

1  
00:00:05,990 --> 00:00:12,379  
welcome to the skeptic zone the podcast

2  
00:00:09,109 --> 00:00:22,460  
from Australia for science and reason

3  
00:00:12,380 --> 00:00:25,289  
[Music]

4  
00:00:22,460 --> 00:00:28,528  
hello and welcome to the skeptic zone

5  
00:00:25,289 --> 00:00:32,250  
episode number 429 for the 8th of

6  
00:00:28,528 --> 00:00:35,429  
January 2017 Richardson is here with you

7  
00:00:32,250 --> 00:00:38,939  
back in Sydney Australia muggy hot warm

8  
00:00:35,429 --> 00:00:41,159  
humid cloudy looking out the window

9  
00:00:38,939 --> 00:00:44,009  
Sydney Australia nice to be back in

10  
00:00:41,159 --> 00:00:46,890  
Australia nice to see Henrietta and more

11  
00:00:44,009 --> 00:00:48,628  
the skeptic zone cats as soon as I

12  
00:00:46,890 --> 00:00:52,409  
walked in the door they looked at me and

13  
00:00:48,628 --> 00:00:54,599  
said time for food yes they haven't

14  
00:00:52,409 --> 00:00:56,578  
changed a bit thank you to the wonderful

15  
00:00:54,600 --> 00:00:58,679  
people I saw in the United States on my

16  
00:00:56,579 --> 00:01:01,350  
recent trip thank you to the people who

17  
00:00:58,679 --> 00:01:03,058  
helped put together my my talks over

18  
00:01:01,350 --> 00:01:05,579  
there wow what a great time I had I

19  
00:01:03,058 --> 00:01:07,140  
really enjoyed that very much and a big

20  
00:01:05,579 --> 00:01:09,629  
thank you to the Dunning family who

21  
00:01:07,140 --> 00:01:12,599  
looked after me so well in Southern

22  
00:01:09,629 --> 00:01:13,709  
California and in fact later on in this

23  
00:01:12,599 --> 00:01:17,489  
episode you'll be hearing from

24  
00:01:13,709 --> 00:01:20,969  
up-and-coming young geologist Andrew

25  
00:01:17,489 --> 00:01:24,839  
Dunning as he and I explore the La Brea

26  
00:01:20,969 --> 00:01:27,719  
Tar Pits yeah fantastic area in Los

27  
00:01:24,840 --> 00:01:30,689  
Angeles the brea tar pits and the

28  
00:01:27,719 --> 00:01:33,329  
associated museum wow what a magical

29

00:01:30,688 --> 00:01:35,219  
place it is who would have ever thought

30  
00:01:33,329 --> 00:01:39,478  
that uh could be interesting it is

31  
00:01:35,219 --> 00:01:41,548  
because of all the remains of long

32  
00:01:39,478 --> 00:01:44,219  
extinct animals they do get out of these

33  
00:01:41,549 --> 00:01:47,280  
Tar Pits find out more later on in the

34  
00:01:44,219 --> 00:01:51,840  
show and also included in that report is

35  
00:01:47,280 --> 00:01:54,710  
a visit to the space shuttle Endeavour

36  
00:01:51,840 --> 00:01:58,259  
which is also on display in Los Angeles

37  
00:01:54,709 --> 00:02:00,629  
links to those places in the show notes

38  
00:01:58,259 --> 00:02:05,519  
but what an interesting day I had

39  
00:02:00,629 --> 00:02:08,639  
exploring the science on offer in Los

40  
00:02:05,519 --> 00:02:10,919  
Angeles but before we get to that report

41  
00:02:08,639 --> 00:02:13,559  
I better tell you that we've got a new

42  
00:02:10,919 --> 00:02:17,458  
reporter a new reporter on the skeptic

43  
00:02:13,560 --> 00:02:21,049

zone mandy lee Noble and her segment is

44

00:02:17,459 --> 00:02:23,939

going to be called the diet skeptic

45

00:02:21,049 --> 00:02:26,420

mandy lee noble is a dietician and

46

00:02:23,939 --> 00:02:29,129

skeptic from Brisbane up in Queensland

47

00:02:26,419 --> 00:02:32,000

dedicated to exposing health and

48

00:02:29,129 --> 00:02:34,379

wellness whoo and promoting inclusive

49

00:02:32,000 --> 00:02:37,110

evidence-based health care

50

00:02:34,379 --> 00:02:39,210

member of the dietitians Association of

51

00:02:37,110 --> 00:02:42,630

Australia registered Australian

52

00:02:39,210 --> 00:02:44,879

independent dietitian nutritionist Wow

53

00:02:42,629 --> 00:02:46,740

the diet skeptic what's good to eat

54

00:02:44,879 --> 00:02:49,859

what's bad to eat what shouldn't you eat

55

00:02:46,740 --> 00:02:53,189

what can I eat what's downstairs for me

56

00:02:49,860 --> 00:02:55,710

to eat find out with the diet skeptic

57

00:02:53,189 --> 00:02:57,780

very first report coming up at the top

58  
00:02:55,710 --> 00:03:00,390  
of the show also in this week's show we

59  
00:02:57,780 --> 00:03:04,169  
here once again from dr. Danny chambers

60  
00:03:00,389 --> 00:03:07,409  
the vet you will remember in the UK who

61  
00:03:04,169 --> 00:03:11,119  
is mounting a very strong campaign

62  
00:03:07,409 --> 00:03:14,069  
against homeopathic veterinary care

63  
00:03:11,120 --> 00:03:16,890  
homeopathic veterinary care vets who

64  
00:03:14,069 --> 00:03:19,319  
prescribe homeopathy instead of real

65  
00:03:16,889 --> 00:03:21,929  
medicine well he wrote an article for

66  
00:03:19,319 --> 00:03:24,239  
the veterinary times it's also published

67  
00:03:21,930 --> 00:03:28,140  
online and that's what I'll be reading

68  
00:03:24,240 --> 00:03:31,170  
out today homeopathic veterinary care I

69  
00:03:28,139 --> 00:03:32,959  
don't think so also in this week's show

70  
00:03:31,169 --> 00:03:36,139  
we have a couple of reports from

71  
00:03:32,960 --> 00:03:40,140  
brouhaha from Australia science dot TV

72  
00:03:36,139 --> 00:03:42,539  
this week it's casey Harrigan now those

73  
00:03:40,139 --> 00:03:45,539  
people who listen to the skeptic ality

74  
00:03:42,539 --> 00:03:48,120  
podcast on a very recent episode i think

75  
00:03:45,539 --> 00:03:50,939  
the most recent episode is an interview

76  
00:03:48,120 --> 00:03:54,180  
with me conducted by susan go back from

77  
00:03:50,939 --> 00:03:56,579  
guerrilla skepticism non Wikipedia Thank

78  
00:03:54,180 --> 00:03:58,849  
You Derek from skeptic ality and thank

79  
00:03:56,580 --> 00:04:01,620  
you susan Kubek was a lot of fun being

80  
00:03:58,849 --> 00:04:03,090  
interviewed the tables were turned on me

81  
00:04:01,620 --> 00:04:07,980  
for a change and the tables were turned

82  
00:04:03,090 --> 00:04:09,270  
earlier this morning very early 530am my

83  
00:04:07,979 --> 00:04:13,199  
time but that's okay I'm jet-lagged

84  
00:04:09,270 --> 00:04:15,900  
where I was interviewed by the ESP

85  
00:04:13,199 --> 00:04:18,839  
podcast and I think that'll be coming up

86

00:04:15,900 --> 00:04:23,019  
pretty soon I on that particular show so

87  
00:04:18,839 --> 00:04:26,198  
thanks to the ESP for interviewing me

88  
00:04:23,019 --> 00:04:28,508  
and now here's something that's not

89  
00:04:26,199 --> 00:04:34,060  
skeptical in the least he had this

90  
00:04:28,509 --> 00:04:37,030  
wonderful music recently my brother and

91  
00:04:34,060 --> 00:04:38,978  
a friend went and traveled around Cuba

92  
00:04:37,029 --> 00:04:42,158  
they had a wonderful time listening to

93  
00:04:38,978 --> 00:04:45,430  
the local music and as a result there is

94  
00:04:42,158 --> 00:04:51,939  
now a Kickstarter page and the aim is to

95  
00:04:45,430 --> 00:04:54,579  
help produce a new album true Cuban

96  
00:04:51,939 --> 00:04:56,860  
music the album's going to be called

97  
00:04:54,579 --> 00:04:59,109  
Cala Alice Ted which translates to

98  
00:04:56,860 --> 00:05:02,020  
Friendship street it's going to be an

99  
00:04:59,110 --> 00:05:04,810  
album of new music in the Sun style as

100  
00:05:02,019 --> 00:05:07,930

created by the next wave of musicians

101

00:05:04,810 --> 00:05:09,399

from Cuba wow if you love Latin music

102

00:05:07,930 --> 00:05:11,560

and that sort of beaten it sort of a

103

00:05:09,399 --> 00:05:13,359

rhythm that sort of music why not check

104

00:05:11,560 --> 00:05:15,610

it out there is the link on this week's

105

00:05:13,360 --> 00:05:18,759

show notes and I've put a little loud a

106

00:05:15,610 --> 00:05:20,860

little banner on the the website of the

107

00:05:18,759 --> 00:05:23,468

skeptic zone if you like that sort of

108

00:05:20,860 --> 00:05:25,330

thing well why not help out again not

109

00:05:23,468 --> 00:05:27,639

much to do with skepticism but it's nice

110

00:05:25,329 --> 00:05:30,189

to help out there my friends and family

111

00:05:27,639 --> 00:05:31,689

from time to time but that's enough from

112

00:05:30,189 --> 00:05:34,689

me right now I'm going to run down or

113

00:05:31,689 --> 00:05:36,339

before I run downstairs before I run

114

00:05:34,689 --> 00:05:41,408

downstairs now where I here they are

115  
00:05:36,339 --> 00:05:44,228  
here they are now hear this it's a

116  
00:05:41,408 --> 00:05:46,478  
packet of mints yes means I picked up in

117  
00:05:44,228 --> 00:05:48,668  
the United States the flavor is called

118  
00:05:46,478 --> 00:05:51,310  
wintergreen and you can't get that

119  
00:05:48,668 --> 00:05:56,198  
flavor in Australia as far as i know and

120  
00:05:51,310 --> 00:05:58,149  
it's my instant favorite hmm wintergreen

121  
00:05:56,199 --> 00:06:01,270  
mints I wonder if you like them now

122  
00:05:58,149 --> 00:06:03,008  
people who know me when I go to the

123  
00:06:01,269 --> 00:06:05,560  
United States our waste take a packet of

124  
00:06:03,009 --> 00:06:08,020  
musk sticks with me the traditional

125  
00:06:05,560 --> 00:06:10,288  
Australian candy and watch the faces of

126  
00:06:08,019 --> 00:06:13,418  
poor Americans as they try to eat it

127  
00:06:10,288 --> 00:06:16,329  
many people spit it out well I was

128  
00:06:13,418 --> 00:06:18,698  
offering some wintergreen mints around

129  
00:06:16,329 --> 00:06:19,990  
the Australian skeptics committee just

130  
00:06:18,699 --> 00:06:23,080  
yesterday when I was catching up with

131  
00:06:19,990 --> 00:06:25,180  
everybody and I got similar expressions

132  
00:06:23,079 --> 00:06:27,399  
on their faces hmm do you like

133  
00:06:25,180 --> 00:06:29,468  
wintergreen can I get wintergreen in

134  
00:06:27,399 --> 00:06:32,439  
Australia these are important questions

135  
00:06:29,468 --> 00:06:35,139  
folks I must be really jet-lagged I'm

136  
00:06:32,439 --> 00:06:36,490  
going to run downstairs looking out for

137  
00:06:35,139 --> 00:06:39,610  
the skeptics and cats I'm going to

138  
00:06:36,490 --> 00:06:42,728  
downstairs just have a nice hot cup of

139  
00:06:39,610 --> 00:06:45,879  
tea and a biscuit Tina biscuit well I'm

140  
00:06:42,728 --> 00:06:46,490  
doing that I hope you enjoy the skeptic

141  
00:06:45,879 --> 00:07:00,569  
zone

142  
00:06:46,490 --> 00:07:00,569  
[Music]

