

**THE
SKEPTIC
ZONE
PODCAST**

www.skepticzone.tv

1
00:00:12,370 --> 00:00:09,100
welcome to the skeptic zone the podcast

2
00:00:22,450 --> 00:00:12,380
from Australia for science and reason

3
00:00:25,279 --> 00:00:22,460
[Music]

4
00:00:28,519 --> 00:00:25,289
hello and welcome to the skeptic zone

5
00:00:32,240 --> 00:00:28,529
episode number 429 for the 8th of

6
00:00:35,420 --> 00:00:32,250
January 2017 Richardson is here with you

7
00:00:38,930 --> 00:00:35,430
back in Sydney Australia muggy hot warm

8
00:00:41,150 --> 00:00:38,940
humid cloudy looking out the window

9
00:00:44,000 --> 00:00:41,160
Sydney Australia nice to be back in

10
00:00:46,880 --> 00:00:44,010
Australia nice to see Henrietta and more

11
00:00:48,619 --> 00:00:46,890
the skeptic zone cats as soon as I

12
00:00:52,400 --> 00:00:48,629
walked in the door they looked at me and

13
00:00:54,590 --> 00:00:52,410

said time for food yes they haven't

14

00:00:56,569 --> 00:00:54,600

changed a bit thank you to the wonderful

15

00:00:58,670 --> 00:00:56,579

people I saw in the United States on my

16

00:01:01,340 --> 00:00:58,680

recent trip thank you to the people who

17

00:01:03,049 --> 00:01:01,350

helped put together my my talks over

18

00:01:05,570 --> 00:01:03,059

there wow what a great time I had I

19

00:01:07,130 --> 00:01:05,580

really enjoyed that very much and a big

20

00:01:09,620 --> 00:01:07,140

thank you to the Dunning family who

21

00:01:12,590 --> 00:01:09,630

looked after me so well in Southern

22

00:01:13,700 --> 00:01:12,600

California and in fact later on in this

23

00:01:17,480 --> 00:01:13,710

episode you'll be hearing from

24

00:01:20,960 --> 00:01:17,490

up-and-coming young geologist Andrew

25

00:01:24,830 --> 00:01:20,970

Dunning as he and I explore the La Brea

26

00:01:27,710 --> 00:01:24,840

Tar Pits yeah fantastic area in Los

27

00:01:30,679 --> 00:01:27,720

Angeles the brea tar pits and the

28

00:01:33,320 --> 00:01:30,689

associated museum wow what a magical

29

00:01:35,210 --> 00:01:33,330

place it is who would have ever thought

30

00:01:39,469 --> 00:01:35,220

that uh could be interesting it is

31

00:01:41,539 --> 00:01:39,479

because of all the remains of long

32

00:01:44,210 --> 00:01:41,549

extinct animals they do get out of these

33

00:01:47,270 --> 00:01:44,220

Tar Pits find out more later on in the

34

00:01:51,830 --> 00:01:47,280

show and also included in that report is

35

00:01:54,700 --> 00:01:51,840

a visit to the space shuttle Endeavour

36

00:01:58,249 --> 00:01:54,710

which is also on display in Los Angeles

37

00:02:00,620 --> 00:01:58,259

links to those places in the show notes

38

00:02:05,510 --> 00:02:00,630

but what an interesting day I had

39

00:02:08,630 --> 00:02:05,520

exploring the science on offer in Los

40

00:02:10,910 --> 00:02:08,640

Angeles but before we get to that report

41

00:02:13,550 --> 00:02:10,920

I better tell you that we've got a new

42

00:02:17,449 --> 00:02:13,560

reporter a new reporter on the skeptic

43

00:02:21,039 --> 00:02:17,459

zone mandy lee Noble and her segment is

44

00:02:23,930 --> 00:02:21,049

going to be called the diet skeptic

45

00:02:26,410 --> 00:02:23,940

mandy lee noble is a dietician and

46

00:02:29,120 --> 00:02:26,420

skeptic from Brisbane up in Queensland

47

00:02:31,990 --> 00:02:29,130

dedicated to exposing health and

48

00:02:34,370 --> 00:02:32,000

wellness whoo and promoting inclusive

49

00:02:37,100 --> 00:02:34,380

evidence-based health care

50

00:02:39,200 --> 00:02:37,110

member of the dietitians Association of

51
00:02:42,620 --> 00:02:39,210
Australia registered Australian

52
00:02:44,870 --> 00:02:42,630
independent dietitian nutritionist Wow

53
00:02:46,730 --> 00:02:44,880
the diet skeptic what's good to eat

54
00:02:49,850 --> 00:02:46,740
what's bad to eat what shouldn't you eat

55
00:02:53,180 --> 00:02:49,860
what can I eat what's downstairs for me

56
00:02:55,700 --> 00:02:53,190
to eat find out with the diet skeptic

57
00:02:57,770 --> 00:02:55,710
very first report coming up at the top

58
00:03:00,380 --> 00:02:57,780
of the show also in this week's show we

59
00:03:04,160 --> 00:03:00,390
here once again from dr. Danny chambers

60
00:03:07,400 --> 00:03:04,170
the vet you will remember in the UK who

61
00:03:11,110 --> 00:03:07,410
is mounting a very strong campaign

62
00:03:14,060 --> 00:03:11,120
against homeopathic veterinary care

63
00:03:16,880 --> 00:03:14,070

homeopathic veterinary care vets who

64

00:03:19,310 --> 00:03:16,890

prescribe homeopathy instead of real

65

00:03:21,920 --> 00:03:19,320

medicine well he wrote an article for

66

00:03:24,230 --> 00:03:21,930

the veterinary times it's also published

67

00:03:28,130 --> 00:03:24,240

online and that's what I'll be reading

68

00:03:31,160 --> 00:03:28,140

out today homeopathic veterinary care I

69

00:03:32,950 --> 00:03:31,170

don't think so also in this week's show

70

00:03:36,130 --> 00:03:32,960

we have a couple of reports from

71

00:03:40,130 --> 00:03:36,140

brouhaha from Australia science dot TV

72

00:03:42,530 --> 00:03:40,140

this week it's casey Harrigan now those

73

00:03:45,530 --> 00:03:42,540

people who listen to the skeptic ality

74

00:03:48,110 --> 00:03:45,540

podcast on a very recent episode i think

75

00:03:50,930 --> 00:03:48,120

the most recent episode is an interview

76
00:03:54,170 --> 00:03:50,940
with me conducted by susan go back from

77
00:03:56,570 --> 00:03:54,180
guerrilla skepticism non Wikipedia Thank

78
00:03:58,840 --> 00:03:56,580
You Derek from skeptic ality and thank

79
00:04:01,610 --> 00:03:58,850
you susan Kubek was a lot of fun being

80
00:04:03,080 --> 00:04:01,620
interviewed the tables were turned on me

81
00:04:07,970 --> 00:04:03,090
for a change and the tables were turned

82
00:04:09,260 --> 00:04:07,980
earlier this morning very early 530am my

83
00:04:13,190 --> 00:04:09,270
time but that's okay I'm jet-lagged

84
00:04:15,890 --> 00:04:13,200
where I was interviewed by the ESP

85
00:04:18,830 --> 00:04:15,900
podcast and I think that'll be coming up

86
00:04:23,010 --> 00:04:18,840
pretty soon I on that particular show so

87
00:04:26,189 --> 00:04:23,020
thanks to the ESP for interviewing me

88
00:04:28,499 --> 00:04:26,199

and now here's something that's not

89

00:04:34,050 --> 00:04:28,509

skeptical in the least he had this

90

00:04:37,020 --> 00:04:34,060

wonderful music recently my brother and

91

00:04:38,969 --> 00:04:37,030

a friend went and traveled around Cuba

92

00:04:42,149 --> 00:04:38,979

they had a wonderful time listening to

93

00:04:45,420 --> 00:04:42,159

the local music and as a result there is

94

00:04:51,930 --> 00:04:45,430

now a Kickstarter page and the aim is to

95

00:04:54,570 --> 00:04:51,940

help produce a new album true Cuban

96

00:04:56,850 --> 00:04:54,580

music the album's going to be called

97

00:04:59,100 --> 00:04:56,860

Cala Alice Ted which translates to

98

00:05:02,010 --> 00:04:59,110

Friendship street it's going to be an

99

00:05:04,800 --> 00:05:02,020

album of new music in the Sun style as

100

00:05:07,920 --> 00:05:04,810

created by the next wave of musicians

101
00:05:09,390 --> 00:05:07,930
from Cuba wow if you love Latin music

102
00:05:11,550 --> 00:05:09,400
and that sort of beaten it sort of a

103
00:05:13,350 --> 00:05:11,560
rhythm that sort of music why not check

104
00:05:15,600 --> 00:05:13,360
it out there is the link on this week's

105
00:05:18,749 --> 00:05:15,610
show notes and I've put a little loud a

106
00:05:20,850 --> 00:05:18,759
little banner on the the website of the

107
00:05:23,459 --> 00:05:20,860
skeptic zone if you like that sort of

108
00:05:25,320 --> 00:05:23,469
thing well why not help out again not

109
00:05:27,629 --> 00:05:25,330
much to do with skepticism but it's nice

110
00:05:30,180 --> 00:05:27,639
to help out there my friends and family

111
00:05:31,680 --> 00:05:30,190
from time to time but that's enough from

112
00:05:34,680 --> 00:05:31,690
me right now I'm going to run down or

113
00:05:36,330 --> 00:05:34,690

before I run downstairs before I run

114

00:05:41,399 --> 00:05:36,340

downstairs now where I here they are

115

00:05:44,219 --> 00:05:41,409

here they are now hear this it's a

116

00:05:46,469 --> 00:05:44,229

packet of mints yes means I picked up in

117

00:05:48,659 --> 00:05:46,479

the United States the flavor is called

118

00:05:51,300 --> 00:05:48,669

wintergreen and you can't get that

119

00:05:56,189 --> 00:05:51,310

flavor in Australia as far as i know and

120

00:05:58,140 --> 00:05:56,199

it's my instant favorite hmm wintergreen

121

00:06:01,260 --> 00:05:58,150

mints I wonder if you like them now

122

00:06:02,999 --> 00:06:01,270

people who know me when I go to the

123

00:06:05,550 --> 00:06:03,009

United States our waste take a packet of

124

00:06:08,010 --> 00:06:05,560

musk sticks with me the traditional

125

00:06:10,279 --> 00:06:08,020

Australian candy and watch the faces of

126

00:06:13,409 --> 00:06:10,289

poor Americans as they try to eat it

127

00:06:16,320 --> 00:06:13,419

many people spit it out well I was

128

00:06:18,689 --> 00:06:16,330

offering some wintergreen mints around

129

00:06:19,980 --> 00:06:18,699

the Australian skeptics committee just

130

00:06:23,070 --> 00:06:19,990

yesterday when I was catching up with

131

00:06:25,170 --> 00:06:23,080

everybody and I got similar expressions

132

00:06:27,390 --> 00:06:25,180

on their faces hmm do you like

133

00:06:29,459 --> 00:06:27,400

wintergreen can I get wintergreen in

134

00:06:32,430 --> 00:06:29,469

Australia these are important questions

135

00:06:35,129 --> 00:06:32,440

folks I must be really jet-lagged I'm

136

00:06:36,480 --> 00:06:35,139

going to run downstairs looking out for

137

00:06:39,600 --> 00:06:36,490

the skeptics and cats I'm going to

138

00:06:42,719 --> 00:06:39,610

downstairs just have a nice hot cup of

139

00:06:45,870 --> 00:06:42,729

tea and a biscuit Tina biscuit well I'm

140

00:06:46,480 --> 00:06:45,880

doing that I hope you enjoy the skeptic

141

00:07:02,050 --> 00:06:46,490

zone

142

00:07:02,060 --> 00:07:08,470

that looks good enough to eat or does it

143

00:07:08,480 --> 00:07:16,120

here's the diet skeptic mandy lee noble

144

00:07:23,480 --> 00:07:20,360

hello skeptics own listeners mandy lee

145

00:07:30,410 --> 00:07:23,490

noble here dietitian and skeptic

146

00:07:33,290 --> 00:07:30,420

reporting from brisbane as the diet

147

00:07:36,350 --> 00:07:33,300

