 00:50:22,839
oh it just gets better and better what's

1167
00:50:20,000 --> 00:50:25,309
this so the science of tidal waves

1168
00:50:22,840 --> 00:50:29,450
we've got spoons something close to my

1169

00:50:25,309 --> 00:50:32,630
heart okay taking yeah I think this I'll

1170
00:50:29,449 --> 00:50:34,669
have to put your fingers through loops

1171
00:50:32,630 --> 00:50:36,320
yeah you'll demonstrate it to me then

1172
00:50:34,670 --> 00:50:41,030
I'll do it yeah then put it in your ear

1173
00:50:36,320 --> 00:50:44,840
what and then bang it against the side

1174
00:50:41,030 --> 00:50:46,820
of the table okay trust me it's worth

1175
00:50:44,840 --> 00:50:48,710
alright so I'll get you to hold the

1176
00:50:46,820 --> 00:50:50,809
microphone all right I've got a fork

1177
00:50:48,710 --> 00:50:52,730
dangling on the end of the string but I

1178
00:50:50,809 --> 00:50:54,469
put one loop of the string through this

1179
00:50:52,730 --> 00:50:55,820
finger right one loop of the string

1180
00:50:54,469 --> 00:50:57,889
through the other thing right so the

1181
00:50:55,820 --> 00:50:59,210
forks in the middle right put my fingers

1182
00:50:57,889 --> 00:51:01,309
in my ears such a fingers in your ears

1183
00:50:59,210 --> 00:51:03,470

they're looking at me like I'm crazy and

1184

00:51:01,309 --> 00:51:09,509

then I bang the fork against the table

1185

00:51:03,469 --> 00:51:12,599

yes I'm on candid camera here we go

1186

00:51:09,510 --> 00:51:14,040

right now do it do it do it software

1187

00:51:12,599 --> 00:51:16,429

let's see and keep your fingers in there

1188

00:51:14,039 --> 00:51:16,429

crazy

1189

00:51:17,420 --> 00:51:24,200

isn't that zoning is ridiculous I could

1190

00:51:21,760 --> 00:51:26,600

feel the sound traveling through the

1191

00:51:24,199 --> 00:51:31,779

string through my fingers into my ears

1192

00:51:26,599 --> 00:51:31,779

and it's just this magnificent drawn

1193

00:51:32,619 --> 00:51:39,349

you can do this at home I can do this at

1194

00:51:35,329 --> 00:51:41,210

home a wire hanger Wow and it's amazing

1195

00:51:39,349 --> 00:51:43,720

and this is something we can talk to

1196

00:51:41,210 --> 00:51:43,720

each other with

1197

00:51:45,230 --> 00:51:49,699

hello we're going to descriptive day

1198
00:51:52,500 --> 00:51:58,358
[Music]

1199
00:51:54,509 --> 00:52:00,849
yobbos space and Science Center open

1200
00:51:58,358 --> 00:52:05,159
from Wednesdays to Sunday 10:00 a.m. to

1201
00:52:00,849 --> 00:52:05,160
5:00 p.m. for more information visit

1202
00:52:09,760 --> 00:52:14,528
[Music]