143

00:07:02,060 --> 00:07:07,370  
that looks good enough to eat or does it

144  
00:07:08,480 --> 00:07:14,090  
here's the diet skeptic mandy lee noble

145  
00:07:16,129 --> 00:07:23,490  
hello skeptics own listeners mandy lee

146  
00:07:20,370 --> 00:07:30,420  
noble here dietitian and skeptic

147  
00:07:23,490 --> 00:07:33,300  
reporting from brisbane as the diet

148  
00:07:30,420 --> 00:07:36,360  
skeptic i hope to bring you many reports

149  
00:07:33,300 --> 00:07:39,300  
on my favorite skeptic topic health and

150  
00:07:36,360 --> 00:07:41,520  
wellness woo as well as reports on the

151  
00:07:39,300 --> 00:07:45,389  
other fantastic skeptic activities

152  
00:07:41,519 --> 00:07:47,849  
happening here in Queensland when it

153  
00:07:45,389 --> 00:07:50,789  
comes to health and wellness whew there

154  
00:07:47,850 --> 00:07:54,120  
is no end to the pseudoscience and shams

155  
00:07:50,790 --> 00:07:57,390  
I could investigate but for my very

156  
00:07:54,120 --> 00:08:02,540  
first report the skeptic zone I have

157  
00:07:57,389 --> 00:08:04,860

chosen MTHFR gene testing and treatments

158

00:08:02,540 --> 00:08:07,170

this is an issue that is gaining

159

00:08:04,860 --> 00:08:08,960

momentum in Australia with many

160

00:08:07,170 --> 00:08:12,390

complementary and alternative medicine

161

00:08:08,959 --> 00:08:16,799

providers now advising clients to have

162

00:08:12,389 --> 00:08:21,689

genetic testing to verify their MTHFR

163

00:08:16,800 --> 00:08:26,600

status there is a dedicated MTHFR clinic

164

00:08:21,689 --> 00:08:29,750

in sydney called MTHFR support australia

165

00:08:26,600 --> 00:08:33,060

the clinic was founded by naturopath

166

00:08:29,750 --> 00:08:36,210

carolyn lebowski it provides

167

00:08:33,059 --> 00:08:39,809

consultations interpretations of genetic

168

00:08:36,210 --> 00:08:42,090

test results educational webinars and a

169

00:08:39,809 --> 00:08:46,079

range of exorbitantly overpriced

170

00:08:42,090 --> 00:08:49,110

supplements unfortunately I also need to

171

00:08:46,080 --> 00:08:51,180

mention that MTHFR diagnosis and

172  
00:08:49,110 --> 00:08:55,139  
treatment is being practiced by a small

173  
00:08:51,179 --> 00:08:57,620  
number of GPS and dieticians and in many

174  
00:08:55,139 --> 00:09:04,409  
cases medicare is currently funding

175  
00:08:57,620 --> 00:09:05,970  
MTHFR testing so what is MTHFR it is an

176  
00:09:04,409 --> 00:09:09,438  
acronym for

177  
00:09:05,970 --> 00:09:11,910  
methylene tetrahydrofolate reductase an

178  
00:09:09,438 --> 00:09:14,578  
enzyme involved in the metabolism of

179  
00:09:11,909 --> 00:09:16,769  
follow allowing it to perform important

180  
00:09:14,578 --> 00:09:21,269  
functions in DNA replication and

181  
00:09:16,769 --> 00:09:24,688  
maintenance the MTHFR enzyme is coded

182  
00:09:21,269 --> 00:09:27,560  
from the MTHFR gene which has a small

183  
00:09:24,688 --> 00:09:31,078  
number of variations in the population

184  
00:09:27,559 --> 00:09:34,649  
the variant enzymes are functional but

185  
00:09:31,078 --> 00:09:36,838  
less efficient we all have two copies of

186  
00:09:34,649 --> 00:09:40,049  
each gene and the majority of people

187  
00:09:36,839 --> 00:09:43,800  
have at least one MTHFR gene that codes

188  
00:09:40,049 --> 00:09:46,708  
a less efficient enzyme genetic variants

189  
00:09:43,799 --> 00:09:48,929  
makes us robust as a species and gene

190  
00:09:46,708 --> 00:09:51,508  
changes are not necessarily associated

191  
00:09:48,929 --> 00:09:55,828  
with disease the different blood groups

192  
00:09:51,509 --> 00:09:59,659  
a B and O are an example of gene

193  
00:09:55,828 --> 00:10:04,888  
variants so what are the implications of

194  
00:09:59,659 --> 00:10:08,818  
MTHFR studies show people with MTHFR

195  
00:10:04,889 --> 00:10:12,448  
variants in addition to a poor diet low

196  
00:10:08,818 --> 00:10:15,409  
in folate may have reduced blood folate

197  
00:10:12,448 --> 00:10:17,789  
and increase homocysteine levels

198  
00:10:15,409 --> 00:10:21,389  
homocysteine levels have been associated

199  
00:10:17,789 --> 00:10:25,230  
with cardiovascular disease cancer

200

00:10:21,389 --> 00:10:27,808  
autism mental illness as well as

201  
00:10:25,230 --> 00:10:31,589  
recurrent pregnancy loss and neural tube

202  
00:10:27,808 --> 00:10:34,500  
defects however the current evidence for

203  
00:10:31,589 --> 00:10:38,430  
all of these associations is described

204  
00:10:34,500 --> 00:10:40,578  
as either weak or inconclusive health

205  
00:10:38,429 --> 00:10:44,458  
authorities both here in Australia and

206  
00:10:40,578 --> 00:10:48,088  
internationally recommend not testing

207  
00:10:44,458 --> 00:10:52,708  
for the MTHFR variants in regards to any

208  
00:10:48,089 --> 00:10:56,610  
health condition as MTHFR status is not

209  
00:10:52,708 --> 00:11:00,869  
relevant for diagnosis or treatment so

210  
00:10:56,610 --> 00:11:04,318  
other possible benefits of MTHFR

211  
00:11:00,870 --> 00:11:06,568  
variants while proponents of MTHFR

212  
00:11:04,318 --> 00:11:10,528  
testing raise concerns about the

213  
00:11:06,568 --> 00:11:12,568  
possible harms of MTHFR variants they

214  
00:11:10,528 --> 00:11:15,928

neglect to mention that there is

215

00:11:12,568 --> 00:11:19,439  
significant evidence that MTHFR variance

216

00:11:15,928 --> 00:11:23,120  
is protective against colon cancer

217

00:11:19,440 --> 00:11:26,070  
lymphatic leukemia and other cancers

218

00:11:23,120 --> 00:11:28,919  
there also appears to be a strong

219

00:11:26,070 --> 00:11:31,470  
evolutionary selection for the MTHFR

220

00:11:28,919 --> 00:11:34,679  
variants where there is adequate

221

00:11:31,470 --> 00:11:38,389  
followed intake indicating that the

222

00:11:34,679 --> 00:11:41,579  
variants may provide a survival benefit

223

00:11:38,389 --> 00:11:44,730  
another claim by the proponents of MTHFR

224

00:11:41,580 --> 00:11:47,639  
testing is that folate in the form of

225

00:11:44,730 --> 00:11:51,720  
folic acid is harmful to those with the

226

00:11:47,639 --> 00:11:54,960  
variant genes many advocates for MTHFR

227

00:11:51,720 --> 00:11:57,480  
testing prescribe and sell a very

228

00:11:54,960 --> 00:12:01,470  
expensive alternative form of folate

229  
00:11:57,480 --> 00:12:03,360  
supplement called methyl folate however

230  
00:12:01,470 --> 00:12:06,509  
the research does not support these

231  
00:12:03,360 --> 00:12:09,389  
claims and in Australia folic acid added

232  
00:12:06,509 --> 00:12:12,419  
to wheat flour for bread making purposes

233  
00:12:09,389 --> 00:12:14,909  
has reduced the incidence of neural tube

234  
00:12:12,419 --> 00:12:17,819  
defects by fourteen percent in the

235  
00:12:14,909 --> 00:12:21,389  
general population and by seventy four

236  
00:12:17,820 --> 00:12:24,830  
percent in indigenous populations it is

237  
00:12:21,389 --> 00:12:28,169  
also important to note that the MTHFR

238  
00:12:24,830 --> 00:12:32,420  
support clinic strongly advises clients

239  
00:12:28,169 --> 00:12:36,209  
to adopt a completely gluten-free diet

240  
00:12:32,419 --> 00:12:38,789  
no scientifically robust reason is given

241  
00:12:36,210 --> 00:12:41,550  
for this advice and such a change would

242  
00:12:38,789 --> 00:12:44,699  
effectively reduce the folate intake

243  
00:12:41,549 --> 00:12:48,329  
through fortified foods of those who may

244  
00:12:44,700 --> 00:12:51,120  
benefit most finally but very

245  
00:12:48,330 --> 00:12:55,290  
importantly naturopathic Carolyn lab

246  
00:12:51,120 --> 00:12:58,519  
dowski also claims that MTHFR variants

247  
00:12:55,289 --> 00:13:01,919  
increases susceptibility to aluminium

248  
00:12:58,519 --> 00:13:05,639  
polysorbate and formaldehyde found in

249  
00:13:01,919 --> 00:13:07,829  
childhood vaccinations madoski does not

250  
00:13:05,639 --> 00:13:10,588  
provide any scientific evidence to

251  
00:13:07,830 --> 00:13:13,170  
support these claims despite advising

252  
00:13:10,589 --> 00:13:15,930  
her clients to either deviate from the

253  
00:13:13,169 --> 00:13:20,269  
current vaccination schedule or consider

254  
00:13:15,929 --> 00:13:23,399  
not vaccinating their child so what did

255  
00:13:20,269 --> 00:13:27,809  
MTHFR testing become a thing in the

256  
00:13:23,399 --> 00:13:31,319  
first place carolyn Landowski founder of

257

00:13:27,809 --> 00:13:32,939  
MTHFR support australia sums it up

258  
00:13:31,320 --> 00:13:36,720  
perfectly in her

259  
00:13:32,940 --> 00:13:40,080  
words on the MTHFR support website and I

260  
00:13:36,720 --> 00:13:42,450  
quote I certainly got to this point

261  
00:13:40,080 --> 00:13:44,790  
because I continuously saw people in my

262  
00:13:42,450 --> 00:13:47,610  
practice who just were not getting

263  
00:13:44,789 --> 00:13:50,219  
better despite giving them the normal

264  
00:13:47,610 --> 00:13:52,590  
supplements & herb's that I would expect

265  
00:13:50,220 --> 00:13:56,360  
them to respond to and I kept thinking

266  
00:13:52,590 --> 00:13:58,710  
that there had to be something more

267  
00:13:56,360 --> 00:14:01,649  
Occam's razor would suggest that the

268  
00:13:58,710 --> 00:14:04,050  
supplements don't work but cognitive

269  
00:14:01,649 --> 00:14:10,590  
dissidence convince ladakhi that the

270  
00:14:04,049 --> 00:14:13,109  
something more is MTHFR so to wrap up if

271  
00:14:10,590 --> 00:14:16,350

we were to take advice from all health

272

00:14:13,110 --> 00:14:19,139

authorities including the American Heart

273

00:14:16,350 --> 00:14:21,600

Association the American Congress of

274

00:14:19,139 --> 00:14:24,139

Obstetricians and Gynaecologists and the

275

00:14:21,600 --> 00:14:28,830

American College of medical genetics as

276

00:14:24,139 --> 00:14:31,679

well as our own Royal Australian College

277

00:14:28,830 --> 00:14:35,670

of General Practitioners there would be

278

00:14:31,679 --> 00:14:40,019

no reason to ever recommend MTHFR gene

279

00:14:35,669 --> 00:14:42,240

testing given the evidence Australian

280

00:14:40,019 --> 00:14:44,730

taxpayers and healthcare consumers

281

00:14:42,240 --> 00:14:49,460

should be asking questions about whether

282

00:14:44,730 --> 00:14:53,700

Medicare should be funding MTHFR testing

283

00:14:49,460 --> 00:14:55,740

reduced MTHFR dm's I'm function does not

284

00:14:53,700 --> 00:14:59,580

require treatment and those who have

285

00:14:55,740 --> 00:15:00,930

less efficient MTHFR enzymes benefit

286

00:14:59,580 --> 00:15:03,930

most from the current health

287

00:15:00,929 --> 00:15:09,899

recommendations for diet and pregnancy

288

00:15:03,929 --> 00:15:13,049

given to all Australians thanks everyone

289

00:15:09,899 --> 00:15:15,299

for listening I recommend that anyone

290

00:15:13,049 --> 00:15:18,620

with concerns regarding childhood

291

00:15:15,299 --> 00:15:22,349

vaccinations visit the Northern Rivers

292

00:15:18,620 --> 00:15:25,100

vaccination supporters website bye for

293

00:15:22,350 --> 00:15:25,100

now skeptics

294

00:15:34,600 --> 00:15:39,329

[Music]