skeptic i hope to bring you many reports

148

00:07:39,290 --> 00:07:36,360

on my favorite skeptic topic health and

149

00:07:41,510 --> 00:07:39,300

wellness woo as well as reports on the

150

00:07:45,380 --> 00:07:41,520

other fantastic skeptic activities

151
00:07:47,840 --> 00:07:45,390
happening here in Queensland when it

152
00:07:50,780 --> 00:07:47,850
comes to health and wellness whew there

153
00:07:54,110 --> 00:07:50,790
is no end to the pseudoscience and shams

154
00:07:57,380 --> 00:07:54,120
I could investigate but for my very

155
00:08:02,530 --> 00:07:57,390
first report the skeptic zone I have

156
00:08:04,850 --> 00:08:02,540
chosen MTHFR gene testing and treatments

157
00:08:07,160 --> 00:08:04,860
this is an issue that is gaining

158
00:08:08,950 --> 00:08:07,170
momentum in Australia with many

159
00:08:12,380 --> 00:08:08,960
complementary and alternative medicine

160
00:08:16,790 --> 00:08:12,390
providers now advising clients to have

161
00:08:21,680 --> 00:08:16,800
genetic testing to verify their MTHFR

162
00:08:26,590 --> 00:08:21,690
status there is a dedicated MTHFR clinic

163
00:08:29,740 --> 00:08:26,600

in sydney called MTHFR support australia

164

00:08:33,050 --> 00:08:29,750

the clinic was founded by naturopath

165

00:08:36,200 --> 00:08:33,060

carolyn lebowski it provides

166

00:08:39,800 --> 00:08:36,210

consultations interpretations of genetic

167

00:08:42,080 --> 00:08:39,810

test results educational webinars and a

168

00:08:46,070 --> 00:08:42,090

range of exorbitantly overpriced

169

00:08:49,100 --> 00:08:46,080

supplements unfortunately I also need to

170

00:08:51,170 --> 00:08:49,110

mention that MTHFR diagnosis and

171

00:08:55,130 --> 00:08:51,180

treatment is being practiced by a small

172

00:08:57,610 --> 00:08:55,140

number of GPs and dieticians and in many

173

00:09:04,400 --> 00:08:57,620

cases medicare is currently funding

174

00:09:05,960 --> 00:09:04,410

MTHFR testing so what is MTHFR it is an

175

00:09:09,429 --> 00:09:05,970

acronym for

176
00:09:11,900 --> 00:09:09,439
methylene tetrahydrofolate reductase an

177
00:09:14,569 --> 00:09:11,910
enzyme involved in the metabolism of

178
00:09:16,759 --> 00:09:14,579
follow allowing it to perform important

179
00:09:21,259 --> 00:09:16,769
functions in DNA replication and

180
00:09:24,679 --> 00:09:21,269
maintenance the MTHFR enzyme is coded

181
00:09:27,550 --> 00:09:24,689
from the MTHFR gene which has a small

182
00:09:31,069 --> 00:09:27,560
number of variations in the population

183
00:09:34,639 --> 00:09:31,079
the variant enzymes are functional but

184
00:09:36,829 --> 00:09:34,649
less efficient we all have two copies of

185
00:09:40,040 --> 00:09:36,839
each gene and the majority of people

186
00:09:43,790 --> 00:09:40,050
have at least one MTHFR gene that codes

187
00:09:46,699 --> 00:09:43,800
a less efficient enzyme genetic variants

188
00:09:48,920 --> 00:09:46,709

makes us robust as a species and gene

189

00:09:51,499 --> 00:09:48,930

changes are not necessarily associated

190

00:09:55,819 --> 00:09:51,509

with disease the different blood groups

191

00:09:59,650 --> 00:09:55,829

a B and O are an example of gene

192

00:10:04,879 --> 00:09:59,660

variants so what are the implications of

193

00:10:08,809 --> 00:10:04,889

MTHFR studies show people with MTHFR

194

00:10:12,439 --> 00:10:08,819

variants in addition to a poor diet low

195

00:10:15,400 --> 00:10:12,449

in folate may have reduced blood folate

196

00:10:17,780 --> 00:10:15,410

and increase homocysteine levels

197

00:10:21,379 --> 00:10:17,790

homocysteine levels have been associated

198

00:10:25,220 --> 00:10:21,389

with cardiovascular disease cancer

199

00:10:27,799 --> 00:10:25,230

autism mental illness as well as

200

00:10:31,579 --> 00:10:27,809

recurrent pregnancy loss and neural tube

201
00:10:34,490 --> 00:10:31,589
defects however the current evidence for

202
00:10:38,420 --> 00:10:34,500
all of these associations is described

203
00:10:40,569 --> 00:10:38,430
as either weak or inconclusive health

204
00:10:44,449 --> 00:10:40,579
authorities both here in Australia and

205
00:10:48,079 --> 00:10:44,459
internationally recommend not testing

206
00:10:52,699 --> 00:10:48,089
for the MTHFR variants in regards to any

207
00:10:56,600 --> 00:10:52,709
health condition as MTHFR status is not

208
00:11:00,860 --> 00:10:56,610
relevant for diagnosis or treatment so

209
00:11:04,309 --> 00:11:00,870
other possible benefits of MTHFR

210
00:11:06,559 --> 00:11:04,319
variants while proponents of MTHFR

211
00:11:10,519 --> 00:11:06,569
testing raise concerns about the

212
00:11:12,559 --> 00:11:10,529
possible harms of MTHFR variants they

213
00:11:15,919 --> 00:11:12,569

neglect to mention that there is

214

00:11:19,430 --> 00:11:15,929

significant evidence that MTHFR variance

215

00:11:23,110 --> 00:11:19,440

is protective against colon cancer

216

00:11:26,060 --> 00:11:23,120

lymphatic leukemia and other cancers

217

00:11:28,910 --> 00:11:26,070

there also appears to be a strong

218

00:11:31,460 --> 00:11:28,920

evolutionary selection for the MTHFR

219

00:11:34,670 --> 00:11:31,470

variants where there is adequate

220

00:11:38,380 --> 00:11:34,680

followed intake indicating that the

221

00:11:41,570 --> 00:11:38,390

variants may provide a survival benefit

222

00:11:44,720 --> 00:11:41,580

another claim by the proponents of MTHFR

223

00:11:47,630 --> 00:11:44,730

testing is that folate in the form of

224

00:11:51,710 --> 00:11:47,640

folic acid is harmful to those with the

225

00:11:54,950 --> 00:11:51,720

variant genes many advocates for MTHFR

226

00:11:57,470 --> 00:11:54,960

testing prescribe and sell a very

227

00:12:01,460 --> 00:11:57,480

expensive alternative form of folate

228

00:12:03,350 --> 00:12:01,470

supplement called methyl folate however

229

00:12:06,500 --> 00:12:03,360

the research does not support these

230

00:12:09,380 --> 00:12:06,510

claims and in Australia folic acid added

231

00:12:12,410 --> 00:12:09,390

to wheat flour for bread making purposes

232

00:12:14,900 --> 00:12:12,420

has reduced the incidence of neural tube

233

00:12:17,810 --> 00:12:14,910

defects by fourteen percent in the

234

00:12:21,380 --> 00:12:17,820

general population and by seventy four

235

00:12:24,820 --> 00:12:21,390

percent in indigenous populations it is

236

00:12:28,160 --> 00:12:24,830

also important to note that the MTHFR

237

00:12:32,410 --> 00:12:28,170

support clinic strongly advises clients

238

00:12:36,200 --> 00:12:32,420

to adopt a completely gluten-free diet

239

00:12:38,780 --> 00:12:36,210

no scientifically robust reason is given

240

00:12:41,540 --> 00:12:38,790

for this advice and such a change would

241

00:12:44,690 --> 00:12:41,550

effectively reduce the folate intake

242

00:12:48,320 --> 00:12:44,700

through fortified foods of those who may

243

00:12:51,110 --> 00:12:48,330

benefit most finally but very

244

00:12:55,280 --> 00:12:51,120

importantly naturopathic Carolyn lab

245

00:12:58,510 --> 00:12:55,290

dowski also claims that MTHFR variants

246

00:13:01,910 --> 00:12:58,520

increases susceptibility to aluminium

247

00:13:05,630 --> 00:13:01,920

polysorbate and formaldehyde found in

248

00:13:07,820 --> 00:13:05,640

childhood vaccinations madoski does not

249

00:13:10,579 --> 00:13:07,830

provide any scientific evidence to

250

00:13:13,160 --> 00:13:10,589

support these claims despite advising

251

00:13:15,920 --> 00:13:13,170

her clients to either deviate from the

252

00:13:20,260 --> 00:13:15,930

current vaccination schedule or consider

253

00:13:23,390 --> 00:13:20,270

not vaccinating their child so what did

254

00:13:27,800 --> 00:13:23,400

MTHFR testing become a thing in the

255

00:13:31,310 --> 00:13:27,810

first place carolyn Landowski founder of

256

00:13:32,930 --> 00:13:31,320

MTHFR support australia sums it up

257

00:13:36,710 --> 00:13:32,940

perfectly in her

258

00:13:40,070 --> 00:13:36,720

words on the MTHFR support website and I

259

00:13:42,440 --> 00:13:40,080

quote I certainly got to this point

260

00:13:44,780 --> 00:13:42,450

because I continuously saw people in my

261

00:13:47,600 --> 00:13:44,790

practice who just were not getting

262

00:13:50,210 --> 00:13:47,610

better despite giving them the normal

263

00:13:52,580 --> 00:13:50,220

supplements & herb's that I would expect

264

00:13:56,350 --> 00:13:52,590

them to respond to and I kept thinking

265

00:13:58,700 --> 00:13:56,360

that there had to be something more

266

00:14:01,640 --> 00:13:58,710

Occam's razor would suggest that the

267

00:14:04,040 --> 00:14:01,650

supplements don't work but cognitive

268

00:14:10,580 --> 00:14:04,050

dissidence convince ladakhi that the

269

00:14:13,100 --> 00:14:10,590

something more is MTHFR so to wrap up if

270

00:14:16,340 --> 00:14:13,110

we were to take advice from all health

271

00:14:19,130 --> 00:14:16,350

authorities including the American Heart

272

00:14:21,590 --> 00:14:19,140

Association the American Congress of

273

00:14:24,130 --> 00:14:21,600

Obstetricians and Gynaecologists and the

274

00:14:28,820 --> 00:14:24,140

American College of medical genetics as

275

00:14:31,670 --> 00:14:28,830

well as our own Royal Australian College

276

00:14:35,660 --> 00:14:31,680

of General Practitioners there would be

277

00:14:40,010 --> 00:14:35,670

no reason to ever recommend MTHFR gene

278

00:14:42,230 --> 00:14:40,020

testing given the evidence Australian

279

00:14:44,720 --> 00:14:42,240

taxpayers and healthcare consumers

280

00:14:49,450 --> 00:14:44,730

should be asking questions about whether

281

00:14:53,690 --> 00:14:49,460

Medicare should be funding MTHFR testing

282

00:14:55,730 --> 00:14:53,700

reduced MTHFR dm's l'm function does not

283

00:14:59,570 --> 00:14:55,740

require treatment and those who have

284

00:15:00,920 --> 00:14:59,580

less efficient MTHFR enzymes benefit

285

00:15:03,920 --> 00:15:00,930

most from the current health

286

00:15:09,890 --> 00:15:03,930

recommendations for diet and pregnancy

287

00:15:13,040 --> 00:15:09,900

given to all Australians thanks everyone

288

00:15:15,290 --> 00:15:13,050

for listening I recommend that anyone

289

00:15:18,610 --> 00:15:15,300

with concerns regarding childhood

290

00:15:22,340 --> 00:15:18,620

vaccinations visit the Northern Rivers

291

00:15:34,590 --> 00:15:22,350

vaccination supporters website bye for

292

00:15:39,319 --> 00:15:36,009

[Music]