1203
00:52:22,949 --> 00:52:29,889
www.opm.gov/health install cognitive

1204
00:52:26,739 --> 00:52:32,379
psychology tells us about why we lay

1205
00:52:29,889 --> 00:52:34,690
awake worrying at night instead of

1206
00:52:32,380 --> 00:52:36,849
sleeping and this will be addy Belconnen

1207
00:52:34,690 --> 00:52:39,849
community service which is in Chandler

1208
00:52:36,849 --> 00:52:42,999
Street Belconnen in the AC t the cost is

1209
00:52:39,849 --> 00:52:45,329
free Bronwen Milken's is a PhD candidate

1210
00:52:42,998 --> 00:52:48,338
at the University of Western Australia

1211
00:52:45,329 --> 00:52:50,079
the PhD research begins with the

1212
00:52:48,338 --> 00:52:54,130
situation that many people are familiar

1213
00:52:50,079 --> 00:52:56,740
with worrying in bed at night instead of

1214
00:52:54,130 --> 00:53:00,009
sleeping the study she has conducted

1215
00:52:56,739 --> 00:53:02,409
throughout her PhD have tried to work

1216
00:53:00,009 --> 00:53:04,900
out whether anomalies in the way our

1217
00:53:02,409 --> 00:53:08,318
brain processes information drives the

1218
00:53:04,900 --> 00:53:10,190
worry keeping us up at night dinner will

1219
00:53:08,318 --> 00:53:12,440
follow the lecture

1220
00:53:10,190 --> 00:53:15,740
then on the 13th of August we have

1221
00:53:12,440 --> 00:53:18,920
woman's woo pseudoscience and woman's

1222
00:53:15,739 --> 00:53:22,788
health with Trish hand that's from 6

1223
00:53:18,920 --> 00:53:26,480
p.m. and the venue is the law lecture

1224
00:53:22,789 --> 00:53:28,700
theatre fellows Road Australian National

1225
00:53:26,480 --> 00:53:32,510
University and the cost is also free

1226

00:53:28,699 --> 00:53:35,629
this talk is a tour through the world of

1227
00:53:32,510 --> 00:53:37,520
woman's womb there's probably more of it

1228
00:53:35,630 --> 00:53:39,740
than youth realize and it's often

1229
00:53:37,519 --> 00:53:41,989
weirder than you expect there are the

1230
00:53:39,739 --> 00:53:45,078
obvious ones which are skewed towards

1231
00:53:41,989 --> 00:53:47,618
women but technically gender neutral

1232
00:53:45,079 --> 00:53:51,859
such as essential oils naturopathy

1233
00:53:47,619 --> 00:53:54,980
psychics mediums etc which generally

1234
00:53:51,858 --> 00:53:58,009
have more female customers than male but

1235
00:53:54,980 --> 00:54:00,619
not necessarily by design Trish Han is a

1236
00:53:58,010 --> 00:54:03,020
clinical educator in diagnostic

1237
00:54:00,619 --> 00:54:05,690
radiology at Royal Prince Alfred

1238
00:54:03,019 --> 00:54:07,759
Hospital in Sydney and vice-president of

1239
00:54:05,690 --> 00:54:09,940
Australian skeptics and of course a

1240
00:54:07,760 --> 00:54:13,010

reporter right here on the sceptic zone

1241
00:54:09,940 --> 00:54:16,400
for more information just head to the

1242
00:54:13,010 --> 00:54:18,260
social skeptics Canberra meetup page or

1243
00:54:16,400 --> 00:54:18,530
follow the link in this week's show

1244
00:54:18,260 --> 00:54:21,760
notes

1245
00:54:18,530 --> 00:54:21,760
[Music]