295

00:15:36,019 --> 00:15:41,489

it never ends a friend starts talking

296

00:15:39,328 --> 00:15:43,108

about his new Reiki Master and someone

297

00:15:41,489 --> 00:15:45,809

else just posted about another

298

00:15:43,109 --> 00:15:48,329

all-natural cancer cure that they don't

299

00:15:45,808 --> 00:15:50,548

want you to know about a skeptics we

300  
00:15:48,328 --> 00:15:52,649  
dedicate a lot of time trying to protect

301  
00:15:50,548 --> 00:15:54,869  
those around us but there's a way that

302  
00:15:52,649 --> 00:15:57,479  
you can reach millions guerrilla

303  
00:15:54,869 --> 00:15:59,369  
skepticism on Wikipedia is a group that

304  
00:15:57,479 --> 00:16:01,829  
is working to keep the best skeptical

305  
00:15:59,369 --> 00:16:04,918  
information at everyone's fingertips in

306  
00:16:01,828 --> 00:16:07,649  
all languages join us training is

307  
00:16:04,918 --> 00:16:10,348  
self-paced and fun and we have our very

308  
00:16:07,649 --> 00:16:12,869  
own super secret Facebook group you will

309  
00:16:10,349 --> 00:16:17,179  
be educating the world in your sleep to

310  
00:16:12,869 --> 00:16:21,239  
find out more email us at GS o w team @

311  
00:16:17,178 --> 00:16:27,858  
gmail.com guerrilla skepticism the time

312  
00:16:21,239 --> 00:16:27,859  
is now music by bin sound calm

313  
00:16:31,409 --> 00:16:34,629  
[Music]