293

00:15:41,479 --> 00:15:39,329

it never ends a friend starts talking

294

00:15:43,099 --> 00:15:41,489

about his new Reiki Master and someone

295

00:15:45,799 --> 00:15:43,109

else just posted about another

296

00:15:48,319 --> 00:15:45,809

all-natural cancer cure that they don't

297

00:15:50,539 --> 00:15:48,329

want you to know about a skeptics we

298

00:15:52,639 --> 00:15:50,549

dedicate a lot of time trying to protect

299

00:15:54,859 --> 00:15:52,649

those around us but there's a way that

300

00:15:57,469 --> 00:15:54,869

you can reach millions guerrilla

301
00:15:59,359 --> 00:15:57,479
skepticism on Wikipedia is a group that

302
00:16:01,819 --> 00:15:59,369
is working to keep the best skeptical

303
00:16:04,909 --> 00:16:01,829
information at everyone's fingertips in

304
00:16:07,639 --> 00:16:04,919
all languages join us training is

305
00:16:10,339 --> 00:16:07,649
self-paced and fun and we have our very

306
00:16:12,859 --> 00:16:10,349
own super secret Facebook group you will

307
00:16:17,169 --> 00:16:12,869
be educating the world in your sleep to

308
00:16:21,229 --> 00:16:17,179
find out more email us at GS o w team @

309
00:16:31,400 --> 00:16:21,239
gmail.com guerrilla skepticism the time

310
00:16:31,410 --> 00:16:38,469
[Music]