1246
00:54:32,539 --> 00:54:37,409
thank you for listening to the skeptic

1247
00:54:35,039 --> 00:54:39,300
zone and thank you to those people who

1248
00:54:37,409 --> 00:54:41,789
went along to skeptics in the pub in

1249
00:54:39,300 --> 00:54:43,560
Sydney a few days ago I I couldn't make

1250
00:54:41,789 --> 00:54:46,380
it which is a great pity because it was

1251
00:54:43,559 --> 00:54:48,599
a talk by dr. Karl crucial miss key and

1252
00:54:46,380 --> 00:54:50,369
judging by the photographs it was a full

1253
00:54:48,599 --> 00:54:51,569
house but don't forget if you're in

1254
00:54:50,369 --> 00:54:54,049
Sydney there's lots of fun to be had

1255
00:54:51,570 --> 00:54:56,789
with Maynard at Maynard comdataís you

1256
00:54:54,050 --> 00:54:59,430
including movie nights and Maynard's

1257
00:54:56,789 --> 00:55:02,909
Love Shack and by the way the next Love

1258
00:54:59,429 --> 00:55:05,250
Shack is on the 17th of August Saturday

1259
00:55:02,909 --> 00:55:07,259
the 17th of August at the red bar which

1260
00:55:05,250 --> 00:55:09,929
is at the end of Glee Point Road near

1261
00:55:07,260 --> 00:55:11,520
the Broadway more information at Maynard

1262
00:55:09,929 --> 00:55:13,980
com Donei you

1263
00:55:11,519 --> 00:55:15,750
and speaking of Maynard and skeptics in

1264
00:55:13,980 --> 00:55:17,909
the pub and dr. Karl coming up on next

1265
00:55:15,750 --> 00:55:19,800
week's show a special report another

1266
00:55:17,909 --> 00:55:21,899
special report from may not who was at

1267
00:55:19,800 --> 00:55:24,480
skeptics in the pub and spoke to lots of

1268
00:55:21,900 --> 00:55:27,920
pub goers and dr. Karl Cruz on whiskey

1269
00:55:24,480 --> 00:55:30,960
himself no stranger to the sceptic zone

1270
00:55:27,920 --> 00:55:32,750
but for this week from the San Francisco

1271
00:55:30,960 --> 00:55:39,750
Bay Area this is Richard Saunders

1272
00:55:32,750 --> 00:55:42,449
signing off you've been listening to the

1273
00:55:39,750 --> 00:55:47,039
skeptic zone podcast please visit our

1274
00:55:42,449 --> 00:55:50,339
website at WWDC be for show notes

1275
00:55:47,039 --> 00:55:54,539
contacts and to access the bat catalog

1276
00:55:50,340 --> 00:55:56,250
of episodes going back to 2008 you can

1277
00:55:54,539 --> 00:55:59,309
follow the skeptic zone podcast on

1278
00:55:56,250 --> 00:56:01,590
twitter at skeptic zone visit our

1279
00:55:59,309 --> 00:56:02,480
facebook page or leave a review on

1280
00:56:01,590 --> 00:56:05,160
itunes

1281
00:56:02,480 --> 00:56:08,550
you can also support the skeptic zone

1282
00:56:05,159 --> 00:56:11,269
via patreon or PayPal the skeptic zone

1283

00:56:08,550 --> 00:56:13,650
podcast is an independent production

1284
00:56:11,269 --> 00:56:15,750
reviews and opinions expressed on the

1285
00:56:13,650 --> 00:56:18,119
skeptical zone are not necessarily those

1286
00:56:15,750 --> 00:56:19,960
of Australian skeptics or any other

1287
00:56:18,119 --> 00:56:26,409
skeptical organization

1288
00:56:19,960 --> 00:56:26,409
[Music]

1289
00:56:30,989 --> 00:56:36,139
hello everybody who keeps listening

1290
00:56:33,090 --> 00:56:39,570
after the music maybe you're asleep

1291
00:56:36,139 --> 00:56:42,480
hello wake up wake up it's time for the

1292
00:56:39,570 --> 00:56:44,870
dice game asleep how dare you fall

1293
00:56:42,480 --> 00:56:47,130
asleep during the sceptic zone anyway

1294
00:56:44,869 --> 00:56:51,049
for those of you don't know I've got a

1295
00:56:47,130 --> 00:56:54,570
10 sided die here no it's this one sir

1296
00:56:51,050 --> 00:56:57,200
sort of a yellow transparent yellow I'm

1297
00:56:54,570 --> 00:57:00,150

going to roll it three times and

1298

00:56:57,199 --> 00:57:03,449

grabbing my pen and paper here I want

1299

00:57:00,150 --> 00:57:06,300

you to use your psychic powers hmm

1300

00:57:03,449 --> 00:57:09,149

you're predicting powers or your

1301

00:57:06,300 --> 00:57:11,070

mathematical odds something like that

1302

00:57:09,150 --> 00:57:13,619

yeah this see if you can guess what

1303

00:57:11,070 --> 00:57:14,970

numbers come up shaking it now here

1304

00:57:13,619 --> 00:57:18,259

comes the first roll so it'll be a

1305

00:57:14,969 --> 00:57:24,629

number from 1 to 10

1306

00:57:18,260 --> 00:57:26,930

today's first number is 3 ok ok next

1307

00:57:24,630 --> 00:57:32,579

number

1308

00:57:26,929 --> 00:57:36,269

it's a 903 and 9 whatever that means

1309

00:57:32,579 --> 00:57:43,829

last one and to get all three numbers is

1310

00:57:36,269 --> 00:57:49,440

a 1 in 1,000 shot here we go rolling 8

1311

00:57:43,829 --> 00:57:49,440

three nine and eight