314

00:16:38,479 --> 00:16:43,619  
listens to the skeptic zone may well

315  
00:16:40,979 --> 00:16:46,769  
remember that he's shown number 404 on

316  
00:16:43,619 --> 00:16:49,918  
the seventeenth of July 2016 we

317  
00:16:46,769 --> 00:16:54,269  
interviewed UK the vet dr. Dani chambers

318  
00:16:49,918 --> 00:16:57,509  
about a petition he put together to stop

319  
00:16:54,269 --> 00:16:59,609  
vets from using homeopathy to treat

320  
00:16:57,509 --> 00:17:02,459  
animals we're pleased to bring you an

321  
00:16:59,609 --> 00:17:06,588  
update on the story in the way of an

322  
00:17:02,458 --> 00:17:06,588  
item written by dr. Dani chambers

323  
00:17:07,159 --> 00:17:13,799  
published in the veterinary times UK why

324  
00:17:11,970 --> 00:17:17,068  
the Royal College of Veterinary Surgeons

325  
00:17:13,798 --> 00:17:20,368  
must prevent vets from prescribing

326  
00:17:17,068 --> 00:17:23,849  
homeopathy the case against homeopathy

327  
00:17:20,368 --> 00:17:26,428  
has never been a clearer with every well

328  
00:17:23,849 --> 00:17:29,628

controlled study showing these remedies

329

00:17:26,429 --> 00:17:32,909

and no more effective than a placebo

330

00:17:29,628 --> 00:17:35,759

this is to be expected as homeopathic

331

00:17:32,909 --> 00:17:39,509

treatments contain no active substances

332

00:17:35,759 --> 00:17:43,288

at all the reason I started this

333

00:17:39,509 --> 00:17:46,019

campaign was because I figured I can't

334

00:17:43,288 --> 00:17:48,298

be the only vet who no longer wants to

335

00:17:46,019 --> 00:17:50,990

have to see animals whose perfectly

336

00:17:48,298 --> 00:17:53,519

treatable conditions have been left to

337

00:17:50,990 --> 00:17:56,069

deteriorate because their owners and

338

00:17:53,519 --> 00:18:00,058

vets were convinced homeopathic remedies

339

00:17:56,069 --> 00:18:02,189

would do the trick given more than 1,100

340

00:18:00,058 --> 00:18:05,609

of my veterinary colleagues signed the

341

00:18:02,190 --> 00:18:07,499

petition it appears I was right it is

342

00:18:05,609 --> 00:18:10,699

clear to me treating animals with

343  
00:18:07,499 --> 00:18:13,769  
homeopathy at best leads to unnecessary

344  
00:18:10,700 --> 00:18:16,889  
suffering and reduced likelihood of a

345  
00:18:13,769 --> 00:18:19,349  
full recovery and at worst as with a

346  
00:18:16,888 --> 00:18:21,359  
case of a horse I saw that had been

347  
00:18:19,349 --> 00:18:23,658  
treated for cushing's syndrome and

348  
00:18:21,359 --> 00:18:26,298  
chronic laminitis homeopathic ly

349  
00:18:23,659 --> 00:18:29,309  
conditions deteriorate so severely that

350  
00:18:26,298 --> 00:18:31,980  
euthanasia is the only option I also

351  
00:18:29,308 --> 00:18:34,378  
feel very strongly the use of homeopathy

352  
00:18:31,980 --> 00:18:37,099  
and other pseudo-scientific treatments

353  
00:18:34,378 --> 00:18:39,748  
in the profession gives it a bad name

354  
00:18:37,099 --> 00:18:43,019  
members of the public expect when they

355  
00:18:39,749 --> 00:18:45,720  
see a vet to get advice that represents

356  
00:18:43,019 --> 00:18:46,799  
the best treatment based on the totality

357  
00:18:45,720 --> 00:18:49,640  
of

358  
00:18:46,799 --> 00:18:52,369  
experience and expertise of a medical

359  
00:18:49,640 --> 00:18:55,200  
profession in the case of homeopathy

360  
00:18:52,369 --> 00:18:57,839  
they are instead given treatment based

361  
00:18:55,200 --> 00:19:00,509  
on the personal beliefs of an extreme

362  
00:18:57,839 --> 00:19:02,069  
fringe that directly contradicts the

363  
00:19:00,509 --> 00:19:05,099  
wealth of evidence gathered by the

364  
00:19:02,069 --> 00:19:07,829  
veterinary field this clearly undermines

365  
00:19:05,099 --> 00:19:11,639  
the reputation of the entire field is

366  
00:19:07,829 --> 00:19:15,269  
being reliable responsible and robust so

367  
00:19:11,640 --> 00:19:18,060  
if it is only a minority of vets why is

368  
00:19:15,269 --> 00:19:21,629  
it important given more than 22,000

369  
00:19:18,059 --> 00:19:24,480  
registered vets exist the 200 or fewer

370  
00:19:21,630 --> 00:19:26,760  
who practice homeopathy in fact an

371

00:19:24,480 --> 00:19:29,630  
article cited 50 vets licensed to

372  
00:19:26,759 --> 00:19:33,629  
practice homeopathy represent around

373  
00:19:29,630 --> 00:19:36,330  
point 25 to 1 percent of the profession

374  
00:19:33,630 --> 00:19:39,000  
yet if the Royal College of venery

375  
00:19:36,329 --> 00:19:41,250  
surgeons fails to end the prescription

376  
00:19:39,000 --> 00:19:44,069  
of homeopathic remedies by this fringe

377  
00:19:41,250 --> 00:19:46,380  
group of vets it is an implicit

378  
00:19:44,069 --> 00:19:50,159  
endorsement of their use of these

379  
00:19:46,380 --> 00:19:52,590  
treatments it would therefore also be an

380  
00:19:50,160 --> 00:19:55,290  
imp listen acceptance of vets who place

381  
00:19:52,589 --> 00:19:57,269  
animal welfare at risk by putting their

382  
00:19:55,289 --> 00:20:00,599  
personal beliefs ahead of evidence-based

383  
00:19:57,269 --> 00:20:02,730  
medicine and the body of knowledge our

384  
00:20:00,599 --> 00:20:04,679  
profession has a cured that these

385  
00:20:02,730 --> 00:20:08,160

treatments are offered by qualified vets

386

00:20:04,680 --> 00:20:11,660

suggests to the public homeopathy is not

387

00:20:08,160 --> 00:20:14,820

a wacky pseudoscience but an equivalent

388

00:20:11,660 --> 00:20:17,490

legitimate option perhaps just as

389

00:20:14,819 --> 00:20:19,619

effective as conventional medicine they

390

00:20:17,490 --> 00:20:22,890

may be more likely to use it on

391

00:20:19,619 --> 00:20:24,899

themselves or their children as some

392

00:20:22,890 --> 00:20:27,030

high-profile media cases have

393

00:20:24,900 --> 00:20:29,820

highlighted the consequences of

394

00:20:27,029 --> 00:20:31,740

well-meaning parents using homeopathic

395

00:20:29,819 --> 00:20:35,519

remedies to treat children suffering

396

00:20:31,740 --> 00:20:37,920

from meningitis can be tragic preventing

397

00:20:35,519 --> 00:20:41,009

vets from using homeopathy would send a

398

00:20:37,920 --> 00:20:43,789

clear message to the public of it not

399

00:20:41,009 --> 00:20:47,309

being approved by medical professionals

400  
00:20:43,789 --> 00:20:49,940  
not being a genuine effective treatment

401  
00:20:47,309 --> 00:20:53,369  
and being firmly in the quote

402  
00:20:49,940 --> 00:20:57,390  
alternative and quote and in fact

403  
00:20:53,369 --> 00:20:59,519  
disproven camp with no backing by

404  
00:20:57,390 --> 00:21:00,970  
conventionally trained professionals

405  
00:20:59,519 --> 00:21:03,339  
while the number

406  
00:21:00,970 --> 00:21:05,500  
of companion animals that may suffer as

407  
00:21:03,339 --> 00:21:08,558  
a result of using homeopathic remedies

408  
00:21:05,500 --> 00:21:11,109  
is relatively small given the fringe

409  
00:21:08,558 --> 00:21:13,569  
nature of belief in homeopathy among

410  
00:21:11,109 --> 00:21:15,779  
vets clearly causing an amount of

411  
00:21:13,569 --> 00:21:18,700  
avoidable suffering is deeply unethical

412  
00:21:15,779 --> 00:21:21,250  
furthermore if a vet who believed

413  
00:21:18,700 --> 00:21:26,019  
passionately in homeopathy was to raise

414  
00:21:21,250 --> 00:21:27,940  
to the position of CVO the potential

415  
00:21:26,019 --> 00:21:30,099  
damage done when forming government

416  
00:21:27,940 --> 00:21:33,640  
policy regarding antimicrobial

417  
00:21:30,099 --> 00:21:37,178  
resistance or disease outbreaks could be

418  
00:21:33,640 --> 00:21:39,909  
catastrophic I have regularly worked on

419  
00:21:37,179 --> 00:21:42,759  
rabies control projects in India to

420  
00:21:39,909 --> 00:21:44,770  
prevent dogs from dying of rabies and to

421  
00:21:42,759 --> 00:21:48,038  
prevent the disease infecting and

422  
00:21:44,769 --> 00:21:50,200  
killing people to enjoy poem as a result

423  
00:21:48,038 --> 00:21:52,808  
of vaccinating and neutering eighty-five

424  
00:21:50,200 --> 00:21:55,240  
percent of the street dog population no

425  
00:21:52,808 --> 00:21:59,440  
reported human cases of rabies have

426  
00:21:55,240 --> 00:22:01,929  
occurred since 2003 in 2016 I worked on

427  
00:21:59,440 --> 00:22:04,960  
a post-conflict livestock vaccination

428

00:22:01,929 --> 00:22:07,900  
program in Iraq to help improve food

429  
00:22:04,960 --> 00:22:10,630  
security these are projects that affect

430  
00:22:07,900 --> 00:22:14,019  
not just animal welfare but human

431  
00:22:10,630 --> 00:22:17,320  
well-being too if I was a homeopathic

432  
00:22:14,019 --> 00:22:19,990  
vet imagine the time money and lives

433  
00:22:17,319 --> 00:22:22,779  
that would have been wasted if I thought

434  
00:22:19,990 --> 00:22:25,690  
homeopathic no doses could prevent

435  
00:22:22,779 --> 00:22:28,210  
rabies and dogs or were a substitute for

436  
00:22:25,690 --> 00:22:32,019  
foot and mouth disease vaccination in

437  
00:22:28,210 --> 00:22:34,450  
sheep and goats this would rightly be

438  
00:22:32,019 --> 00:22:36,460  
viewed as ridiculous and no competent

439  
00:22:34,450 --> 00:22:39,370  
vet would use homeopathy in those

440  
00:22:36,460 --> 00:22:41,679  
situations yet we know colleagues who

441  
00:22:39,369 --> 00:22:44,829  
put their faith in homeopathy offer no

442  
00:22:41,679 --> 00:22:46,210

doses in the place of vaccination the

443

00:22:44,829 --> 00:22:48,970

Royal College of Veterinary Surgeons

444

00:22:46,210 --> 00:22:51,850

States one reason for permitting vets to

445

00:22:48,970 --> 00:22:54,038

prescribe homeopathy is pet owners will

446

00:22:51,849 --> 00:22:56,109

want to use homeopathic treatments

447

00:22:54,038 --> 00:22:59,048

anyway so it is better for a vet to

448

00:22:56,109 --> 00:23:01,509

administer this as he or she will be

449

00:22:59,048 --> 00:23:03,879

better place to monitor the welfare it

450

00:23:01,509 --> 00:23:06,819

does not want homeopathic treatments to

451

00:23:03,880 --> 00:23:09,640

be forced quote underground men quote on

452

00:23:06,819 --> 00:23:12,609

the surface this argument appears to

453

00:23:09,640 --> 00:23:14,210

make sense but i believe it is flawed

454

00:23:12,609 --> 00:23:17,219

for a number of reasons

455

00:23:14,210 --> 00:23:18,989

firstly it does not make any difference

456

00:23:17,220 --> 00:23:20,999

to the animal whether effective

457  
00:23:18,989 --> 00:23:24,690  
treatment or painkillers are withheld by

458  
00:23:20,999 --> 00:23:27,450  
a lay person or a qualified vet a lay

459  
00:23:24,690 --> 00:23:30,119  
person can be prosecuted for not seeking

460  
00:23:27,450 --> 00:23:32,399  
veterinary treatment if he or she gives

461  
00:23:30,118 --> 00:23:35,730  
homeopathy instead of appropriate

462  
00:23:32,398 --> 00:23:38,189  
interventions however if he or she goes

463  
00:23:35,730 --> 00:23:40,739  
to a homeopathic vet the outcome is the

464  
00:23:38,190 --> 00:23:43,409  
same for the animal but neither the

465  
00:23:40,739 --> 00:23:46,200  
owner nor the vet face any rebuke and

466  
00:23:43,409 --> 00:23:50,940  
the owner does not realize he or she has

467  
00:23:46,200 --> 00:23:53,129  
been done a disservice secondly I don't

468  
00:23:50,940 --> 00:23:56,190  
believe homeopathic vets are best placed

469  
00:23:53,128 --> 00:23:58,980  
to monitor animal welfare because I feel

470  
00:23:56,190 --> 00:24:02,129  
their belief in a disproven modality

471  
00:23:58,980 --> 00:24:03,868  
casts doubts on their critical judgment

472  
00:24:02,128 --> 00:24:06,839  
take the example of a cat with

473  
00:24:03,868 --> 00:24:09,658  
hyperthyroidism if a homeopathic vet is

474  
00:24:06,839 --> 00:24:12,238  
willing to administer homeopathy instead

475  
00:24:09,659 --> 00:24:14,730  
of appropriate treatment we know this

476  
00:24:12,239 --> 00:24:17,399  
lack of valid treatment can cause the

477  
00:24:14,730 --> 00:24:19,950  
animals health to deteriorate at what

478  
00:24:17,398 --> 00:24:22,709  
point do we trust the homeopathic vet to

479  
00:24:19,950 --> 00:24:26,069  
stop giving the homeopathy and treat the

480  
00:24:22,710 --> 00:24:29,038  
animal properly when it develops renal

481  
00:24:26,069 --> 00:24:32,308  
failure when its weight drops below a

482  
00:24:29,038 --> 00:24:34,349  
certain amount likewise if he or she is

483  
00:24:32,308 --> 00:24:37,980  
willing to treat a horse with laminitis

484  
00:24:34,349 --> 00:24:40,589  
with homeopathy can we trust him or her

485

00:24:37,980 --> 00:24:43,980  
to monitor welfare by giving proper

486  
00:24:40,589 --> 00:24:45,720  
treatment at some point maybe when the

487  
00:24:43,980 --> 00:24:48,599  
heart rate is more than 60 beats per

488  
00:24:45,720 --> 00:24:51,720  
minute or when there is visible rotation

489  
00:24:48,599 --> 00:24:54,449  
of the pedal bones on radiographs the

490  
00:24:51,720 --> 00:24:58,230  
British Association of homeopathic of

491  
00:24:54,450 --> 00:25:01,558  
veterinary surgeons bah vs claims to

492  
00:24:58,230 --> 00:25:04,200  
cure cancer with homeopathy and Jeff

493  
00:25:01,558 --> 00:25:07,079  
Johnson the homeopath whose claims the

494  
00:25:04,200 --> 00:25:09,600  
bah vs features prominently on its

495  
00:25:07,079 --> 00:25:12,720  
website claimed during an interview with

496  
00:25:09,599 --> 00:25:16,408  
the BBC that he was treating quote many

497  
00:25:12,720 --> 00:25:19,889  
and quote dogs with a view to curing

498  
00:25:16,409 --> 00:25:22,409  
their cancer he told the BBC's Victoria

499  
00:25:19,888 --> 00:25:25,349

Derbyshire his ability to cure cancer

500

00:25:22,409 --> 00:25:27,299

with homeopathy was one of the main

501

00:25:25,349 --> 00:25:30,058

reasons animal owners

502

00:25:27,298 --> 00:25:33,599

used to get treatment from him I do not

503

00:25:30,058 --> 00:25:36,329

believe we nor the public are able to

504

00:25:33,599 --> 00:25:37,980

trust the clinical judgment of vets who

505

00:25:36,329 --> 00:25:40,439

believe they can cure cancer with

506

00:25:37,980 --> 00:25:42,419

homeopathy instead these animals need

507

00:25:40,440 --> 00:25:45,028

appropriate treatment or possibly

508

00:25:42,419 --> 00:25:47,129

euthanasia their owners are being

509

00:25:45,028 --> 00:25:49,648

offered a disservice by being sold

510

00:25:47,128 --> 00:25:52,288

ineffective treatments that offer false

511

00:25:49,648 --> 00:25:54,959

hope the Royal College of Veterinary

512

00:25:52,288 --> 00:25:58,200

surgeons stated quote homeopathy is

513

00:25:54,960 --> 00:26:00,569

accepted by society and quote though it

514  
00:25:58,200 --> 00:26:03,960  
doesn't make clear what it means by this

515  
00:26:00,569 --> 00:26:06,898  
claim what constitutes quote social

516  
00:26:03,960 --> 00:26:09,450  
acceptance end quote evidently it

517  
00:26:06,898 --> 00:26:11,908  
ignores the fact that every credible

518  
00:26:09,450 --> 00:26:15,058  
expert and a large proportion of the

519  
00:26:11,909 --> 00:26:17,389  
public sees homeopathy has a nonsensical

520  
00:26:15,058 --> 00:26:20,339  
and potentially dangerous waste of time

521  
00:26:17,388 --> 00:26:22,888  
even if it were true that homeopathy was

522  
00:26:20,339 --> 00:26:26,699  
accepted by society it says nothing

523  
00:26:22,888 --> 00:26:28,618  
about whether the treatment works we do

524  
00:26:26,700 --> 00:26:31,950  
not make health interventions on the

525  
00:26:28,618 --> 00:26:34,648  
beliefs of a small but vocal fringe

526  
00:26:31,950 --> 00:26:37,190  
group in society we must follow the

527  
00:26:34,648 --> 00:26:40,589  
evidence many beliefs in society are

528  
00:26:37,190 --> 00:26:44,359  
incorrect but it is the purpose of

529  
00:26:40,589 --> 00:26:47,428  
research and expertise to help educate

530  
00:26:44,358 --> 00:26:49,558  
condoning and pandering to mistaken

531  
00:26:47,429 --> 00:26:51,359  
fringe beliefs there's nothing to

532  
00:26:49,558 --> 00:26:55,470  
improve society's understanding of

533  
00:26:51,358 --> 00:26:58,168  
science and medicine changing beliefs I

534  
00:26:55,470 --> 00:27:00,499  
want to make it clear I have no

535  
00:26:58,169 --> 00:27:03,749  
particular ax to grind with homeopathy

536  
00:27:00,499 --> 00:27:05,909  
specifically other than it runs so

537  
00:27:03,749 --> 00:27:08,970  
clearly counter to evidence-based

538  
00:27:05,909 --> 00:27:11,309  
medicine unlike homeopaths if clinical

539  
00:27:08,970 --> 00:27:14,069  
trials showed a particular drug or

540  
00:27:11,308 --> 00:27:17,999  
surgical technique I had been using for

541  
00:27:14,069 --> 00:27:20,189  
years was useless did more harm or had

542

00:27:17,999 --> 00:27:23,368  
simply been superseded by something

543  
00:27:20,190 --> 00:27:26,669  
superior I would be eager to change my

544  
00:27:23,368 --> 00:27:29,220  
position I actively want to know when

545  
00:27:26,669 --> 00:27:31,470  
and if i can improve my clinical

546  
00:27:29,220 --> 00:27:34,350  
practice whether that means to stop

547  
00:27:31,470 --> 00:27:37,798  
using a product or switching to

548  
00:27:34,349 --> 00:27:40,288  
something better indeed it would be

549  
00:27:37,798 --> 00:27:41,039  
intellectually bankrupt of me too

550  
00:27:40,288 --> 00:27:43,079  
desperate

551  
00:27:41,039 --> 00:27:45,450  
seek out every piece of anecdotal

552  
00:27:43,079 --> 00:27:47,699  
evidence I could find to support my

553  
00:27:45,450 --> 00:27:50,250  
existing position or to cherry pick

554  
00:27:47,700 --> 00:27:52,019  
whatever study justifies continuing

555  
00:27:50,250 --> 00:27:54,589  
along my path in the face of

556  
00:27:52,019 --> 00:27:57,480

overwhelming evidence to the contrary

557

00:27:54,589 --> 00:28:00,419

when discussing a faith-based belief

558

00:27:57,480 --> 00:28:03,329

system such as homeopathy emotions

559

00:28:00,420 --> 00:28:06,240

inevitably run high which is perhaps why

560

00:28:03,329 --> 00:28:09,359

this debate remains so persistent

561

00:28:06,240 --> 00:28:12,569

despite it being fewer than 1% of vets

562

00:28:09,359 --> 00:28:14,429

who put their belief in homeopathy I am

563

00:28:12,569 --> 00:28:17,369

aware of no amount of scientific

564

00:28:14,430 --> 00:28:20,070

evidence will change the opinions of the

565

00:28:17,369 --> 00:28:23,519

hardcore believers that is the very

566

00:28:20,069 --> 00:28:25,919

nature of such a belief system if you

567

00:28:23,519 --> 00:28:28,400

are a believer in homeopathy I fully

568

00:28:25,920 --> 00:28:33,090

understand you may be feeling persecuted

569

00:28:28,400 --> 00:28:35,700

by my petition and my calls to prevent

570

00:28:33,089 --> 00:28:38,250

homeopathic treatments I know a belief

571  
00:28:35,700 --> 00:28:40,590  
in homeopathy some will have held for

572  
00:28:38,250 --> 00:28:43,410  
decades will form a large part of your

573  
00:28:40,589 --> 00:28:45,569  
identity I can identify with your

574  
00:28:43,410 --> 00:28:48,300  
position I was brought up in an

575  
00:28:45,569 --> 00:28:51,509  
evangelical church that taught us the

576  
00:28:48,299 --> 00:28:55,529  
earth was created in six days exactly as

577  
00:28:51,509 --> 00:28:59,460  
the Bible described around 6,000 years

578  
00:28:55,529 --> 00:29:01,769  
ago and evolution is alive these kinds

579  
00:28:59,460 --> 00:29:03,960  
of beliefs shape your whole identity it

580  
00:29:01,769 --> 00:29:06,000  
affects how you interpret scientific

581  
00:29:03,960 --> 00:29:09,420  
information I have personal

582  
00:29:06,000 --> 00:29:11,730  
understanding of how hard it can be to

583  
00:29:09,420 --> 00:29:14,269  
tear yourself away from a belief that

584  
00:29:11,730 --> 00:29:17,460  
has influenced your thinking for years

585  
00:29:14,269 --> 00:29:19,309  
when I realized no big coordinated

586  
00:29:17,460 --> 00:29:22,950  
deception by the scientific community

587  
00:29:19,309 --> 00:29:25,849  
existed I began a painful process to

588  
00:29:22,950 --> 00:29:29,039  
accept a literal six-day creation was

589  
00:29:25,849 --> 00:29:32,009  
incorrect it was never my intention to

590  
00:29:29,039 --> 00:29:35,190  
deliberately upset anyone and I'm sorry

591  
00:29:32,009 --> 00:29:37,500  
for any hurt caused this is why I have

592  
00:29:35,190 --> 00:29:39,930  
directed this campaign towards the Royal

593  
00:29:37,500 --> 00:29:43,950  
College of Veterinary Surgeons to be an

594  
00:29:39,930 --> 00:29:46,830  
impartial third party just like the rest

595  
00:29:43,950 --> 00:29:49,440  
of us homeopaths want what is best for

596  
00:29:46,829 --> 00:29:52,019  
animals under their care and what is

597  
00:29:49,440 --> 00:29:54,140  
best for the profession unfortunately

598  
00:29:52,019 --> 00:29:56,809  
being well-intentioned

599

00:29:54,140 --> 00:29:59,360  
and deluded is no substitute for being

600  
00:29:56,809 --> 00:30:01,849  
right especially when the cost of being

601  
00:29:59,359 --> 00:30:06,189  
wrong causes animals to suffer and

602  
00:30:01,849 --> 00:30:08,539  
brings the profession into disrepute and

603  
00:30:06,190 --> 00:30:10,700  
that was why the Royal College of

604  
00:30:08,539 --> 00:30:13,129  
veterans must prevent vets from

605  
00:30:10,700 --> 00:30:14,660  
prescribing homeopathy written by dr.