311
00:16:43,609 --> 00:16:40,969
listens to the skeptic zone may well

312
00:16:46,759 --> 00:16:43,619
remember that he's shown number 404 on

313
00:16:49,909 --> 00:16:46,769

the seventeenth of July 2016 we

314

00:16:54,259 --> 00:16:49,919

interviewed UK the vet dr. Dani chambers

315

00:16:57,499 --> 00:16:54,269

about a petition he put together to stop

316

00:16:59,599 --> 00:16:57,509

vets from using homeopathy to treat

317

00:17:02,449 --> 00:16:59,609

animals we're pleased to bring you an

318

00:17:07,149 --> 00:17:02,459

update on the story in the way of an

319

00:17:13,789 --> 00:17:11,960

published in the veterinary times UK why

320

00:17:17,059 --> 00:17:13,799

the Royal College of Veterinary Surgeons

321

00:17:20,359 --> 00:17:17,069

must prevent vets from prescribing

322

00:17:23,840 --> 00:17:20,369

homeopathy the case against homeopathy

323

00:17:26,419 --> 00:17:23,850

has never been a clearer with every well

324

00:17:29,619 --> 00:17:26,429

controlled study showing these remedies

325

00:17:32,899 --> 00:17:29,629

and no more effective than a placebo

326

00:17:35,749 --> 00:17:32,909

this is to be expected as homeopathic

327

00:17:39,499 --> 00:17:35,759

treatments contain no active substances

328

00:17:43,279 --> 00:17:39,509

at all the reason I started this

329

00:17:46,009 --> 00:17:43,289

campaign was because I figured I can't

330

00:17:48,289 --> 00:17:46,019

be the only vet who no longer wants to

331

00:17:50,980 --> 00:17:48,299

have to see animals whose perfectly

332

00:17:53,509 --> 00:17:50,990

treatable conditions have been left to

333

00:17:56,060 --> 00:17:53,519

deteriorate because their owners and

334

00:18:00,049 --> 00:17:56,070

vets were convinced homeopathic remedies

335

00:18:02,180 --> 00:18:00,059

would do the trick given more than 1,100

336

00:18:05,600 --> 00:18:02,190

of my veterinary colleagues signed the

337

00:18:07,489 --> 00:18:05,610

petition it appears I was right it is

338

00:18:10,690 --> 00:18:07,499

clear to me treating animals with

339

00:18:13,759 --> 00:18:10,700

homeopathy at best leads to unnecessary

340

00:18:16,879 --> 00:18:13,769

suffering and reduced likelihood of a

341

00:18:19,340 --> 00:18:16,889

full recovery and at worst as with a

342

00:18:21,350 --> 00:18:19,350

case of a horse I saw that had been

343

00:18:23,649 --> 00:18:21,360

treated for cushing's syndrome and

344

00:18:26,289 --> 00:18:23,659

chronic laminitis homeopathic ly

345

00:18:29,299 --> 00:18:26,299

conditions deteriorate so severely that

346

00:18:31,970 --> 00:18:29,309

euthanasia is the only option I also

347

00:18:34,369 --> 00:18:31,980

feel very strongly the use of homeopathy

348

00:18:37,090 --> 00:18:34,379

and other pseudo-scientific treatments

349

00:18:39,739 --> 00:18:37,100

in the profession gives it a bad name

350

00:18:43,009 --> 00:18:39,749

members of the public expect when they

351
00:18:45,710 --> 00:18:43,019
see a vet to get advice that represents

352
00:18:46,790 --> 00:18:45,720
the best treatment based on the totality

353
00:18:55,190 --> 00:18:46,800
of

354
00:18:57,830 --> 00:18:55,200
they are instead given treatment based

355
00:19:00,500 --> 00:18:57,840
on the personal beliefs of an extreme

356
00:19:02,060 --> 00:19:00,510
fringe that directly contradicts the

357
00:19:05,090 --> 00:19:02,070
wealth of evidence gathered by the

358
00:19:07,820 --> 00:19:05,100
veterinary field this clearly undermines

359
00:19:11,630 --> 00:19:07,830
the reputation of the entire field is

360
00:19:15,260 --> 00:19:11,640
being reliable responsible and robust so

361
00:19:18,050 --> 00:19:15,270
if it is only a minority of vets why is

362
00:19:21,620 --> 00:19:18,060
it important given more than 22,000

363
00:19:24,470 --> 00:19:21,630

registered vets exist the 200 or fewer

364

00:19:26,750 --> 00:19:24,480

who practice homeopathy in fact an

365

00:19:29,620 --> 00:19:26,760

article cited 50 vets licensed to

366

00:19:33,620 --> 00:19:29,630

practice homeopathy represent around

367

00:19:36,320 --> 00:19:33,630

point 25 to 1 percent of the profession

368

00:19:38,990 --> 00:19:36,330

yet if the Royal College of ventry

369

00:19:41,240 --> 00:19:39,000

surgeons fails to end the prescription

370

00:19:44,060 --> 00:19:41,250

of homeopathic remedies by this fringe

371

00:19:46,370 --> 00:19:44,070

group of vets it is an implicit

372

00:19:50,150 --> 00:19:46,380

endorsement of their use of these

373

00:19:52,580 --> 00:19:50,160

treatments it would therefore also be an

374

00:19:55,280 --> 00:19:52,590

imp listen acceptance of vets who place

375

00:19:57,260 --> 00:19:55,290

animal welfare at risk by putting their

376

00:20:00,590 --> 00:19:57,270

personal beliefs ahead of evidence-based

377

00:20:02,720 --> 00:20:00,600

medicine and the body of knowledge our

378

00:20:04,670 --> 00:20:02,730

profession has a cured that these

379

00:20:08,150 --> 00:20:04,680

treatments are offered by qualified vets

380

00:20:11,650 --> 00:20:08,160

suggests to the public homeopathy is not

381

00:20:14,810 --> 00:20:11,660

a wacky pseudoscience but an equivalent

382

00:20:17,480 --> 00:20:14,820

legitimate option perhaps just as

383

00:20:19,610 --> 00:20:17,490

effective as conventional medicine they

384

00:20:22,880 --> 00:20:19,620

may be more likely to use it on

385

00:20:24,890 --> 00:20:22,890

themselves or their children as some

386

00:20:27,020 --> 00:20:24,900

high-profile media cases have

387

00:20:29,810 --> 00:20:27,030

highlighted the consequences of

388

00:20:31,730 --> 00:20:29,820

well-meaning parents using homeopathic

389

00:20:35,510 --> 00:20:31,740

remedies to treat children suffering

390

00:20:37,910 --> 00:20:35,520

from meningitis can be tragic preventing

391

00:20:41,000 --> 00:20:37,920

vets from using homeopathy would send a

392

00:20:43,780 --> 00:20:41,010

clear message to the public of it not

393

00:20:47,300 --> 00:20:43,790

being approved by medical professionals

394

00:20:49,930 --> 00:20:47,310

not being a genuine effective treatment

395

00:20:53,360 --> 00:20:49,940

and being firmly in the quote

396

00:20:57,380 --> 00:20:53,370

alternative and quote and in fact

397

00:20:59,510 --> 00:20:57,390

disproven camp with no backing by

398

00:21:00,960 --> 00:20:59,520

conventionally trained professionals

399

00:21:03,330 --> 00:21:00,970

while the number

400

00:21:05,490 --> 00:21:03,340

of companion animals that may suffer as

401
00:21:08,549 --> 00:21:05,500
a result of using homeopathic remedies

402
00:21:11,100 --> 00:21:08,559
is relatively small given the fringe

403
00:21:13,560 --> 00:21:11,110
nature of belief in homeopathy among

404
00:21:15,770 --> 00:21:13,570
vets clearly causing an amount of

405
00:21:18,690 --> 00:21:15,780
avoidable suffering is deeply unethical

406
00:21:21,240 --> 00:21:18,700
furthermore if a vet who believed

407
00:21:26,010 --> 00:21:21,250
passionately in homeopathy was to raise

408
00:21:27,930 --> 00:21:26,020
to the position of CVO the potential

409
00:21:30,090 --> 00:21:27,940
damage done when forming government

410
00:21:33,630 --> 00:21:30,100
policy regarding antimicrobial

411
00:21:37,169 --> 00:21:33,640
resistance or disease outbreaks could be

412
00:21:39,899 --> 00:21:37,179
catastrophic I have regularly worked on

413
00:21:42,750 --> 00:21:39,909

rabies control projects in India to

414

00:21:44,760 --> 00:21:42,760

prevent dogs from dying of rabies and to

415

00:21:48,029 --> 00:21:44,770

prevent the disease infecting and

416

00:21:50,190 --> 00:21:48,039

killing people to enjoy poem as a result

417

00:21:52,799 --> 00:21:50,200

of vaccinating and neutering eighty-five

418

00:21:55,230 --> 00:21:52,809

percent of the street dog population no

419

00:21:59,430 --> 00:21:55,240

reported human cases of rabies have

420

00:22:01,919 --> 00:21:59,440

occurred since 2003 in 2016 I worked on

421

00:22:04,950 --> 00:22:01,929

a post-conflict livestock vaccination

422

00:22:07,890 --> 00:22:04,960

program in Iraq to help improve food

423

00:22:10,620 --> 00:22:07,900

security these are projects that affect

424

00:22:14,010 --> 00:22:10,630

not just animal welfare but human

425

00:22:17,310 --> 00:22:14,020

well-being too if I was a homeopathic

426
00:22:19,980 --> 00:22:17,320
vet imagine the time money and lives

427
00:22:22,770 --> 00:22:19,990
that would have been wasted if I thought

428
00:22:25,680 --> 00:22:22,780
homeopathic no doses could prevent

429
00:22:28,200 --> 00:22:25,690
rabies and dogs or were a substitute for

430
00:22:32,010 --> 00:22:28,210
foot and mouth disease vaccination in

431
00:22:34,440 --> 00:22:32,020
sheep and goats this would rightly be

432
00:22:36,450 --> 00:22:34,450
viewed as ridiculous and no competent

433
00:22:39,360 --> 00:22:36,460
vet would use homeopathy in those

434
00:22:41,669 --> 00:22:39,370
situations yet we know colleagues who

435
00:22:44,820 --> 00:22:41,679
put their faith in homeopathy offer no

436
00:22:46,200 --> 00:22:44,830
doses in the place of vaccination the

437
00:22:48,960 --> 00:22:46,210
Royal College of Veterinary Surgeons

438
00:22:51,840 --> 00:22:48,970

States one reason for permitting vets to

439

00:22:54,029 --> 00:22:51,850

prescribe homeopathy is pet owners will

440

00:22:56,100 --> 00:22:54,039

want to use homeopathic treatments

441

00:22:59,039 --> 00:22:56,110

anyway so it is better for a vet to

442

00:23:01,500 --> 00:22:59,049

administer this as he or she will be

443

00:23:03,870 --> 00:23:01,510

better place to monitor the welfare it

444

00:23:06,810 --> 00:23:03,880

does not want homeopathic treatments to

445

00:23:09,630 --> 00:23:06,820

be forced quote underground men quote on

446

00:23:12,600 --> 00:23:09,640

the surface this argument appears to

447

00:23:14,200 --> 00:23:12,610

make sense but i believe it is flawed

448

00:23:17,210 --> 00:23:14,210

for a number of reasons

449

00:23:18,979 --> 00:23:17,220

firstly it does not make any difference

450

00:23:20,989 --> 00:23:18,989

to the animal whether effective

451
00:23:24,680 --> 00:23:20,999
treatment or painkillers are withheld by

452
00:23:27,440 --> 00:23:24,690
a lay person or a qualified vet a lay

453
00:23:30,109 --> 00:23:27,450
person can be prosecuted for not seeking

454
00:23:32,389 --> 00:23:30,119
veterinary treatment if he or she gives

455
00:23:35,720 --> 00:23:32,399
homeopathy instead of appropriate

456
00:23:38,180 --> 00:23:35,730
interventions however if he or she goes

457
00:23:40,729 --> 00:23:38,190
to a homeopathic vet the outcome is the

458
00:23:43,399 --> 00:23:40,739
same for the animal but neither the

459
00:23:46,190 --> 00:23:43,409
owner nor the vet face any rebuke and

460
00:23:50,930 --> 00:23:46,200
the owner does not realize he or she has

461
00:23:53,119 --> 00:23:50,940
been done a disservice secondly I don't

462
00:23:56,180 --> 00:23:53,129
believe homeopathic vets are best placed

463
00:23:58,970 --> 00:23:56,190

to monitor animal welfare because I feel

464

00:24:02,119 --> 00:23:58,980

their belief in a disproven modality

465

00:24:03,859 --> 00:24:02,129

casts doubts on their critical judgment

466

00:24:06,830 --> 00:24:03,869

take the example of a cat with

467

00:24:09,649 --> 00:24:06,840

hyperthyroidism if a homeopathic vet is

468

00:24:12,229 --> 00:24:09,659

willing to administer homeopathy instead

469

00:24:14,720 --> 00:24:12,239

of appropriate treatment we know this

470

00:24:17,389 --> 00:24:14,730

lack of valid treatment can cause the

471

00:24:19,940 --> 00:24:17,399

animals health to deteriorate at what

472

00:24:22,700 --> 00:24:19,950

point do we trust the homeopathic vet to

473

00:24:26,060 --> 00:24:22,710

stop giving the homeopathy and treat the

474

00:24:29,029 --> 00:24:26,070

animal properly when it develops renal

475

00:24:32,299 --> 00:24:29,039

failure when its weight drops below a

476

00:24:34,340 --> 00:24:32,309

certain amount likewise if he or she is

477

00:24:37,970 --> 00:24:34,350

willing to treat a horse with laminitis

478

00:24:40,580 --> 00:24:37,980

with homeopathy can we trust him or her

479

00:24:43,970 --> 00:24:40,590

to monitor welfare by giving proper

480

00:24:45,710 --> 00:24:43,980

treatment at some point maybe when the

481

00:24:48,590 --> 00:24:45,720

heart rate is more than 60 beats per

482

00:24:51,710 --> 00:24:48,600

minute or when there is visible rotation

483

00:24:54,440 --> 00:24:51,720

of the pedal bones on radiographs the

484

00:24:58,220 --> 00:24:54,450

British Association of homeopathic of

485

00:25:01,549 --> 00:24:58,230

veterinary surgeons bah vs claims to

486

00:25:04,190 --> 00:25:01,559

cure cancer with homeopathy and Jeff

487

00:25:07,070 --> 00:25:04,200

Johnson the homeopath whose claims the

488

00:25:09,590 --> 00:25:07,080

bah vs features prominently on its

489

00:25:12,710 --> 00:25:09,600

website claimed during an interview with

490

00:25:16,399 --> 00:25:12,720

the BBC that he was treating quote many

491

00:25:19,879 --> 00:25:16,409

and quote dogs with a view to curing

492

00:25:22,399 --> 00:25:19,889

their cancer he told the BBC's Victoria

493

00:25:25,340 --> 00:25:22,409

Derbyshire his ability to cure cancer

494

00:25:27,289 --> 00:25:25,350

with homeopathy was one of the main

495

00:25:30,049 --> 00:25:27,299

reasons animal owners

496

00:25:33,590 --> 00:25:30,059

used to get treatment from him I do not

497

00:25:36,320 --> 00:25:33,600

believe we nor the public are able to

498

00:25:37,970 --> 00:25:36,330

trust the clinical judgment of vets who

499

00:25:40,430 --> 00:25:37,980

believe they can cure cancer with

500

00:25:42,409 --> 00:25:40,440

homeopathy instead these animals need

501
00:25:45,019 --> 00:25:42,419
appropriate treatment or possibly

502
00:25:47,119 --> 00:25:45,029
euthanasia their owners are being

503
00:25:49,639 --> 00:25:47,129
offered a disservice by being sold

504
00:25:52,279 --> 00:25:49,649
ineffective treatments that offer false

505
00:25:54,950 --> 00:25:52,289
hope the Royal College of veterinary

506
00:25:58,190 --> 00:25:54,960
surgeons stated quote homeopathy is

507
00:26:00,560 --> 00:25:58,200
accepted by society and quote though it

508
00:26:03,950 --> 00:26:00,570
doesn't make clear what it means by this

509
00:26:06,889 --> 00:26:03,960
claim what constitutes quote social

510
00:26:09,440 --> 00:26:06,899
acceptance end quote evidently it

511
00:26:11,899 --> 00:26:09,450
ignores the fact that every credible

512
00:26:15,049 --> 00:26:11,909
expert and a large proportion of the

513
00:26:17,379 --> 00:26:15,059

public sees homeopathy has a nonsensical

514

00:26:20,330 --> 00:26:17,389

and potentially dangerous waste of time

515

00:26:22,879 --> 00:26:20,340

even if it were true that homeopathy was

516

00:26:26,690 --> 00:26:22,889

accepted by society it says nothing

517

00:26:28,609 --> 00:26:26,700

about whether the treatment works we do

518

00:26:31,940 --> 00:26:28,619

not make health interventions on the

519

00:26:34,639 --> 00:26:31,950

beliefs of a small but vocal fringe

520

00:26:37,180 --> 00:26:34,649

group in society we must follow the

521

00:26:40,580 --> 00:26:37,190

evidence many beliefs in society are

522

00:26:44,349 --> 00:26:40,590

incorrect but it is the purpose of

523

00:26:47,419 --> 00:26:44,359

research and expertise to help educate

524

00:26:49,549 --> 00:26:47,429

condoning and pandering to mistaken

525

00:26:51,349 --> 00:26:49,559

fringe beliefs there's nothing to

526

00:26:55,460 --> 00:26:51,359

improve society's understanding of

527

00:26:58,159 --> 00:26:55,470

science and medicine changing beliefs I

528

00:27:00,489 --> 00:26:58,169

want to make it clear I have no

529

00:27:03,739 --> 00:27:00,499

particular ax to grind with homeopathy

530

00:27:05,899 --> 00:27:03,749

specifically other than it runs so

531

00:27:08,960 --> 00:27:05,909

clearly counter to evidence-based

532

00:27:11,299 --> 00:27:08,970

medicine unlike homeopaths if clinical

533

00:27:14,060 --> 00:27:11,309

trials showed a particular drug or

534

00:27:17,989 --> 00:27:14,070

surgical technique I had been using for

535

00:27:20,180 --> 00:27:17,999

years was useless did more harm or had

536

00:27:23,359 --> 00:27:20,190

simply been superseded by something

537

00:27:26,659 --> 00:27:23,369

superior I would be eager to change my

538

00:27:29,210 --> 00:27:26,669

position I actively want to know when

539

00:27:31,460 --> 00:27:29,220

and if i can improve my clinical

540

00:27:34,340 --> 00:27:31,470

practice whether that means to stop

541

00:27:37,789 --> 00:27:34,350

using a product or switching to

542

00:27:40,279 --> 00:27:37,799

something better indeed it would be

543

00:27:41,030 --> 00:27:40,289

intellectually bankrupt of me too

544

00:27:43,070 --> 00:27:41,040

desperate

545

00:27:45,440 --> 00:27:43,080

seek out every piece of anecdotal

546

00:27:47,690 --> 00:27:45,450

evidence I could find to support my

547

00:27:50,240 --> 00:27:47,700

existing position or to cherry pick

548

00:27:52,010 --> 00:27:50,250

whatever study justifies continuing

549

00:27:54,580 --> 00:27:52,020

along my path in the face of

550

00:27:57,470 --> 00:27:54,590

overwhelming evidence to the contrary

551
00:28:00,410 --> 00:27:57,480
when discussing a faith-based belief

552
00:28:03,320 --> 00:28:00,420
system such as homeopathy emotions

553
00:28:06,230 --> 00:28:03,330
inevitably run high which is perhaps why

554
00:28:09,350 --> 00:28:06,240
this debate remains so persistent

555
00:28:12,560 --> 00:28:09,360
despite it being fewer than 1% of vets

556
00:28:14,420 --> 00:28:12,570
who put their belief in homeopathy I am

557
00:28:17,360 --> 00:28:14,430
aware of no amount of scientific

558
00:28:20,060 --> 00:28:17,370
evidence will change the opinions of the

559
00:28:23,510 --> 00:28:20,070
hardcore believers that is the very

560
00:28:25,910 --> 00:28:23,520
nature of such a belief system if you

561
00:28:28,390 --> 00:28:25,920
are a believer in homeopathy I fully

562
00:28:33,080 --> 00:28:28,400
understand you may be feeling persecuted

563
00:28:35,690 --> 00:28:33,090

by my petition and my calls to prevent

564

00:28:38,240 --> 00:28:35,700

homeopathic treatments I know a belief

565

00:28:40,580 --> 00:28:38,250

in homeopathy some will have held for

566

00:28:43,400 --> 00:28:40,590

decades will form a large part of your

567

00:28:45,560 --> 00:28:43,410

identity I can identify with your

568

00:28:48,290 --> 00:28:45,570

position I was brought up in an

569

00:28:51,500 --> 00:28:48,300

evangelical church that taught us the

570

00:28:55,520 --> 00:28:51,510

earth was created in six days exactly as

571

00:28:59,450 --> 00:28:55,530

the Bible described around 6,000 years

572

00:29:01,760 --> 00:28:59,460

ago and evolution is alive these kinds

573

00:29:03,950 --> 00:29:01,770

of beliefs shape your whole identity it

574

00:29:05,990 --> 00:29:03,960

affects how you interpret scientific

575

00:29:09,410 --> 00:29:06,000

information I have personal

576
00:29:11,720 --> 00:29:09,420
understanding of how hard it can be to

577
00:29:14,260 --> 00:29:11,730
tear yourself away from a belief that

578
00:29:17,450 --> 00:29:14,270
has influenced your thinking for years

579
00:29:19,300 --> 00:29:17,460
when I realized no big coordinated

580
00:29:22,940 --> 00:29:19,310
deception by the scientific community

581
00:29:25,840 --> 00:29:22,950
existed I began a painful process to

582
00:29:29,030 --> 00:29:25,850
accept a literal six-day creation was

583
00:29:32,000 --> 00:29:29,040
incorrect it was never my intention to

584
00:29:35,180 --> 00:29:32,010
deliberately upset anyone and I'm sorry

585
00:29:37,490 --> 00:29:35,190
for any hurt caused this is why I have

586
00:29:39,920 --> 00:29:37,500
directed this campaign towards the Royal

587
00:29:43,940 --> 00:29:39,930
College of Veterinary Surgeons to be an

588
00:29:46,820 --> 00:29:43,950

impartial third party just like the rest

589

00:29:49,430 --> 00:29:46,830

of us homeopaths want what is best for

590

00:29:52,010 --> 00:29:49,440

animals under their care and what is

591

00:29:54,130 --> 00:29:52,020

best for the profession unfortunately

592

00:29:56,800 --> 00:29:54,140

being well-intentioned

593

00:29:59,350 --> 00:29:56,810

and deluded is no substitute for being

594

00:30:01,840 --> 00:29:59,360

right especially when the cost of being

595

00:30:06,180 --> 00:30:01,850

wrong causes animals to suffer and

596

00:30:08,530 --> 00:30:06,190

brings the profession into disrepute and

597

00:30:10,690 --> 00:30:08,540

that was why the Royal College of

598

00:30:13,120 --> 00:30:10,700

veterans must prevent vets from

599

00:30:14,650 --> 00:30:13,130

prescribing homeopathy written by dr.

600

00:30:33,010 --> 00:30:14,660

Danny chambers published in the

601
00:30:36,370 --> 00:30:33,020
veterinary times and now direct from the

602
00:30:43,330 --> 00:30:36,380
cafe at Australia's science channel its

603
00:30:45,610 --> 00:30:43,340
brouhaha with Casey Harrigan any time I

604
00:30:47,740 --> 00:30:45,620
see someone walking along all smugly

605
00:30:50,230 --> 00:30:47,750
holding party balloons I can't help but

606
00:30:53,590 --> 00:30:50,240
think oh we need that helium for science

607
00:30:55,330 --> 00:30:53,600
and I was right to until yesterday when

608
00:30:57,850 --> 00:30:55,340
researchers announced they discovered a

609
00:31:00,730 --> 00:30:57,860
huge helium gas field in the Rift Valley

610
00:31:03,070 --> 00:31:00,740
of Tanzania we're running out of a

611
00:31:04,690 --> 00:31:03,080
finite supply of helium because it

612
00:31:07,060 --> 00:31:04,700
literally slips through our fingers and

613
00:31:09,580 --> 00:31:07,070

shoots off through the atmosphere never

614

00:31:11,980 --> 00:31:09,590

to return this discovery gives us

615

00:31:14,710 --> 00:31:11,990

another seven years on our previous 20

616

00:31:16,960 --> 00:31:14,720

year supply buying us more time to find

617

00:31:20,200 --> 00:31:16,970

even more helium reserves and get better

618

00:31:22,750 --> 00:31:20,210

at recycling what we do have it's seven

619

00:31:24,970 --> 00:31:22,760

extra years of MRI machines weather

620

00:31:27,160 --> 00:31:24,980

balloons deep sea diving quantum

621

00:31:29,350 --> 00:31:27,170

computing Large Hadron Collider ring and

622

00:31:31,720 --> 00:31:29,360

my personal favorite rocket engine

623

00:31:34,000 --> 00:31:31,730

cleaning and yes but grudgingly I'll

624

00:31:36,490 --> 00:31:34,010

admit it seven extra is a party balloons

625

00:31:38,050 --> 00:31:36,500

but seriously what would you rather a

626
00:31:40,420 --> 00:31:38,060
balloon that makes you crane your neck

627
00:31:43,270 --> 00:31:40,430
to look at it or a fully functioning

628
00:31:46,440 --> 00:31:43,280
rocket we need that helium for science

629
00:31:50,810 --> 00:31:46,450
guys science

630
00:31:53,460 --> 00:31:50,820
ah summer in the southern hemisphere

631
00:31:56,130 --> 00:31:53,470
cranking some tunes gazing out over the

632
00:31:59,040 --> 00:31:56,140
ocean and plowing through six meter deep

633
00:32:01,620 --> 00:31:59,050
snow to expose the road underneath yup

634
00:32:04,620 --> 00:32:01,630
summer is well and truly underway for

635
00:32:06,780 --> 00:32:04,630
the Ozzy's in Antarctica so while I'm

636
00:32:08,100 --> 00:32:06,790
drinking mojitos and splashing around at

637
00:32:09,900 --> 00:32:08,110
the beach what will the summer

638
00:32:12,990 --> 00:32:09,910

highlights be for the intrepid folk

639

00:32:15,540 --> 00:32:13,000

calling Antarctica home first up the

640

00:32:17,820 --> 00:32:15,550

million-year ice core otherwise known as

641

00:32:19,800 --> 00:32:17,830

the holy grail of climate science

642

00:32:21,630 --> 00:32:19,810

basically somewhere underneath

643

00:32:24,180 --> 00:32:21,640

Antarctica there's some ice that's a

644

00:32:26,790 --> 00:32:24,190

million years old and Australia is part

645

00:32:28,740 --> 00:32:26,800

of an international race to find it when

646

00:32:31,110 --> 00:32:28,750

we do it'll tell us all sorts of things

647

00:32:32,910 --> 00:32:31,120

about the history of our climate this

648

00:32:35,340 --> 00:32:32,920

summer will involve some preliminary

649

00:32:38,250 --> 00:32:35,350

drilling so that by 2020 we can track

650

00:32:41,070 --> 00:32:38,260

down the real thing meanwhile the

651
00:32:44,730 --> 00:32:41,080
largest ever all-female expedition to

652
00:32:46,580 --> 00:32:44,740
Antarctica is underway 76 women from all

653
00:32:49,920 --> 00:32:46,590
sorts of scientific disciplines like

654
00:32:51,870 --> 00:32:49,930
astronomers engineers physicists doctors

655
00:32:53,700 --> 00:32:51,880
social scientists and teachers are

656
00:32:55,650 --> 00:32:53,710
chilling out together on the voyage as

657
00:32:58,050 --> 00:32:55,660
part of a larger project to develop

658
00:32:59,730 --> 00:32:58,060
women's leadership in science also

659
00:33:01,200 --> 00:32:59,740
because women should have just as many

660
00:33:04,320 --> 00:33:01,210
opportunities to see penguins in the

661
00:33:07,810 --> 00:33:04,330
wild as men so no matter who you are or

662
00:33:11,170 --> 00:33:07,820
where you are have a great summer

663
00:33:16,120 --> 00:33:11,180

for more brouhaha and Australian science

664

00:33:27,049 --> 00:33:16,130

head for ww Australia science TV

665

00:33:29,730 --> 00:33:27,059

[Music]

666

00:33:32,370 --> 00:33:29,740

see a stock simply idiot hey Sal who

667

00:33:34,590 --> 00:33:32,380

guys guys I just had the most amazing

668

00:33:36,450 --> 00:33:34,600

experience what experience unders unders

669

00:33:38,250 --> 00:33:36,460

have you been to the pub children not

670

00:33:40,740 --> 00:33:38,260

hang out with mash you know he was

671

00:33:43,230 --> 00:33:40,750

blessed by peter Popoff no yellow no i'm

672

00:33:45,630 --> 00:33:43,240

not talking about psychics it was a

673

00:33:47,250 --> 00:33:45,640

really SP experience now you have been

674

00:33:50,159 --> 00:33:47,260

to the pub either that or you've been

675

00:33:52,590 --> 00:33:50,169

smoking something no punches the ESP is

676

00:33:54,690 --> 00:33:52,600

the European skeptics podcast it's the

677

00:33:56,820 --> 00:33:54,700

most amazing thing you get to know so

678

00:33:59,669 --> 00:33:56,830

much about skeptics and their activities

679

00:34:01,770 --> 00:33:59,679

across Europe you know events hot topics

680

00:34:03,990 --> 00:34:01,780

and interviews with lots of interesting

681

00:34:05,730 --> 00:34:04,000

people oh wow cool by the way pointers

682

00:34:08,159 --> 00:34:05,740

you just come into the false dichotomy

683

00:34:11,010 --> 00:34:08,169

fallacy I guess that means I'm really

684

00:34:13,020 --> 00:34:11,020

wrong yep and you can even learn about

685

00:34:15,510 --> 00:34:13,030

those fallacies in the show and hear

686

00:34:17,790 --> 00:34:15,520

about people spreading silly ideas you

687

00:34:20,760 --> 00:34:17,800

should really check it out it's the ESP

688

00:34:23,460 --> 00:34:20,770

the European skeptics podcast it's on

689

00:34:25,800 --> 00:34:23,470

never weak alright so where can I get

690

00:34:28,440 --> 00:34:25,810

this is the experience it sounds good

691

00:34:31,530 --> 00:34:28,450

you can go online at the ESP do to you

692

00:34:34,560 --> 00:34:31,540

follow it on twitter at es podcast

693

00:34:36,690 --> 00:34:34,570

underscore EU or like the podcast on

694

00:34:39,750 --> 00:34:36,700

facebook oh and you can also contact the

695

00:34:43,590 --> 00:34:39,760

show by sending them an email to info at

696

00:34:45,629 --> 00:34:43,600

the ESPE you and if you want to

697

00:34:48,379 --> 00:34:45,639

subscribe do a quick search for the

698

00:34:51,760 --> 00:34:48,389

european skeptic podcast on soundcloud

699

00:34:56,860 --> 00:34:51,770

itunes or stitcher

700

00:35:12,640 --> 00:34:56,870

I don't know I you can't believe

701

00:35:15,830 --> 00:35:12,650

[Music]