606  
00:30:13,130 --> 00:30:33,020  
Danny chambers published in the

607  
00:30:14,660 --> 00:30:36,380  
veterinary times and now direct from the

608  
00:30:33,019 --> 00:30:43,339  
cafe at Australia's science channel its

609  
00:30:36,380 --> 00:30:45,620  
brouhaha with Casey Harrigan any time I

610  
00:30:43,339 --> 00:30:47,750  
see someone walking along all smugly

611  
00:30:45,619 --> 00:30:50,239  
holding party balloons I can't help but

612  
00:30:47,750 --> 00:30:53,599  
think oh we need that helium for science

613  
00:30:50,240 --> 00:30:55,339

and I was right to until yesterday when

614

00:30:53,599 --> 00:30:57,859

researchers announced they discovered a

615

00:30:55,339 --> 00:31:00,740

huge helium gas field in the Rift Valley

616

00:30:57,859 --> 00:31:03,079

of Tanzania we're running out of a

617

00:31:00,740 --> 00:31:04,700

finite supply of helium because it

618

00:31:03,079 --> 00:31:07,069

literally slips through our fingers and

619

00:31:04,700 --> 00:31:09,590

shoots off through the atmosphere never

620

00:31:07,069 --> 00:31:11,990

to return this discovery gives us

621

00:31:09,589 --> 00:31:14,720

another seven years on our previous 20

622

00:31:11,990 --> 00:31:16,970

year supply buying us more time to find

623

00:31:14,720 --> 00:31:20,210

even more helium reserves and get better

624

00:31:16,970 --> 00:31:22,759

at recycling what we do have it's seven

625

00:31:20,210 --> 00:31:24,980

extra years of MRI machines weather

626

00:31:22,759 --> 00:31:27,170

balloons deep sea diving quantum

627

00:31:24,980 --> 00:31:29,360

computing Large Hadron Collider ring and

628  
00:31:27,170 --> 00:31:31,730  
my personal favorite rocket engine

629  
00:31:29,359 --> 00:31:34,009  
cleaning and yes but grudgingly I'll

630  
00:31:31,730 --> 00:31:36,500  
admit it seven extra is a party balloons

631  
00:31:34,009 --> 00:31:38,059  
but seriously what would you rather a

632  
00:31:36,500 --> 00:31:40,430  
balloon that makes you crane your neck

633  
00:31:38,059 --> 00:31:43,279  
to look at it or a fully functioning

634  
00:31:40,430 --> 00:31:46,450  
rocket we need that helium for science

635  
00:31:43,279 --> 00:31:50,819  
guys science

636  
00:31:46,450 --> 00:31:53,470  
ah summer in the southern hemisphere

637  
00:31:50,819 --> 00:31:56,139  
cranking some tunes gazing out over the

638  
00:31:53,470 --> 00:31:59,049  
ocean and plowing through six meter deep

639  
00:31:56,140 --> 00:32:01,630  
snow to expose the road underneath yup

640  
00:31:59,049 --> 00:32:04,629  
summer is well and truly underway for

641  
00:32:01,630 --> 00:32:06,790  
the Ozzy's in Antarctica so while I'm

642  
00:32:04,630 --> 00:32:08,110  
drinking mojitos and splashing around at

643  
00:32:06,789 --> 00:32:09,909  
the beach what will the summer

644  
00:32:08,109 --> 00:32:13,000  
highlights be for the intrepid folk

645  
00:32:09,910 --> 00:32:15,550  
calling Antarctica home first up the

646  
00:32:13,000 --> 00:32:17,829  
million-year ice core otherwise known as

647  
00:32:15,549 --> 00:32:19,809  
the holy grail of climate science

648  
00:32:17,829 --> 00:32:21,639  
basically somewhere underneath

649  
00:32:19,809 --> 00:32:24,190  
Antarctica there's some ice that's a

650  
00:32:21,640 --> 00:32:26,800  
million years old and Australia is part

651  
00:32:24,190 --> 00:32:28,750  
of an international race to find it when

652  
00:32:26,799 --> 00:32:31,119  
we do it'll tell us all sorts of things

653  
00:32:28,750 --> 00:32:32,920  
about the history of our climate this

654  
00:32:31,119 --> 00:32:35,349  
summer will involve some preliminary

655  
00:32:32,920 --> 00:32:38,259  
drilling so that by 2020 we can track

656

00:32:35,349 --> 00:32:41,079  
down the real thing meanwhile the

657  
00:32:38,259 --> 00:32:44,740  
largest ever all-female expedition to

658  
00:32:41,079 --> 00:32:46,589  
Antarctica is underway 76 women from all

659  
00:32:44,740 --> 00:32:49,930  
sorts of scientific disciplines like

660  
00:32:46,589 --> 00:32:51,879  
astronomers engineers physicists doctors

661  
00:32:49,930 --> 00:32:53,710  
social scientists and teachers are

662  
00:32:51,880 --> 00:32:55,660  
chilling out together on the voyage as

663  
00:32:53,710 --> 00:32:58,059  
part of a larger project to develop

664  
00:32:55,660 --> 00:32:59,740  
women's leadership in science also

665  
00:32:58,059 --> 00:33:01,210  
because women should have just as many

666  
00:32:59,740 --> 00:33:04,329  
opportunities to see penguins in the

667  
00:33:01,210 --> 00:33:07,819  
wild as men so no matter who you are or

668  
00:33:04,329 --> 00:33:11,179  
where you are have a great summer

669  
00:33:07,819 --> 00:33:16,129  
for more brouhaha and Australian science

670  
00:33:11,180 --> 00:33:27,058

head for ww Australia science TV

671

00:33:16,130 --> 00:33:29,740

[Music]

672

00:33:27,058 --> 00:33:32,379

see a stock simply idiot hey Sal who

673

00:33:29,740 --> 00:33:34,599

guys guys I just had the most amazing

674

00:33:32,380 --> 00:33:36,460

experience what experience unders unders

675

00:33:34,599 --> 00:33:38,259

have you been to the pub children not

676

00:33:36,460 --> 00:33:40,750

hang out with mash you know he was

677

00:33:38,259 --> 00:33:43,240

blessed by peter Popoff no yellow no i'm

678

00:33:40,750 --> 00:33:45,640

not talking about psychics it was a

679

00:33:43,240 --> 00:33:47,259

really SP experience now you have been

680

00:33:45,640 --> 00:33:50,169

to the pub either that or you've been

681

00:33:47,259 --> 00:33:52,599

smoking something no punches the ESP is

682

00:33:50,169 --> 00:33:54,700

the European skeptics podcast it's the

683

00:33:52,599 --> 00:33:56,829

most amazing thing you get to know so

684

00:33:54,700 --> 00:33:59,679

much about skeptics and their activities

685  
00:33:56,829 --> 00:34:01,779  
across Europe you know events hot topics

686  
00:33:59,679 --> 00:34:04,000  
and interviews with lots of interesting

687  
00:34:01,779 --> 00:34:05,740  
people oh wow cool by the way pointers

688  
00:34:04,000 --> 00:34:08,168  
you just come into the false dichotomy

689  
00:34:05,740 --> 00:34:11,019  
fallacy I guess that means I'm really

690  
00:34:08,168 --> 00:34:13,029  
wrong yep and you can even learn about

691  
00:34:11,019 --> 00:34:15,519  
those fallacies in the show and hear

692  
00:34:13,030 --> 00:34:17,800  
about people spreading silly ideas you

693  
00:34:15,519 --> 00:34:20,769  
should really check it out it's the ESP

694  
00:34:17,800 --> 00:34:23,470  
the European skeptics podcast it's on

695  
00:34:20,769 --> 00:34:25,809  
never weak alright so where can I get

696  
00:34:23,469 --> 00:34:28,449  
this is the experience it sounds good

697  
00:34:25,809 --> 00:34:31,539  
you can go online at the ESP do to you

698  
00:34:28,449 --> 00:34:34,569  
follow it on twitter at es podcast

699  
00:34:31,539 --> 00:34:36,699  
underscore EU or like the podcast on

700  
00:34:34,570 --> 00:34:39,760  
facebook oh and you can also contact the

701  
00:34:36,699 --> 00:34:43,599  
show by sending them an email to info at

702  
00:34:39,760 --> 00:34:45,639  
the ESPE you and if you want to

703  
00:34:43,599 --> 00:34:48,389  
subscribe do a quick search for the

704  
00:34:45,639 --> 00:34:51,769  
european skeptic podcast on soundcloud

705  
00:34:48,389 --> 00:34:56,870  
itunes or stitcher

706  
00:34:51,769 --> 00:35:12,650  
I don't know I you can't believe

707  
00:34:56,869 --> 00:35:15,839  
[Music]