702

00:35:19,210 --> 00:35:15,840

well here we are the La Brea Tar Pits in

703

00:35:24,010 --> 00:35:19,220

beautiful Los Angeles on a cloudy day

704

00:35:28,520 --> 00:35:24,020

and we're looking over a vast swamp of

705

00:35:30,650 --> 00:35:28,530

oily goo and there's a model over there

706

00:35:33,040 --> 00:35:30,660

of a master none I guess it is now I'm

707

00:35:35,030 --> 00:35:33,050

standing next to up-and-coming geologist

708

00:35:37,880 --> 00:35:35,040

Andrew Dunning Andrew what are we

709

00:35:40,730 --> 00:35:37,890

looking at and what are those bubbles so

710

00:35:42,230 --> 00:35:40,740

this big lake here the most famous pit

711

00:35:43,970 --> 00:35:42,240

at the La Brea Tar Pits was an old

712

00:35:46,880 --> 00:35:43,980

asphalt mine that operated in the early

713

00:35:48,760 --> 00:35:46,890

20th century and now that we've had a

714

00:35:50,960 --> 00:35:48,770

lot of rain recently there's a

715

00:35:53,690 --> 00:35:50,970

significant amount of water on top of it

716

00:35:55,550 --> 00:35:53,700

and you can see oil slicks and tar

717

00:35:57,680 --> 00:35:55,560

puddles on top of the water because as

718

00:35:59,840 --> 00:35:57,690

we know oil is less dense than water and

719

00:36:01,580 --> 00:35:59,850

there's lots of bubbles bubbling up

720

00:36:05,300 --> 00:36:01,590

through it smells quite strongly of

721

00:36:07,580 --> 00:36:05,310

methane and oil yep and these bubbles

722

00:36:09,620 --> 00:36:07,590

are produced by a unique several species

723

00:36:11,540 --> 00:36:09,630

of bacteria that are found probably

724

00:36:13,040 --> 00:36:11,550

nowhere else in the world it's it so

725

00:36:14,480 --> 00:36:13,050

it's an interesting view because what

726

00:36:16,820 --> 00:36:14,490

they've done is they've put that model

727

00:36:18,770 --> 00:36:16,830

of the mastodon over there as it's just

728

00:36:20,900 --> 00:36:18,780

about the staggering and we get caught

729

00:36:23,390 --> 00:36:20,910

in the Tar Pits which is exactly what

730

00:36:25,070 --> 00:36:23,400

this whole area is about which covers

731

00:36:27,170 --> 00:36:25,080

thousands upon thousands of years of

732

00:36:29,030 --> 00:36:27,180

history of this exact spot with animals

733

00:36:31,700 --> 00:36:29,040

wandering into the tar in getting stuck

734

00:36:33,770 --> 00:36:31,710

yeah that's exactly right there's a the

735

00:36:36,110 --> 00:36:33,780

museum here the page Museum at the La

736

00:36:37,610 --> 00:36:36,120

Brea Tar Pits has thousands upon

737

00:36:40,430 --> 00:36:37,620

thousands of fossils that have been

738

00:36:44,390 --> 00:36:40,440

excavated since the late 19th century

739

00:36:46,970 --> 00:36:44,400

here of various predators and animals

740

00:36:48,560 --> 00:36:46,980

and insects pollen all sorts of things

741

00:36:51,560 --> 00:36:48,570

that have been trapped in the sticky tar

742

00:36:52,910 --> 00:36:51,570

for thousands of years and what and will

743

00:36:55,190 --> 00:36:52,920

go in would you still outside the

744

00:36:57,230 --> 00:36:55,200

gardens will go in soon and I was here

745

00:36:59,870 --> 00:36:57,240

many years ago with Brian Dunning from

746

00:37:01,880 --> 00:36:59,880

skip toy calm oddly enough and one of

747

00:37:05,180 --> 00:37:01,890

the things that I remember strongly all

748

00:37:06,860 --> 00:37:05,190

the direwolves my goodness me over

749

00:37:08,480 --> 00:37:06,870

hundreds and thousands of years all the

750

00:37:10,430 --> 00:37:08,490

direwolves that ended their lives right

751
00:37:13,310 --> 00:37:10,440
here being stuck in the in the Tar Pits

752
00:37:15,530 --> 00:37:13,320
it's quite incredible now speaking of

753
00:37:19,180 --> 00:37:15,540
internet type things I noticed that you

754
00:37:21,200 --> 00:37:19,190
have a interesting series about geology

755
00:37:23,360 --> 00:37:21,210
you're filming at the moment what can

756
00:37:24,680 --> 00:37:23,370
you tell us about that a few months ago

757
00:37:27,050 --> 00:37:24,690
i started a

758
00:37:30,890 --> 00:37:27,060
youtube series called better geology all

759
00:37:33,680 --> 00:37:30,900
one word that is all about geology in

760
00:37:36,440 --> 00:37:33,690
places I go Death Valley the Cascade

761
00:37:37,940 --> 00:37:36,450
Mountains in the northwest a lot of the

762
00:37:42,589 --> 00:37:37,950
videos I've been working on have been

763
00:37:45,410 --> 00:37:42,599

following the standard university level

764

00:37:47,390 --> 00:37:45,420

of geology curriculum that I've been

765

00:37:49,640 --> 00:37:47,400

going through and going through and

766

00:37:51,380 --> 00:37:49,650

elaborating on those topics one at a

767

00:37:54,559 --> 00:37:51,390

time they're short videos one to two

768

00:37:58,250 --> 00:37:54,569

minutes on average and I'm doing my best

769

00:37:59,930 --> 00:37:58,260

to explain basic principles of geology I

770

00:38:01,640 --> 00:37:59,940

think it's wonderful and how can people

771

00:38:03,530 --> 00:38:01,650

view those videos well they're on

772

00:38:06,470 --> 00:38:03,540

YouTube better geology is the channel

773

00:38:07,940 --> 00:38:06,480

name there's seven videos I think right

774

00:38:09,349 --> 00:38:07,950

now and I'm working on a whole bunch of

775

00:38:13,400 --> 00:38:09,359

them that I filmed from my most recent

776

00:38:15,620 --> 00:38:13,410

trip in Death Valley and they should be

777

00:38:17,480 --> 00:38:15,630

coming up in the coming weeks excellent

778

00:38:19,520 --> 00:38:17,490

well folks look I'll definitely linked

779

00:38:22,730 --> 00:38:19,530

to better geology on the show notes so

780

00:38:24,770 --> 00:38:22,740

we better wander around now around pass

781

00:38:26,660 --> 00:38:24,780

this tree this is all fenced off of

782

00:38:28,849 --> 00:38:26,670

course but it's a giant black pool folks

783

00:38:32,300 --> 00:38:28,859

if you can imagine that with various

784

00:38:33,950 --> 00:38:32,310

models of animals about to go into the

785

00:38:36,680 --> 00:38:33,960

tar in fact there's a poor master on

786

00:38:39,890 --> 00:38:36,690

over there and its death flows it seems

787

00:38:41,809 --> 00:38:39,900

to me and lots of bubbling bubbling

788

00:38:45,050 --> 00:38:41,819

methane and all sorts of things bubbling

789

00:38:46,520 --> 00:38:45,060

up now if you come to Los Angeles and

790

00:38:48,380 --> 00:38:46,530

you do the Hollywood to as well that's

791

00:38:51,260 --> 00:38:48,390

very great but don't miss the La Brea

792

00:38:53,059 --> 00:38:51,270

Tar Pits as my second time here and I

793

00:38:59,510 --> 00:38:53,069

can't wait to go back inside and look at

794

00:39:03,770 --> 00:38:59,520

all the the history and the science so

795

00:39:07,930 --> 00:39:03,780

we've now in the main exhibit area of

796

00:39:12,079 --> 00:39:07,940

the Tar Pits here what do we have here a

797

00:39:14,990 --> 00:39:12,089

ground sloth which is about two meters

798

00:39:16,760 --> 00:39:15,000

tall it's bigger than a grizzly bear

799

00:39:18,380 --> 00:39:16,770

much bigger than a grizzly bear and the

800

00:39:21,530 --> 00:39:18,390

rib cage is tremendous this is one of

801
00:39:25,040 --> 00:39:21,540
the creatures that was a dragged out of

802
00:39:27,640 --> 00:39:25,050
the Tar Pits and stood over six feet

803
00:39:31,630 --> 00:39:27,650
tall well absolutely probably more

804
00:39:34,750 --> 00:39:31,640
and since he weighed 1500 pounds which I

805
00:39:37,140 --> 00:39:34,760
can believe it's nice to see so many

806
00:39:40,020 --> 00:39:37,150
people here lots of kids milling around

807
00:39:43,420 --> 00:39:40,030
and there are guides talking about the

808
00:39:44,830 --> 00:39:43,430
the California Sabretooth and if we look

809
00:39:48,640 --> 00:39:44,840
in this little display there's one

810
00:39:50,770 --> 00:39:48,650
looking back at us and oh hello we're

811
00:39:52,450 --> 00:39:50,780
doing a podcast from Sydney Australia at

812
00:39:54,250 --> 00:39:52,460
the moment welcome welcome to Los

813
00:39:56,380 --> 00:39:54,260

Angeles thank you and your name is it's

814

00:39:58,120 --> 00:39:56,390

tricia chasm and you're one of the

815

00:40:01,000 --> 00:39:58,130

guides yeah I'm one of the volunteers

816

00:40:02,830 --> 00:40:01,010

here I used to come here as a child 30

817

00:40:04,480 --> 00:40:02,840

years ago so now I work here with the

818

00:40:07,090 --> 00:40:04,490

children in a program and this is a

819

00:40:09,100 --> 00:40:07,100

saber-toothed cat well and she's holding

820

00:40:11,740 --> 00:40:09,110

this remarkable scholar Zetas is that a

821

00:40:13,750 --> 00:40:11,750

real scholar or a cost is actually a

822

00:40:15,580 --> 00:40:13,760

cast because I'm very clumsy and I break

823

00:40:17,440 --> 00:40:15,590

everything so they didn't trust me but

824

00:40:19,750 --> 00:40:17,450

yes everything else you see here was

825

00:40:21,460 --> 00:40:19,760

down in this area but it's tremendous I

826

00:40:25,090 --> 00:40:21,470

mean look at those saber teeth that

827

00:40:27,340 --> 00:40:25,100

amazingly amazing California is really a

828

00:40:29,490 --> 00:40:27,350

pot of gold there are so many amazing

829

00:40:32,830 --> 00:40:29,500

treasures that you can be found in

830

00:40:34,390 --> 00:40:32,840

California so I advise everyone instead

831

00:40:36,610 --> 00:40:34,400

of going there's a million places you

832

00:40:38,200 --> 00:40:36,620

can see a beautiful oceans and beautiful

833

00:40:41,950 --> 00:40:38,210

mountains but where can you actually

834

00:40:44,980 --> 00:40:41,960

come and find things like this and touch

835

00:40:47,560 --> 00:40:44,990

them and the kids can play and it's an

836

00:40:49,780 --> 00:40:47,570

amazing time to come and especially in

837

00:40:51,190 --> 00:40:49,790

the middle of a city it is and I'm

838

00:40:53,290 --> 00:40:51,200

pleased to see so many people here

839

00:40:56,260 --> 00:40:53,300

milling around lots of children and when

840

00:41:00,130 --> 00:40:56,270

about when these poor creatures the

841

00:41:02,440 --> 00:41:00,140

saber-toothed cats is a saber-toothed

842

00:41:04,600 --> 00:41:02,450

cats is a saber-toothed cat yes most

843

00:41:08,080 --> 00:41:04,610

people think it's a tiger but it's not

844

00:41:10,290 --> 00:41:08,090

it's a cat yes but they've been around

845

00:41:12,430 --> 00:41:10,300

quite a long time and we have found

846

00:41:15,490 --> 00:41:12,440

hundreds of these so this was a very

847

00:41:18,880 --> 00:41:15,500

prime area there was a lot of marshes a

848

00:41:20,920 --> 00:41:18,890

lot of hunting a lot of plans there it

849

00:41:23,350 --> 00:41:20,930

was just such a great breeding area

850

00:41:25,600 --> 00:41:23,360

that's why we found so many dot like the

851
00:41:28,480 --> 00:41:25,610
direwolf yeah if you've seen how many

852
00:41:31,450 --> 00:41:28,490
we've found a mini what we're finding

853
00:41:33,490 --> 00:41:31,460
today we have people excavators outside

854
00:41:34,050 --> 00:41:33,500
so just today every day we're finding

855
00:41:38,160 --> 00:41:34,060
new things

856
00:41:39,600 --> 00:41:38,170
that's incredible job security well

857
00:41:41,190 --> 00:41:39,610