708  
00:35:12,650 --> 00:35:19,220  
well here we are the La Brea Tar Pits in

709  
00:35:15,840 --> 00:35:24,019  
beautiful Los Angeles on a cloudy day

710  
00:35:19,219 --> 00:35:28,529  
and we're looking over a vast swamp of

711  
00:35:24,019 --> 00:35:30,659  
oily goo and there's a model over there

712  
00:35:28,530 --> 00:35:33,050  
of a master none I guess it is now I'm

713

00:35:30,659 --> 00:35:35,039  
standing next to up-and-coming geologist

714  
00:35:33,050 --> 00:35:37,890  
Andrew Dunning Andrew what are we

715  
00:35:35,039 --> 00:35:40,739  
looking at and what are those bubbles so

716  
00:35:37,889 --> 00:35:42,239  
this big lake here the most famous pit

717  
00:35:40,739 --> 00:35:43,979  
at the La Brea Tar Pits was an old

718  
00:35:42,239 --> 00:35:46,889  
asphalt mine that operated in the early

719  
00:35:43,980 --> 00:35:48,769  
20th century and now that we've had a

720  
00:35:46,889 --> 00:35:50,969  
lot of rain recently there's a

721  
00:35:48,769 --> 00:35:53,699  
significant amount of water on top of it

722  
00:35:50,969 --> 00:35:55,559  
and you can see oil slicks and tar

723  
00:35:53,699 --> 00:35:57,689  
puddles on top of the water because as

724  
00:35:55,559 --> 00:35:59,849  
we know oil is less dense than water and

725  
00:35:57,690 --> 00:36:01,590  
there's lots of bubbles bubbling up

726  
00:35:59,849 --> 00:36:05,309  
through it smells quite strongly of

727  
00:36:01,590 --> 00:36:07,590

methane and oil yep and these bubbles

728

00:36:05,309 --> 00:36:09,630

are produced by a unique several species

729

00:36:07,590 --> 00:36:11,550

of bacteria that are found probably

730

00:36:09,630 --> 00:36:13,050

nowhere else in the world it's it so

731

00:36:11,550 --> 00:36:14,490

it's an interesting view because what

732

00:36:13,050 --> 00:36:16,830

they've done is they've put that model

733

00:36:14,489 --> 00:36:18,779

of the mastodon over there as it's just

734

00:36:16,829 --> 00:36:20,909

about the staggering and we get caught

735

00:36:18,780 --> 00:36:23,400

in the Tar Pits which is exactly what

736

00:36:20,909 --> 00:36:25,079

this whole area is about which covers

737

00:36:23,400 --> 00:36:27,180

thousands upon thousands of years of

738

00:36:25,079 --> 00:36:29,039

history of this exact spot with animals

739

00:36:27,179 --> 00:36:31,710

wandering into the tar in getting stuck

740

00:36:29,039 --> 00:36:33,779

yeah that's exactly right there's a the

741

00:36:31,710 --> 00:36:36,119

museum here the page Museum at the La

742  
00:36:33,780 --> 00:36:37,620  
Brea Tar Pits has thousands upon

743  
00:36:36,119 --> 00:36:40,440  
thousands of fossils that have been

744  
00:36:37,619 --> 00:36:44,400  
excavated since the late 19th century

745  
00:36:40,440 --> 00:36:46,980  
here of various predators and animals

746  
00:36:44,400 --> 00:36:48,570  
and insects pollen all sorts of things

747  
00:36:46,980 --> 00:36:51,570  
that have been trapped in the sticky tar

748  
00:36:48,570 --> 00:36:52,920  
for thousands of years and what and will

749  
00:36:51,570 --> 00:36:55,200  
go in would you still outside the

750  
00:36:52,920 --> 00:36:57,240  
gardens will go in soon and I was here

751  
00:36:55,199 --> 00:36:59,879  
many years ago with Brian Dunning from

752  
00:36:57,239 --> 00:37:01,889  
skip toy calm oddly enough and one of

753  
00:36:59,880 --> 00:37:05,190  
the things that I remember strongly all

754  
00:37:01,889 --> 00:37:06,869  
the direwolves my goodness me over

755  
00:37:05,190 --> 00:37:08,490  
hundreds and thousands of years all the

756  
00:37:06,869 --> 00:37:10,440  
direwolves that ended their lives right

757  
00:37:08,489 --> 00:37:13,319  
here being stuck in the in the Tar Pits

758  
00:37:10,440 --> 00:37:15,539  
it's quite incredible now speaking of

759  
00:37:13,320 --> 00:37:19,190  
internet type things I noticed that you

760  
00:37:15,539 --> 00:37:21,210  
have a interesting series about geology

761  
00:37:19,190 --> 00:37:23,369  
you're filming at the moment what can

762  
00:37:21,210 --> 00:37:24,690  
you tell us about that a few months ago

763  
00:37:23,369 --> 00:37:27,059  
i started a

764  
00:37:24,690 --> 00:37:30,900  
youtube series called better geology all

765  
00:37:27,059 --> 00:37:33,690  
one word that is all about geology in

766  
00:37:30,900 --> 00:37:36,450  
places I go Death Valley the Cascade

767  
00:37:33,690 --> 00:37:37,950  
Mountains in the northwest a lot of the

768  
00:37:36,449 --> 00:37:42,598  
videos I've been working on have been

769  
00:37:37,949 --> 00:37:45,419  
following the standard university level

770

00:37:42,599 --> 00:37:47,400  
of geology curriculum that I've been

771  
00:37:45,420 --> 00:37:49,650  
going through and going through and

772  
00:37:47,400 --> 00:37:51,389  
elaborating on those topics one at a

773  
00:37:49,650 --> 00:37:54,568  
time they're short videos one to two

774  
00:37:51,389 --> 00:37:58,259  
minutes on average and I'm doing my best

775  
00:37:54,568 --> 00:37:59,940  
to explain basic principles of geology I

776  
00:37:58,260 --> 00:38:01,650  
think it's wonderful and how can people

777  
00:37:59,940 --> 00:38:03,539  
view those videos well they're on

778  
00:38:01,650 --> 00:38:06,480  
YouTube better geology is the channel

779  
00:38:03,539 --> 00:38:07,949  
name there's seven videos I think right

780  
00:38:06,480 --> 00:38:09,358  
now and i'm working on a whole bunch of

781  
00:38:07,949 --> 00:38:13,409  
them that i filmed from my most recent

782  
00:38:09,358 --> 00:38:15,630  
trip in Death Valley and they should be

783  
00:38:13,409 --> 00:38:17,489  
coming up in the coming weeks excellent

784  
00:38:15,630 --> 00:38:19,530

well folks look I'll definitely linked

785

00:38:17,489 --> 00:38:22,739

to better geology on the show notes so

786

00:38:19,530 --> 00:38:24,780

we better wander around now around pass

787

00:38:22,739 --> 00:38:26,669

this tree this is all fenced off of

788

00:38:24,780 --> 00:38:28,859

course but it's a giant black pool folks

789

00:38:26,670 --> 00:38:32,309

if you can imagine that with various

790

00:38:28,858 --> 00:38:33,960

models of animals about to go into the

791

00:38:32,309 --> 00:38:36,690

tar in fact there's a poor master on

792

00:38:33,960 --> 00:38:39,900

over there and its death flows it seems

793

00:38:36,690 --> 00:38:41,818

to me and lots of bubbling bubbling

794

00:38:39,900 --> 00:38:45,059

methane and all sorts of things bubbling

795

00:38:41,818 --> 00:38:46,529

up now if you come to Los Angeles and

796

00:38:45,059 --> 00:38:48,389

you do the Hollywood to as well that's

797

00:38:46,530 --> 00:38:51,269

very great but don't miss the La Brea

798

00:38:48,389 --> 00:38:53,068

Tar Pits as my second time here and I

799

00:38:51,269 --> 00:38:59,519

can't wait to go back inside and look at

800

00:38:53,068 --> 00:39:03,779

all the the history and the science so

801

00:38:59,519 --> 00:39:07,940

we've now in the main exhibit area of

802

00:39:03,780 --> 00:39:12,089

the Tar Pits here what do we have here a

803

00:39:07,940 --> 00:39:15,000

ground sloth which is about two meters

804

00:39:12,088 --> 00:39:16,769

tall it's bigger than a grizzly bear

805

00:39:15,000 --> 00:39:18,389

much bigger than a grizzly bear and the

806

00:39:16,769 --> 00:39:21,539

rib cage is tremendous this is one of

807

00:39:18,389 --> 00:39:25,049

the creatures that was a dragged out of

808

00:39:21,539 --> 00:39:27,650

the Tar Pits and stood over six feet

809

00:39:25,050 --> 00:39:31,640

tall well absolutely probably more

810

00:39:27,650 --> 00:39:34,760

and since he weighed 1500 pounds which I

811

00:39:31,639 --> 00:39:37,150

can believe it's nice to see so many

812

00:39:34,760 --> 00:39:40,030

people here lots of kids milling around

813  
00:39:37,150 --> 00:39:43,430  
and there are guides talking about the

814  
00:39:40,030 --> 00:39:44,840  
the California Sabretooth and if we look

815  
00:39:43,429 --> 00:39:48,649  
in this little display there's one

816  
00:39:44,840 --> 00:39:50,780  
looking back at us and oh hello we're

817  
00:39:48,650 --> 00:39:52,460  
doing a podcast from Sydney Australia at

818  
00:39:50,780 --> 00:39:54,260  
the moment welcome welcome to Los

819  
00:39:52,460 --> 00:39:56,389  
Angeles thank you and your name is it's

820  
00:39:54,260 --> 00:39:58,130  
tricia chasm and you're one of the

821  
00:39:56,389 --> 00:40:01,009  
guides yeah I'm one of the volunteers

822  
00:39:58,130 --> 00:40:02,840  
here I used to come here as a child 30

823  
00:40:01,010 --> 00:40:04,490  
years ago so now I work here with the

824  
00:40:02,840 --> 00:40:07,100  
children in a program and this is a

825  
00:40:04,489 --> 00:40:09,109  
saber-toothed cat well and she's holding

826  
00:40:07,099 --> 00:40:11,750  
this remarkable scholar Zetas is that a

827

00:40:09,110 --> 00:40:13,760  
real scholar or a cost is actually a

828  
00:40:11,750 --> 00:40:15,590  
cast because I'm very clumsy and I break

829  
00:40:13,760 --> 00:40:17,450  
everything so they didn't trust me but

830  
00:40:15,590 --> 00:40:19,760  
yes everything else you see here was

831  
00:40:17,449 --> 00:40:21,469  
down in this area but it's tremendous I

832  
00:40:19,760 --> 00:40:25,100  
mean look at those saber teeth that

833  
00:40:21,469 --> 00:40:27,349  
amazingly amazing California is really a

834  
00:40:25,099 --> 00:40:29,500  
pot of gold there are so many amazing

835  
00:40:27,349 --> 00:40:32,839  
treasures that you can be found in

836  
00:40:29,500 --> 00:40:34,400  
California so I advise everyone instead

837  
00:40:32,840 --> 00:40:36,620  
of going there's a million places you

838  
00:40:34,400 --> 00:40:38,210  
can see a beautiful oceans and beautiful

839  
00:40:36,619 --> 00:40:41,960  
mountains but where can you actually

840  
00:40:38,210 --> 00:40:44,990  
come and find things like this and touch

841  
00:40:41,960 --> 00:40:47,570

them and the kids can play and it's an

842

00:40:44,989 --> 00:40:49,789

amazing time to come and especially in

843

00:40:47,570 --> 00:40:51,200

the middle of a city it is and I'm

844

00:40:49,789 --> 00:40:53,300

pleased to see so many people here

845

00:40:51,199 --> 00:40:56,269

milling around lots of children and when

846

00:40:53,300 --> 00:41:00,140

about when these poor creatures the

847

00:40:56,269 --> 00:41:02,449

saber-toothed cats is a saber-toothed

848

00:41:00,139 --> 00:41:04,609

cats is a saber-toothed cat yes most

849

00:41:02,449 --> 00:41:08,089

people think it's a tiger but it's not

850

00:41:04,610 --> 00:41:10,300

it's a cat yes but they've been around

851

00:41:08,090 --> 00:41:12,440

quite a long time and we have found

852

00:41:10,300 --> 00:41:15,500

hundreds of these so this was a very

853

00:41:12,440 --> 00:41:18,889

prime area there was a lot of marshes a

854

00:41:15,500 --> 00:41:20,929

lot of hunting a lot of plans there it

855

00:41:18,889 --> 00:41:23,359

was just such a great breeding area

856  
00:41:20,929 --> 00:41:25,609  
that's why we found so many dot like the

857  
00:41:23,360 --> 00:41:28,490  
direwolf yeah if you've seen how many

858  
00:41:25,610 --> 00:41:31,460  
we've found a mini what we're finding

859  
00:41:28,489 --> 00:41:33,500  
today we have people excavators outside

860  
00:41:31,460 --> 00:41:34,059  
so just today every day we're finding

861  
00:41:33,500 --> 00:41:38,170  
new things

862  
00:41:34,059 --> 00:41:39,610  
that's incredible job security well

863  
00:41:38,170 --> 00:41:41,200  
thank you for showing me that it's hard

864  
00:41:39,610 --> 00:41:42,970  
to describe to the listen is exactly

865  
00:41:41,199 --> 00:41:44,769  
what we're looking at but it's a

866  
00:41:42,969 --> 00:41:47,199  
tremendous it's a really impressive

867  
00:41:44,769 --> 00:41:49,960  
skull and i'm sure those teeth could

868  
00:41:47,199 --> 00:41:52,059  
have done some oh yeah Oh much much

869  
00:41:49,960 --> 00:41:53,740  
damage but welcome to Los Angeles and

870  
00:41:52,059 --> 00:41:55,750  
everyone is welcome please come and

871  
00:41:53,739 --> 00:41:57,549  
enjoy the Tar Pits and the Natural

872  
00:41:55,750 --> 00:42:01,409  
History Museum anytime we are always

873  
00:41:57,550 --> 00:42:07,030  
welcome thank you it's a woolly mammoth

874  
00:42:01,409 --> 00:42:11,230  
the great curved tusks so my god a model

875  
00:42:07,030 --> 00:42:18,730  
it's swaying if I walk just behind it

876  
00:42:11,230 --> 00:42:22,210  
this a skeleton hear of a mammoth which

877  
00:42:18,730 --> 00:42:26,469  
is I couldn't have said it better myself

878  
00:42:22,210 --> 00:42:29,440  
it's huge Andrew Dunning this is a huge

879  
00:42:26,469 --> 00:42:33,459  
animal yes it is it's all you have to

880  
00:42:29,440 --> 00:42:36,460  
say about food I'd say the leg bones and

881  
00:42:33,460 --> 00:42:39,849  
the shoulder blades are their enormous

882  
00:42:36,460 --> 00:42:41,889  
far bigger than probably most modern

883  
00:42:39,849 --> 00:42:45,549  
elephants except for the largest African

884

00:42:41,889 --> 00:42:48,039  
Bulls the the for the forearms and the

885  
00:42:45,550 --> 00:42:50,320  
four legs are at the widest probably

886  
00:42:48,039 --> 00:42:53,349  
between six and eight inches wide their

887  
00:42:50,320 --> 00:42:55,570  
narrowest there they're just massive