thank you for showing me that it's hard

858
00:41:42,960 --> 00:41:41,200
to describe to the listen is exactly

859
00:41:44,760 --> 00:41:42,970
what we're looking at but it's a

860
00:41:47,190 --> 00:41:44,770
tremendous it's a really impressive

861
00:41:49,950 --> 00:41:47,200
skull and i'm sure those teeth could

862
00:41:52,050 --> 00:41:49,960
have done some oh yeah Oh much much

863
00:41:53,730 --> 00:41:52,060

damage but welcome to Los Angeles and

864

00:41:55,740 --> 00:41:53,740

everyone is welcome please come and

865

00:41:57,540 --> 00:41:55,750

enjoy the Tar Pits and the Natural

866

00:42:01,400 --> 00:41:57,550

History Museum anytime we are always

867

00:42:07,020 --> 00:42:01,410

welcome thank you it's a woolly mammoth

868

00:42:11,220 --> 00:42:07,030

the great curved tusks so my god a model

869

00:42:18,720 --> 00:42:11,230

it's swaying if I walk just behind it

870

00:42:22,200 --> 00:42:18,730

this a skeleton hear of a mammoth which

871

00:42:26,460 --> 00:42:22,210

is I couldn't have said it better myself

872

00:42:29,430 --> 00:42:26,470

it's huge Andrew Dunning this is a huge

873

00:42:33,450 --> 00:42:29,440

animal yes it is it's all you have to

874

00:42:36,450 --> 00:42:33,460

say about food I'd say the leg bones and

875

00:42:39,840 --> 00:42:36,460

the shoulder blades are their enormous

876

00:42:41,880 --> 00:42:39,850

far bigger than probably most modern

877

00:42:45,540 --> 00:42:41,890

elephants except for the largest African

878

00:42:48,030 --> 00:42:45,550

Bulls the the for the forearms and the

879

00:42:50,310 --> 00:42:48,040

four legs are at the widest probably

880

00:42:53,340 --> 00:42:50,320

between six and eight inches wide their

881

00:42:55,560 --> 00:42:53,350

narrowest there they're just massive

882

00:42:57,450 --> 00:42:55,570

yeah it's hard to describe the scale if

883

00:43:00,230 --> 00:42:57,460

we walk around here we can actually

884

00:43:03,870 --> 00:43:00,240

stand under the tusks which are

885

00:43:06,780 --> 00:43:03,880

tremendously long and curved right

886

00:43:09,600 --> 00:43:06,790

around again it's hard to describe the

887

00:43:13,560 --> 00:43:09,610

scale of this this animal it's almost

888

00:43:15,810 --> 00:43:13,570

like looking in a dinosaur museum and

889

00:43:19,590 --> 00:43:15,820

seeing a reasonably large dinosaur but

890

00:43:22,670 --> 00:43:19,600

this is a mammal now this is a working

891

00:43:25,800 --> 00:43:22,680

scientific institution and where it do

892

00:43:29,790 --> 00:43:25,810

the big glass case here with the

893

00:43:33,590 --> 00:43:29,800

paleontology laboratory and through the

894

00:43:36,390 --> 00:43:33,600

glass here we can see one two three

895

00:43:38,400 --> 00:43:36,400

scientists hard at work sorting out

896

00:43:40,890 --> 00:43:38,410

miniature fossils and they are looking

897

00:43:42,990 --> 00:43:40,900

for tiny little bits of bone fragment

898

00:43:45,170 --> 00:43:43,000

right in front of us and what they're

899

00:43:47,850 --> 00:43:45,180

looking at through the microscope is

900

00:43:50,250 --> 00:43:47,860

also projected on a large screen so we

901
00:43:53,160 --> 00:43:50,260
can easily find exactly the tiny fragments

902
00:43:54,800 --> 00:43:53,170
these scientists are trying to discover

903
00:43:57,960 --> 00:43:54,810
and there's a row of magma of

904
00:44:01,200 --> 00:43:57,970
microscopes along here with various

905
00:44:04,920 --> 00:44:01,210
displays and animals so it's a it's a

906
00:44:07,260 --> 00:44:04,930
fascinating place it really is an

907
00:44:10,410 --> 00:44:07,270
interesting worthwhile place to come to

908
00:44:14,010 --> 00:44:10,420
as I walk around lots of displays and

909
00:44:16,310 --> 00:44:14,020
skulls and skeletons and we could see

910
00:44:18,420 --> 00:44:16,320
here some of the history of the Tar Pits

911
00:44:21,120 --> 00:44:18,430
dating back to the early part of last

912
00:44:26,100 --> 00:44:21,130
century with photographs of excavations

913
00:44:27,780 --> 00:44:26,110

and lots of bones in another window here

914

00:44:31,950 --> 00:44:27,790

we can look right into a scientist hard

915

00:44:36,570 --> 00:44:31,960

at work cataloguing and she's got camel

916

00:44:39,240 --> 00:44:36,580

bones camels camels yeah they're

917

00:44:41,220 --> 00:44:39,250

cataloguing camels and there's all these

918

00:44:42,870 --> 00:44:41,230

bones laid out in front of us and the

919

00:44:45,260 --> 00:44:42,880

scientists behind the glass panel

920

00:44:47,339 --> 00:44:45,270

there's it's got a little

921

00:44:50,099 --> 00:44:47,349

photographic what does the knife no

922

00:44:52,349 --> 00:44:50,109

sudden i phone a savvy do camera sort of

923

00:44:57,510 --> 00:44:52,359

device anyway and she's busily

924

00:44:59,400 --> 00:44:57,520

photographing endless camel bones well

925

00:45:01,109 --> 00:44:59,410

camels used to be quite common in this

926

00:45:04,589 --> 00:45:01,119

part of California until the end of the

927

00:45:06,390 --> 00:45:04,599

last ice age when the climate changed

928

00:45:10,950 --> 00:45:06,400

and eventually it became inhabitable for

929

00:45:14,010 --> 00:45:10,960

them so they died what a pity that's

930

00:45:16,020 --> 00:45:14,020

just too bad I'm sorry to hear that but

931

00:45:27,930 --> 00:45:16,030

I didn't I didn't remember that that the

932

00:45:31,260 --> 00:45:27,940

Campbells used to be here well now the

933

00:45:33,870 --> 00:45:31,270

display here with just the one bone from

934

00:45:37,230 --> 00:45:33,880

a condor but there are hundreds and

935

00:45:39,599 --> 00:45:37,240

hundreds on display almost all identical

936

00:45:42,960 --> 00:45:39,609

they vary in length only a couple of

937

00:45:44,820 --> 00:45:42,970

millimeters really and then Andrew

938

00:45:49,560 --> 00:45:44,830

Dunning from better geology is counting

939

00:45:52,230 --> 00:45:49,570

them all so it's 7 by 75 which is when

940

00:45:55,250 --> 00:45:52,240

he gets out his calculator because I

941

00:46:00,060 --> 00:45:55,260

can't do these quick mathematics 525

942

00:46:02,279 --> 00:46:00,070

lower right leg bones from condors it's

943

00:46:05,459 --> 00:46:02,289

a Lubbock indoors it's a lot of condos

944

00:46:07,949 --> 00:46:05,469

well now here's a skeleton of a coyote

945

00:46:11,429 --> 00:46:07,959

looking up to a tree with a skeleton of

946

00:46:13,859 --> 00:46:11,439

a condor or two and there's a point here

947

00:46:16,969 --> 00:46:13,869

to be made about evolution I think yeah

948

00:46:20,759 --> 00:46:16,979

so the coyote skeleton here is probably

949

00:46:23,069 --> 00:46:20,769

about about a meter tall I'd say by

950

00:46:24,900 --> 00:46:23,079

about a meter long minus the tail and

951
00:46:27,900 --> 00:46:24,910
they're much bigger than that in this

952
00:46:31,199 --> 00:46:27,910
part of the country today back when

953
00:46:32,669 --> 00:46:31,209
these were deposited as fossils and they

954
00:46:34,439 --> 00:46:32,679
got stuck in the tar and died they were

955
00:46:36,900 --> 00:46:34,449
a lot smaller because there was much

956
00:46:39,359 --> 00:46:36,910
more competition from the wolves and the

957
00:46:41,339 --> 00:46:39,369
American lions and mountain lions and

958
00:46:43,529 --> 00:46:41,349
saber-toothed cats and a whole wealth of

959
00:46:45,299 --> 00:46:43,539
other predators and as those other

960
00:46:47,489 --> 00:46:45,309
predators slowly went extinct over

961
00:46:48,929 --> 00:46:47,499
thousands of years the coyotes were able

962
00:46:51,299 --> 00:46:48,939
to get bigger and now as we see them

963
00:46:54,749 --> 00:46:51,309

today they're three and a half to four

964

00:46:56,579 --> 00:46:54,759

feet tall now at the head maybe by about

965

00:46:58,049 --> 00:46:56,589

as long they're much bigger creatures

966

00:46:59,880 --> 00:46:58,059

today than they were though they're like

967

00:47:02,519 --> 00:46:59,890

the ones we see on the TV in the movies

968

00:47:05,309 --> 00:47:02,529

yeah a familiar yeah so we've come to

969

00:47:08,159 --> 00:47:05,319

another section I just around the corner

970

00:47:11,159 --> 00:47:08,169

here where it's a long wall of pictures

971

00:47:13,259 --> 00:47:11,169

and each panel represents 2,000 years of

972

00:47:15,179 --> 00:47:13,269

history and starting back thirty eight

973

00:47:17,549 --> 00:47:15,189

thousand years ago and it progresses and

974

00:47:22,019 --> 00:47:17,559

we can see the animals that came and

975

00:47:24,449 --> 00:47:22,029

went and when we reach the 22,000 year

976

00:47:27,179 --> 00:47:24,459

mark twenty two thousand years ago there

977

00:47:30,089 --> 00:47:27,189

are the camels the camels that they used

978

00:47:33,839 --> 00:47:30,099

to roam this part of North America and

979

00:47:35,969 --> 00:47:33,849

we come along to the panel that says ten

980

00:47:39,950 --> 00:47:35,979

thousand years ago and there's a picture

981

00:47:47,010 --> 00:47:43,650

in situations and the panel says the

982

00:47:50,220 --> 00:47:47,020

remains of only one human 25 to 30 years

983

00:47:52,050 --> 00:47:50,230

of age have been found in the pits the

984

00:47:54,180 --> 00:47:52,060

structure of her skull indicates that

985

00:47:57,840 --> 00:47:54,190

she was related to the channel island

986

00:47:59,790 --> 00:47:57,850

Indians this is the way labrea woman may

987

00:48:01,590 --> 00:47:59,800

have a beard with the picture so

988

00:48:03,660 --> 00:48:01,600

described so that's interesting the

989

00:48:05,280 --> 00:48:03,670

whole history of this area and all the

990

00:48:08,430 --> 00:48:05,290

thousands upon thousands of bones are

991

00:48:10,410 --> 00:48:08,440

getting out only one human has been

992

00:48:12,510 --> 00:48:10,420

discovered it's pretty amazing uh they

993

00:48:15,090 --> 00:48:12,520

may have known that the Tar Pits were

994

00:48:17,310 --> 00:48:15,100

not a not a good place to go that you

995

00:48:19,110 --> 00:48:17,320

could get stuck in and it from my

996

00:48:21,090 --> 00:48:19,120

further reading it is determined that

997

00:48:22,770 --> 00:48:21,100

she may have been interred in the Tar

998

00:48:24,810 --> 00:48:22,780

Pits ceremonially I was thinking that

999

00:48:27,270 --> 00:48:24,820

could have been the case that instead of

1000

00:48:28,950 --> 00:48:27,280

her wandering in and getting stuck that

1001
00:48:32,540 --> 00:48:28,960
humans might have been a bit too clever

1002
00:48:35,340 --> 00:48:32,550
for that that they could have done that

1003
00:48:37,020 --> 00:48:35,350
there's a very good record of ceremonial

1004
00:48:39,780 --> 00:48:37,030
burials all over the American Southwest

1005
00:48:44,370 --> 00:48:39,790
dating back tens of thousands of years

1006
00:48:47,310 --> 00:48:44,380
the earliest that's one of them now I

1007
00:48:49,650 --> 00:48:47,320
think they've come back to life but the

1008
00:48:51,780 --> 00:48:49,660
the oldest human burial sites that i

1009
00:48:57,180 --> 00:48:51,790
know of date back about 8,000 years in

1010
00:48:58,590 --> 00:48:57,190
the death valley area there's so much

1011
00:49:00,660 --> 00:48:58,600
tar in this one is because that's where

1012
00:49:04,200 --> 00:49:00,670