888  
00:42:53,349 --> 00:42:57,460  
yeah it's hard to describe the scale if

889  
00:42:55,570 --> 00:43:00,240  
we walk around here we can actually

890  
00:42:57,460 --> 00:43:03,880  
stand under the tusks which are

891  
00:43:00,239 --> 00:43:06,789  
tremendously long and curved right

892  
00:43:03,880 --> 00:43:09,610  
around again it's hard to describe the

893  
00:43:06,789 --> 00:43:13,570  
scale of this this animal it's almost

894  
00:43:09,610 --> 00:43:15,820  
like looking in a dinosaur museum and

895  
00:43:13,570 --> 00:43:19,600  
seeing a reasonably large dinosaur but

896  
00:43:15,820 --> 00:43:22,680  
this is a mammal now this is a working

897  
00:43:19,599 --> 00:43:25,809  
scientific institution and where it do

898  
00:43:22,679 --> 00:43:29,799

the big glass case here with the

899

00:43:25,809 --> 00:43:33,599

paleontology laboratory and through the

900

00:43:29,800 --> 00:43:36,400

glass here we can see one two three

901

00:43:33,599 --> 00:43:38,409

scientists hard at work sorting out

902

00:43:36,400 --> 00:43:40,900

miniature fossils and they are looking

903

00:43:38,409 --> 00:43:43,000

for tiny little bits of bone fragment

904

00:43:40,900 --> 00:43:45,180

right in front of us and what they're

905

00:43:43,000 --> 00:43:47,860

looking at through the microscope is

906

00:43:45,179 --> 00:43:50,259

also projected on a large screen so we

907

00:43:47,860 --> 00:43:53,170

can easily see exactly the tiny fragments

908

00:43:50,260 --> 00:43:54,810

these scientists are trying to discover

909

00:43:53,170 --> 00:43:57,970

and there's a row of magma of

910

00:43:54,809 --> 00:44:01,210

microscopes along here with various

911

00:43:57,969 --> 00:44:04,929

displays and animals so it's a it's a

912

00:44:01,210 --> 00:44:07,269

fascinating place it really is an

913  
00:44:04,929 --> 00:44:10,419  
interesting worthwhile place to come to

914  
00:44:07,269 --> 00:44:14,019  
as I walk around lots of displays and

915  
00:44:10,420 --> 00:44:16,320  
skulls and skeletons and we could see

916  
00:44:14,019 --> 00:44:18,429  
here some of the history of the Tar Pits

917  
00:44:16,320 --> 00:44:21,130  
dating back to the early part of last

918  
00:44:18,429 --> 00:44:26,109  
century with photographs of excavations

919  
00:44:21,130 --> 00:44:27,789  
and lots of bones in another window here

920  
00:44:26,110 --> 00:44:31,960  
we can look right into a scientist hard

921  
00:44:27,789 --> 00:44:36,579  
at work cataloguing and she's got camel

922  
00:44:31,960 --> 00:44:39,250  
bones camels camels yeah they're

923  
00:44:36,579 --> 00:44:41,230  
cataloguing camels and there's all these

924  
00:44:39,250 --> 00:44:42,880  
bones laid out in front of us and the

925  
00:44:41,230 --> 00:44:45,269  
scientists behind the glass panel

926  
00:44:42,880 --> 00:44:47,349  
there's it's got a little

927  
00:44:45,269 --> 00:44:50,108  
photographic what does the knife no

928  
00:44:47,349 --> 00:44:52,359  
sudden i phone a savvy do camera sort of

929  
00:44:50,108 --> 00:44:57,519  
device anyway and she's busily

930  
00:44:52,358 --> 00:44:59,409  
photographing endless camel bones well

931  
00:44:57,519 --> 00:45:01,119  
camels used to be quite common in this

932  
00:44:59,409 --> 00:45:04,598  
part of California until the end of the

933  
00:45:01,119 --> 00:45:06,400  
last ice age when the climate changed

934  
00:45:04,599 --> 00:45:10,960  
and eventually it became inhabitable for

935  
00:45:06,400 --> 00:45:14,019  
them so they died what a pity that's

936  
00:45:10,960 --> 00:45:16,030  
just too bad I'm sorry to hear that but

937  
00:45:14,019 --> 00:45:27,940  
I didn't I didn't remember that that the

938  
00:45:16,030 --> 00:45:31,269  
Campbells used to be here well now the

939  
00:45:27,940 --> 00:45:33,880  
display here with just the one bone from

940  
00:45:31,269 --> 00:45:37,239  
a condor but there are hundreds and

941

00:45:33,880 --> 00:45:39,608  
hundreds on display almost all identical

942  
00:45:37,239 --> 00:45:42,969  
they vary in length only a couple of

943  
00:45:39,608 --> 00:45:44,829  
millimeters really and then Andrew

944  
00:45:42,969 --> 00:45:49,569  
Dunning from better geology is counting

945  
00:45:44,829 --> 00:45:52,239  
them all so it's 7 by 75 which is when

946  
00:45:49,570 --> 00:45:55,260  
he gets out his calculator because I

947  
00:45:52,239 --> 00:46:00,069  
can't do these quick mathematics 525

948  
00:45:55,260 --> 00:46:02,289  
lower right leg bones from condors it's

949  
00:46:00,070 --> 00:46:05,469  
a Lubbock indoors it's a lot of condos

950  
00:46:02,289 --> 00:46:07,959  
well now here's a skeleton of a coyote

951  
00:46:05,469 --> 00:46:11,438  
looking up to a tree with a skeleton of

952  
00:46:07,958 --> 00:46:13,868  
a condor or two and there's a point here

953  
00:46:11,438 --> 00:46:16,978  
to be made about evolution I think yeah

954  
00:46:13,869 --> 00:46:20,769  
so the coyote skeleton here is probably

955  
00:46:16,978 --> 00:46:23,078

about about a meter tall I'd say by

956

00:46:20,768 --> 00:46:24,909

about a meter long minus the tail and

957

00:46:23,079 --> 00:46:27,910

they're much bigger than that in this

958

00:46:24,909 --> 00:46:31,208

part of the country today back when

959

00:46:27,909 --> 00:46:32,678

these were deposited as fossils and they

960

00:46:31,208 --> 00:46:34,448

got stuck in the tar and died they were

961

00:46:32,679 --> 00:46:36,910

a lot smaller because there was much

962

00:46:34,449 --> 00:46:39,369

more competition from the wolves and the

963

00:46:36,909 --> 00:46:41,348

American lions and mountain lions and

964

00:46:39,369 --> 00:46:43,539

saber-toothed cats and a whole wealth of

965

00:46:41,349 --> 00:46:45,309

other predators and as those other

966

00:46:43,539 --> 00:46:47,499

predators slowly went extinct over

967

00:46:45,309 --> 00:46:48,939

thousands of years the coyotes were able

968

00:46:47,498 --> 00:46:51,308

to get bigger and now as we see them

969

00:46:48,938 --> 00:46:54,759

today they're three and a half to four

970  
00:46:51,309 --> 00:46:56,589  
feet tall now at the head maybe by about

971  
00:46:54,759 --> 00:46:58,059  
as long they're much bigger creatures

972  
00:46:56,588 --> 00:46:59,889  
today than they were though they're like

973  
00:46:58,059 --> 00:47:02,528  
the ones we see on the TV in the movies

974  
00:46:59,889 --> 00:47:05,318  
yeah a familiar yeah so we've come to

975  
00:47:02,528 --> 00:47:08,168  
another section I just around the corner

976  
00:47:05,318 --> 00:47:11,168  
here where it's a long wall of pictures

977  
00:47:08,168 --> 00:47:13,268  
and each panel represents 2,000 years of

978  
00:47:11,168 --> 00:47:15,188  
history and starting back thirty eight

979  
00:47:13,268 --> 00:47:17,558  
thousand years ago and it progresses and

980  
00:47:15,188 --> 00:47:22,028  
we can see the animals that came and

981  
00:47:17,559 --> 00:47:24,459  
went and when we reach the 22,000 year

982  
00:47:22,028 --> 00:47:27,188  
mark twenty two thousand years ago there

983  
00:47:24,458 --> 00:47:30,098  
are the camels the camels that they used

984  
00:47:27,188 --> 00:47:33,848  
to roam this part of North America and

985  
00:47:30,099 --> 00:47:35,979  
we come along to the panel that says ten

986  
00:47:33,849 --> 00:47:39,359  
thousand years ago and there's a picture

987  
00:47:35,978 --> 00:47:39,358  
of a native woman

988  
00:47:39,960 --> 00:47:47,019  
in situations and the panel says the

989  
00:47:43,659 --> 00:47:50,230  
remains of only one human 25 to 30 years

990  
00:47:47,019 --> 00:47:52,059  
of age have been found in the pits the

991  
00:47:50,230 --> 00:47:54,190  
structure of her skull indicates that

992  
00:47:52,059 --> 00:47:57,849  
she was related to the channel island

993  
00:47:54,190 --> 00:47:59,800  
Indians this is the way labrea woman may

994  
00:47:57,849 --> 00:48:01,599  
have a beard with the picture so

995  
00:47:59,800 --> 00:48:03,670  
described so that's interesting the

996  
00:48:01,599 --> 00:48:05,289  
whole history of this area and all the

997  
00:48:03,670 --> 00:48:08,440  
thousands upon thousands of bones are

998

00:48:05,289 --> 00:48:10,420  
getting out only one human has been

999  
00:48:08,440 --> 00:48:12,519  
discovered it's pretty amazing uh they

1000  
00:48:10,420 --> 00:48:15,099  
may have known that the Tar Pits were

1001  
00:48:12,519 --> 00:48:17,320  
not a not a good place to go that you

1002  
00:48:15,099 --> 00:48:19,119  
could get stuck in and it from my

1003  
00:48:17,320 --> 00:48:21,100  
further reading it is determined that

1004  
00:48:19,119 --> 00:48:22,779  
she may have been interred in the Tar

1005  
00:48:21,099 --> 00:48:24,819  
Pits ceremonially I was thinking that

1006  
00:48:22,780 --> 00:48:27,280  
could have been the case that instead of

1007  
00:48:24,820 --> 00:48:28,960  
her wandering in and getting stuck that

1008  
00:48:27,280 --> 00:48:32,550  
humans might have been a bit too clever

1009  
00:48:28,960 --> 00:48:35,349  
for that that they could have done that

1010  
00:48:32,550 --> 00:48:37,030  
there's a very good record of ceremonial

1011  
00:48:35,349 --> 00:48:39,789  
burials all over the American Southwest

1012  
00:48:37,030 --> 00:48:44,380

dating back tens of thousands of years

1013

00:48:39,789 --> 00:48:47,320

the earliest that's one of them now I

1014

00:48:44,380 --> 00:48:49,660

think they've come back to life but the

1015

00:48:47,320 --> 00:48:51,789

the oldest human burial sites that i

1016

00:48:49,659 --> 00:48:57,190

know of date back about 8,000 years in

1017

00:48:51,789 --> 00:48:58,599

the death valley area there's so much

1018

00:48:57,190 --> 00:49:00,670

tar in this one is because that's where

1019

00:48:58,599 --> 00:49:04,210

they bubble and that's where they put

1020

00:49:00,670 --> 00:49:06,190

all of the stuff that they dig out we're

1021

00:49:04,210 --> 00:49:07,690

back out in the garden the grounds i

1022

00:49:06,190 --> 00:49:10,179

should say again we're walking around to

1023

00:49:07,690 --> 00:49:12,789

an active excavation and we're walking

1024

00:49:10,179 --> 00:49:15,869

through fenced off Tar Pits and I'm

1025

00:49:12,789 --> 00:49:19,329

delighted to say when we're in there

1026

00:49:15,869 --> 00:49:22,420

there's tyronn fe we're stepping into

1027  
00:49:19,329 --> 00:49:26,739  
I'm not delighted to say that we

1028  
00:49:22,420 --> 00:49:29,559  
actually made a little better geology

1029  
00:49:26,739 --> 00:49:33,449  
video which andrew will no doubt be

1030  
00:49:29,559 --> 00:49:36,190  
editing soon so you can marvel at that

1031  
00:49:33,449 --> 00:49:38,739  
hopefully before long now just walk down

1032  
00:49:36,190 --> 00:49:41,349  
these steps lots of little buildings

1033  
00:49:38,739 --> 00:49:44,859  
like temporary buildings here coming up

1034  
00:49:41,349 --> 00:49:47,199  
to one that says pit 91 and on the

1035  
00:49:44,860 --> 00:49:49,150  
outside of the building that actually

1036  
00:49:47,199 --> 00:49:51,529  
shows you the animals they've excavated

1037  
00:49:49,150 --> 00:49:56,450  
from the pit and how many

1038  
00:49:51,530 --> 00:49:58,160  
so we'll just walk inside and it's like

1039  
00:49:56,449 --> 00:50:00,169  
a little viewing platform and we look

1040  
00:49:58,159 --> 00:50:03,619  
down through the glass into one of the

1041  
00:50:00,170 --> 00:50:07,730  
pits which is bubbling like crazy down

1042  
00:50:03,619 --> 00:50:09,519  
there it's all sort of like you see in

1043  
00:50:07,730 --> 00:50:14,179  
the movies they've got the grid pattern

1044  
00:50:09,519 --> 00:50:16,009  
but it's just a really dark pit which

1045  
00:50:14,179 --> 00:50:22,039  
they have to go into to retrieve the

1046  
00:50:16,010 --> 00:50:24,500  
bones well the day here at the La Brea

1047  
00:50:22,039 --> 00:50:28,849  
Tar Pits the page museum is coming to an

1048  
00:50:24,500 --> 00:50:31,820  
end Andrew we were just looking at the

1049  
00:50:28,849 --> 00:50:33,889  
poor mamus they're stuck in the old some

1050  
00:50:31,820 --> 00:50:36,230  
more gas coming up this this segment

1051  
00:50:33,889 --> 00:50:38,420  
it's today it's like how much thought

1052  
00:50:36,230 --> 00:50:40,519  
there's someone underneath for the straw

1053  
00:50:38,420 --> 00:50:41,750  
going and every now and then they have

1054  
00:50:40,519 --> 00:50:44,030  
to come up for air but there's lots of

1055

00:50:41,750 --> 00:50:46,340  
natural gas coming up yeah the bubbles

1056  
00:50:44,030 --> 00:50:48,890  
are coming up all the time 24 hours a

1057  
00:50:46,340 --> 00:50:50,300  
day the thousands thousands of years as

1058  
00:50:48,889 --> 00:50:52,489  
long as the Tar Pits have been here they

1059  
00:50:50,300 --> 00:50:54,560  
will always continue to bubble up

1060  
00:50:52,489 --> 00:50:56,539  
methane from underground it's amazing

1061  
00:50:54,559 --> 00:50:57,949  
place so once again our recommendation

1062  
00:50:56,539 --> 00:50:59,900  
from the skeptic zone to you dear

1063  
00:50:57,949 --> 00:51:02,210  
listener if you're in Los Angeles make

1064  
00:50:59,900 --> 00:51:04,160  
sure you spare some time for the Brea

1065  
00:51:02,210 --> 00:51:06,309  
Tar Pits

1066  
00:51:04,159 --> 00:51:09,808  
[Music]

1067  
00:51:06,309 --> 00:51:13,660  
and now I find myself in a giant hangar

1068  
00:51:09,809 --> 00:51:18,009  
which displays the space shuttle

1069  
00:51:13,659 --> 00:51:23,588

endeavour and it is a remarkable sight

1070

00:51:18,009 --> 00:51:27,338

its close-up it's not as clean and white

1071

00:51:23,588 --> 00:51:30,068

as you might imagine it's got obvious

1072

00:51:27,338 --> 00:51:34,150

signs of space wear and tear I guess you

1073

00:51:30,068 --> 00:51:36,880

would say but it is just magnificent to

1074

00:51:34,150 --> 00:51:39,009

be in the same building as a space

1075

00:51:36,880 --> 00:51:41,619

shuttle and I can walk right around it

1076

00:51:39,009 --> 00:51:45,849

and underneath it and look up to the

1077

00:51:41,619 --> 00:51:48,119

huge thin at the back the tail and I'm

1078

00:51:45,849 --> 00:51:52,269

approaching the front of Endeavour now

1079

00:51:48,119 --> 00:51:55,028

retro rocket ports along the back here

1080

00:51:52,268 --> 00:51:58,108

at the front to Andrew Dunning it's a

1081

00:51:55,028 --> 00:52:00,670

spectacular sight yes it is and you

1082

00:51:58,108 --> 00:52:02,380

could spend hours in here just inspect

1083

00:52:00,670 --> 00:52:04,749

and you when you get up close you can

1084  
00:52:02,380 --> 00:52:07,329  
actually read the individual tiles which

1085  
00:52:04,748 --> 00:52:09,548  
is interesting and you'll notice that

1086  
00:52:07,329 --> 00:52:11,920  
each individual tile has an individual

1087  
00:52:09,548 --> 00:52:14,469  
serial number yeah which was you need to

1088  
00:52:11,920 --> 00:52:16,989  
keep track of them very closely so if

1089  
00:52:14,469 --> 00:52:18,489  
any of them went wrong or had the

1090  
00:52:16,989 --> 00:52:21,039  
slightest defect they can be tracked

1091  
00:52:18,489 --> 00:52:22,958  
down they did ultrasonic testing of

1092  
00:52:21,039 --> 00:52:24,670  
every individual tile before it went up

1093  
00:52:22,958 --> 00:52:26,618  
to make sure they were all all in

1094  
00:52:24,670 --> 00:52:29,079  
working order because as we remember

1095  
00:52:26,619 --> 00:52:32,229  
from the Columbia one wrong tile can

1096  
00:52:29,079 --> 00:52:34,269  
make the whole thing so again yeah and I

1097  
00:52:32,228 --> 00:52:36,239  
what I find interesting is so if we walk

1098  
00:52:34,268 --> 00:52:39,728  
up closer to the edge here to the side

1099  
00:52:36,239 --> 00:52:43,528  
now we're on the the left front side of

1100  
00:52:39,728 --> 00:52:46,678  
the Space Shuttle under the cockpit and

1101  
00:52:43,528 --> 00:52:50,498  
we've got writing here for exam exhaust

1102  
00:52:46,679 --> 00:52:52,959  
but a purge poured over there and escape

1103  
00:52:50,498 --> 00:52:55,118  
instructions or big arrows to where the

1104  
00:52:52,958 --> 00:52:58,298  
escape is and on the other side there is

1105  
00:52:55,119 --> 00:53:00,249  
equal it's like on racing cars you see

1106  
00:52:58,298 --> 00:53:02,438  
things on the outside say battery here

1107  
00:53:00,248 --> 00:53:05,108  
and all this sort of thing so the same

1108  
00:53:02,438 --> 00:53:08,798  
was on the space shuttle now I'm walking

1109  
00:53:05,108 --> 00:53:11,299  
right under the very nose right of the

1110  
00:53:08,798 --> 00:53:14,019  
front of the space shuttle

1111  
00:53:11,300 --> 00:53:17,810  
where you can see the scoring and the

1112

00:53:14,019 --> 00:53:21,079  
marking and again each tile is

1113  
00:53:17,809 --> 00:53:23,690  
individually labeled I guess I'm about

1114  
00:53:21,079 --> 00:53:26,110  
five feet under the the tip of the nose

1115  
00:53:23,690 --> 00:53:28,849  
walking around to the other side now and

1116  
00:53:26,110 --> 00:53:30,170  
the views are magnificent looking down

1117  
00:53:28,849 --> 00:53:35,389  
the side of the space shuttle to the

1118  
00:53:30,170 --> 00:53:40,639  
back wings or the wings now clear around

1119  
00:53:35,389 --> 00:53:43,009  
the other side I can look up under the

1120  
00:53:40,639 --> 00:53:49,250  
cockpit and cut here for emergency

1121  
00:53:43,010 --> 00:53:52,460  
rescue and so on and so forth and also

1122  
00:53:49,250 --> 00:53:56,300  
here are details of every shuttle

1123  
00:53:52,460 --> 00:53:57,920  
mission and other displays so another

1124  
00:53:56,300 --> 00:54:00,860  
wonderful thing to do if you find

1125  
00:53:57,920 --> 00:54:03,500  
yourself in Los Angeles it's well worth

1126  
00:54:00,860 --> 00:54:05,950

your time to see this or inspiring space

1127

00:54:03,500 --> 00:54:05,949  
shuttle

1128

00:54:08,380 --> 00:54:23,849  
[Music]

1129

00:54:20,958 --> 00:54:27,898  
amazing news for supporters of Maynard

1130

00:54:23,849 --> 00:54:31,159  
calm today you and maynards podcasts you

1131

00:54:27,898 --> 00:54:36,898  
are entitled yes you you are entitled to

1132

00:54:31,159 --> 00:54:38,939  
download the 2017 Maynard calendar be

1133

00:54:36,898 --> 00:54:41,759  
the first person on your block and your

1134

00:54:38,938 --> 00:54:44,639  
city perhaps even your country to own

1135

00:54:41,759 --> 00:54:47,938  
the 2017 Maynard calendar yes spend

1136

00:54:44,639 --> 00:54:51,328  
every month with me nerd for more

1137

00:54:47,938 --> 00:54:54,028  
information visit [www ma not calm](http://www.ma-not-calm.com) day

1138

00:54:51,329 --> 00:54:58,709  
you and send may not a message asking

1139

00:54:54,028 --> 00:55:00,690  
about your 2017 Maynard downloadable

1140

00:54:58,708 --> 00:55:11,078  
printable calendar

1141  
00:55:00,690 --> 00:55:11,079  
[Music]

1142  
00:55:16,728 --> 00:55:21,409  
thank you for listening to the skeptic

1143  
00:55:19,259 --> 00:55:23,849  
zone and thank you to up-and-coming

1144  
00:55:21,409 --> 00:55:26,068  
geologist Andrew Dunning don't forget to

1145  
00:55:23,849 --> 00:55:30,180  
check out his YouTube videos at better

1146  
00:55:26,068 --> 00:55:34,978  
geology link on the show notes always

1147  
00:55:30,179 --> 00:55:37,498  
good to support promote encourage young

1148  
00:55:34,978 --> 00:55:40,919  
scientists coming up next week on the

1149  
00:55:37,498 --> 00:55:43,498  
show some more interviews from QED with

1150  
00:55:40,920 --> 00:55:46,259  
Iran sir give I thought I thought I'd

1151  
00:55:43,498 --> 00:55:48,929  
used them all up but when I came back to

1152  
00:55:46,259 --> 00:55:50,809  
Australia and I looked on my drive where

1153  
00:55:48,929 --> 00:55:53,338  
I keep some of the show files I

1154  
00:55:50,809 --> 00:55:55,829  
discovered some more interviews from QED

1155  
00:55:53,338 --> 00:55:58,108  
wonderful stuff again thank you to Iran

1156  
00:55:55,829 --> 00:56:00,259  
circuit for doing all that work over in

1157  
00:55:58,108 --> 00:56:03,900  
Manchester so next week some more

1158  
00:56:00,259 --> 00:56:05,728  
interviews from QED now before I go

1159  
00:56:03,900 --> 00:56:10,650  
every now and then on the skeptic zone I

1160  
00:56:05,728 --> 00:56:13,919  
like to give a a recommendation of this

1161  
00:56:10,650 --> 00:56:17,759  
that or the other and today I'd like to

1162  
00:56:13,920 --> 00:56:20,430  
recommend an app an app called prompt

1163  
00:56:17,759 --> 00:56:22,889  
smart now again there's no kick back to

1164  
00:56:20,429 --> 00:56:24,989  
me I get nothing out of this but I found

1165  
00:56:22,889 --> 00:56:28,170  
it incredibly useful and maybe you will

1166  
00:56:24,989 --> 00:56:30,900  
too it's a like an autocue program which

1167  
00:56:28,170 --> 00:56:34,380  
listens to your voice and progresses the

1168  
00:56:30,900 --> 00:56:36,838  
text at the speed you speak it's really

1169

00:56:34,380 --> 00:56:38,249  
handy and I even used it in this week's

1170  
00:56:36,838 --> 00:56:40,528  
show when I was reading out that letter

1171  
00:56:38,248 --> 00:56:43,348  
from Danny chambers now I think it's

1172  
00:56:40,528 --> 00:56:46,498  
only available for iOS devices at the

1173  
00:56:43,349 --> 00:56:48,150  
moment but if you are a podcaster or you

1174  
00:56:46,498 --> 00:56:51,149  
need to read scripts or something like

1175  
00:56:48,150 --> 00:56:53,099  
that then yes I could recommend prompts

1176  
00:56:51,150 --> 00:56:54,778  
part thank you once again to those

1177  
00:56:53,099 --> 00:56:58,380  
people who contribute to the skeptic

1178  
00:56:54,778 --> 00:57:00,449  
zone and pity on or just a direct via

1179  
00:56:58,380 --> 00:57:03,900  
paypal you can do that at skeptic zone

1180  
00:57:00,449 --> 00:57:07,199  
dot TV without your support every week

1181  
00:57:03,900 --> 00:57:09,088  
the show simply couldn't go ahead so I

1182  
00:57:07,199 --> 00:57:10,798  
hope everybody enjoys the skeptic zone

1183  
00:57:09,088 --> 00:57:14,130

that those people who do contribute I

1184

00:57:10,798 --> 00:57:17,909

hope you get that extra extra enjoyment

1185

00:57:14,130 --> 00:57:19,528

but i think it's now time for me to to

1186

00:57:17,909 --> 00:57:21,960

have a little rest on the couch while I

1187

00:57:19,528 --> 00:57:23,849

get over this last bit of jet lag thank

1188

00:57:21,960 --> 00:57:25,650

you once again for listening and for

1189

00:57:23,849 --> 00:57:26,850

this week this is Richard Saunders

1190

00:57:25,650 --> 00:57:32,940

signing off

1191

00:57:26,849 --> 00:57:34,610

from Sydney Australia you've been

1192

00:57:32,940 --> 00:57:38,099

listening to the skeptics own podcast

1193

00:57:34,610 --> 00:57:41,160

visit our website at wwc a petting zoo

1194

00:57:38,099 --> 00:57:45,059

TV for contacts and archive of all

1195

00:57:41,159 --> 00:57:47,339

episodes since 2008 and our online store

1196

00:57:45,059 --> 00:57:50,059

please support the skeptic zone by

1197

00:57:47,340 --> 00:57:53,070

following us on twitter at skeptic zone

1198  
00:57:50,059 --> 00:57:56,130  
liking us on facebook and leaving a

1199  
00:57:53,070 --> 00:57:59,010  
review on iTunes you can also show your

1200  
00:57:56,130 --> 00:58:02,460  
support by subscribing via PayPal or as

1201  
00:57:59,010 --> 00:58:04,830  
little as 99 cents a week the skeptic

1202  
00:58:02,460 --> 00:58:06,510  
zone is an independent production the

1203  
00:58:04,829 --> 00:58:08,610  
views and opinions expressed on the

1204  
00:58:06,510 --> 00:58:11,300  
skeptic zone and not necessarily those

1205  
00:58:08,610 --> 00:58:13,480  
of Australian skeptics or any other

1206  
00:58:11,300 --> 00:58:18,320  
skeptical organization

1207  
00:58:13,480 --> 00:58:18,320  
[Music]