they bubble and that's where they put

1013
00:49:06,180 --> 00:49:04,210

all of the stuff that they dig out we're

1014

00:49:07,680 --> 00:49:06,190

back out in the garden the grounds i

1015

00:49:10,170 --> 00:49:07,690

should say again we're walking around to

1016

00:49:12,780 --> 00:49:10,180

an active excavation and we're walking

1017

00:49:15,860 --> 00:49:12,790

through fenced off Tar Pits and I'm

1018

00:49:19,320 --> 00:49:15,870

delighted to say when we're in there

1019

00:49:22,410 --> 00:49:19,330

there's tyronn fe we're stepping into

1020

00:49:26,730 --> 00:49:22,420

I'm not delighted to say that we

1021

00:49:29,550 --> 00:49:26,740

actually made a little better geology

1022

00:49:33,440 --> 00:49:29,560

video which andrew will no doubt be

1023

00:49:36,180 --> 00:49:33,450

editing soon so you can marvel at that

1024

00:49:38,730 --> 00:49:36,190

hopefully before long now just walk down

1025

00:49:41,340 --> 00:49:38,740

these steps lots of little buildings

1026
00:49:44,850 --> 00:49:41,350
like temporary buildings here coming up

1027
00:49:47,190 --> 00:49:44,860
to one that says pit 91 and on the

1028
00:49:49,140 --> 00:49:47,200
outside of the building that actually

1029
00:49:51,520 --> 00:49:49,150
shows you the animals they've excavated

1030
00:49:56,440 --> 00:49:51,530
from the pit and how many

1031
00:49:58,150 --> 00:49:56,450
so we'll just walk inside and it's like

1032
00:50:00,160 --> 00:49:58,160
a little viewing platform and we look

1033
00:50:03,610 --> 00:50:00,170
down through the glass into one of the

1034
00:50:07,720 --> 00:50:03,620
pits which is bubbling like crazy down

1035
00:50:09,510 --> 00:50:07,730
there it's all sort of like you see in

1036
00:50:14,170 --> 00:50:09,520
the movies they've got the grid pattern

1037
00:50:16,000 --> 00:50:14,180
but it's just a really dark pit which

1038
00:50:22,030 --> 00:50:16,010

they have to go into to retrieve the

1039

00:50:24,490 --> 00:50:22,040

bones well the day here at the La Brea

1040

00:50:28,840 --> 00:50:24,500

Tar Pits the page museum is coming to an

1041

00:50:31,810 --> 00:50:28,850

end Andrew we were just looking at the

1042

00:50:33,880 --> 00:50:31,820

poor mamus they're stuck in the old some

1043

00:50:36,220 --> 00:50:33,890

more gas coming up this this segment

1044

00:50:38,410 --> 00:50:36,230

it's today it's like how much thought

1045

00:50:40,510 --> 00:50:38,420

there's someone underneath for the straw

1046

00:50:41,740 --> 00:50:40,520

going and every now and then they have

1047

00:50:44,020 --> 00:50:41,750

to come up for air but there's lots of

1048

00:50:46,330 --> 00:50:44,030

natural gas coming up yeah the bubbles

1049

00:50:48,880 --> 00:50:46,340

are coming up all the time 24 hours a

1050

00:50:50,290 --> 00:50:48,890

day the thousands thousands of years as

1051
00:50:52,480 --> 00:50:50,300
long as the Tar Pits have been here they

1052
00:50:54,550 --> 00:50:52,490
will always continue to bubble up

1053
00:50:56,530 --> 00:50:54,560
methane from underground it's amazing

1054
00:50:57,940 --> 00:50:56,540
place so once again our recommendation

1055
00:50:59,890 --> 00:50:57,950
from the skeptic zone to you dear

1056
00:51:02,200 --> 00:50:59,900
listener if you're in Los Angeles make

1057
00:51:04,150 --> 00:51:02,210
sure you spare some time for the Brea

1058
00:51:06,299 --> 00:51:04,160
Tar Pits

1059
00:51:09,799 --> 00:51:06,309
[Music]

1060
00:51:13,650 --> 00:51:09,809
and now I find myself in a giant hangar

1061
00:51:17,999 --> 00:51:13,660
which displays the space shuttle

1062
00:51:23,579 --> 00:51:18,009
endeavour and it is a remarkable sight

1063
00:51:27,329 --> 00:51:23,589

its close-up it's not as clean and white

1064

00:51:30,059 --> 00:51:27,339

as you might imagine it's got obvious

1065

00:51:34,140 --> 00:51:30,069

signs of space wear and tear I guess you

1066

00:51:36,870 --> 00:51:34,150

would say but it is just magnificent to

1067

00:51:38,999 --> 00:51:36,880

be in the same building as a space

1068

00:51:41,609 --> 00:51:39,009

shuttle and I can walk right around it

1069

00:51:45,839 --> 00:51:41,619

and underneath it and look up to the

1070

00:51:48,109 --> 00:51:45,849

huge thin at the back the tail and I'm

1071

00:51:52,259 --> 00:51:48,119

approaching the front of Endeavour now

1072

00:51:55,019 --> 00:51:52,269

retro rocket ports along the back here

1073

00:51:58,099 --> 00:51:55,029

at the front to Andrew Dunning it's a

1074

00:52:00,660 --> 00:51:58,109

spectacular sight yes it is and you

1075

00:52:02,370 --> 00:52:00,670

could spend hours in here just inspect

1076
00:52:04,739 --> 00:52:02,380
and you when you get up close you can

1077
00:52:07,319 --> 00:52:04,749
actually read the individual tiles which

1078
00:52:09,539 --> 00:52:07,329
is interesting and you'll notice that

1079
00:52:11,910 --> 00:52:09,549
each individual tile has an individual

1080
00:52:14,459 --> 00:52:11,920
serial number yeah which was you need to

1081
00:52:16,979 --> 00:52:14,469
keep track of them very closely so if

1082
00:52:18,479 --> 00:52:16,989
any of them went wrong or had the

1083
00:52:21,029 --> 00:52:18,489
slightest defect they can be tracked

1084
00:52:22,949 --> 00:52:21,039
down they did ultrasonic testing of

1085
00:52:24,660 --> 00:52:22,959
every individual tile before it went up

1086
00:52:26,609 --> 00:52:24,670
to make sure they were all all in

1087
00:52:29,069 --> 00:52:26,619
working order because as we remember

1088
00:52:32,219 --> 00:52:29,079

from the Columbia one wrong tile can

1089

00:52:34,259 --> 00:52:32,229

make the whole thing so again yeah and I

1090

00:52:36,229 --> 00:52:34,269

what I find interesting is so if we walk

1091

00:52:39,719 --> 00:52:36,239

up closer to the edge here to the side

1092

00:52:43,519 --> 00:52:39,729

now we're on the the left front side of

1093

00:52:46,669 --> 00:52:43,529

the Space Shuttle under the cockpit and

1094

00:52:50,489 --> 00:52:46,679

we've got writing here for exam exhaust

1095

00:52:52,949 --> 00:52:50,499

but a purge poured over there and escape

1096

00:52:55,109 --> 00:52:52,959

instructions or big arrows to where the

1097

00:52:58,289 --> 00:52:55,119

escape is and on the other side there is

1098

00:53:00,239 --> 00:52:58,299

equal it's like on racing cars you see

1099

00:53:02,429 --> 00:53:00,249

things on the outside say battery here

1100

00:53:05,099 --> 00:53:02,439

and all this sort of thing so the same

1101
00:53:08,789 --> 00:53:05,109
was on the space shuttle now I'm walking

1102
00:53:11,290 --> 00:53:08,799
right under the very nose right of the

1103
00:53:14,010 --> 00:53:11,300
front of the space shuttle

1104
00:53:17,800 --> 00:53:14,020
where you can see the scoring and the

1105
00:53:21,070 --> 00:53:17,810
marking and again each tile is

1106
00:53:23,680 --> 00:53:21,080
individually labeled I guess I'm about

1107
00:53:26,100 --> 00:53:23,690
five feet under the the tip of the nose

1108
00:53:28,840 --> 00:53:26,110
walking around to the other side now and

1109
00:53:30,160 --> 00:53:28,850
the views are magnificent looking down

1110
00:53:35,380 --> 00:53:30,170
the side of the space shuttle to the

1111
00:53:40,630 --> 00:53:35,390
back wings or the wings now clear around

1112
00:53:43,000 --> 00:53:40,640
the other side I can look up under the

1113
00:53:49,240 --> 00:53:43,010

cockpit and cut here for emergency

1114

00:53:52,450 --> 00:53:49,250

rescue and so on and so forth and also

1115

00:53:56,290 --> 00:53:52,460

here are details of every shuttle

1116

00:53:57,910 --> 00:53:56,300

mission and other displays so another

1117

00:54:00,850 --> 00:53:57,920

wonderful thing to do if you find

1118

00:54:03,490 --> 00:54:00,860

yourself in Los Angeles it's well worth

1119

00:54:08,370 --> 00:54:03,500

your time to see this or inspiring space

1120

00:54:23,839 --> 00:54:20,949

[Music]

1121

00:54:27,889 --> 00:54:23,849

amazing news for supporters of Maynard

1122

00:54:31,149 --> 00:54:27,899

calm today you and maynards podcasts you

1123

00:54:36,889 --> 00:54:31,159

are entitled yes you you are entitled to

1124

00:54:38,929 --> 00:54:36,899

download the 2017 Maynard calendar be

1125

00:54:41,749 --> 00:54:38,939

the first person on your block and your

1126

00:54:44,630 --> 00:54:41,759

city perhaps even your country to own

1127

00:54:47,929 --> 00:54:44,640

the 2017 Maynard calendar yes spend

1128

00:54:51,319 --> 00:54:47,939

every month with me nerd for more

1129

00:54:54,019 --> 00:54:51,329

information visit [www ma not calm](http://www.ma-not-calm.com) day

1130

00:54:58,699 --> 00:54:54,029

you and send may not a message asking

1131

00:55:00,680 --> 00:54:58,709

about your 2017 Maynard downloadable

1132

00:55:16,719 --> 00:55:00,690

printable calendar

1133

00:55:21,400 --> 00:55:19,249

thank you for listening to the skeptic

1134

00:55:23,839 --> 00:55:21,410

zone and thank you to up-and-coming

1135

00:55:26,059 --> 00:55:23,849

geologist Andrew Dunning don't forget to

1136

00:55:30,170 --> 00:55:26,069

check out his YouTube videos at better

1137

00:55:34,969 --> 00:55:30,180

geology link on the show notes always

1138

00:55:37,489 --> 00:55:34,979

good to support promote encourage young

1139

00:55:40,910 --> 00:55:37,499

scientists coming up next week on the

1140

00:55:43,489 --> 00:55:40,920

show some more interviews from QED with

1141

00:55:46,249 --> 00:55:43,499

Iran sir give I thought I thought I'd

1142

00:55:48,920 --> 00:55:46,259

used them all up but when I came back to

1143

00:55:50,799 --> 00:55:48,930

Australia and I looked on my drive where

1144

00:55:53,329 --> 00:55:50,809

I keep some of the show files I

1145

00:55:55,819 --> 00:55:53,339

discovered some more interviews from QED

1146

00:55:58,099 --> 00:55:55,829

wonderful stuff again thank you to Iran

1147

00:56:00,249 --> 00:55:58,109

circuit for doing all that work over in

1148

00:56:03,890 --> 00:56:00,259

Manchester so next week some more

1149

00:56:05,719 --> 00:56:03,900

interviews from QED now before I go

1150

00:56:10,640 --> 00:56:05,729

every now and then on the skeptic zone I

1151
00:56:13,910 --> 00:56:10,650
like to give a a recommendation of this

1152
00:56:17,749 --> 00:56:13,920
that or the other and today I'd like to

1153
00:56:20,420 --> 00:56:17,759
recommend an app an app called prompt

1154
00:56:22,880 --> 00:56:20,430
smart now again there's no kick back to

1155
00:56:24,979 --> 00:56:22,890
me I get nothing out of this but I found

1156
00:56:28,160 --> 00:56:24,989
it incredibly useful and maybe you will

1157
00:56:30,890 --> 00:56:28,170
too it's a like an autocue program which

1158
00:56:34,370 --> 00:56:30,900
listens to your voice and progresses the

1159
00:56:36,829 --> 00:56:34,380
text at the speed you speak it's really

1160
00:56:38,239 --> 00:56:36,839
handy and I even used it in this week's

1161
00:56:40,519 --> 00:56:38,249
show when I was reading out that letter

1162
00:56:43,339 --> 00:56:40,529
from Danny chambers now I think it's

1163
00:56:46,489 --> 00:56:43,349

only available for iOS devices at the

1164

00:56:48,140 --> 00:56:46,499

moment but if you are a podcaster or you

1165

00:56:51,140 --> 00:56:48,150

need to read scripts or something like

1166

00:56:53,089 --> 00:56:51,150

that then yes I could recommend prompts

1167

00:56:54,769 --> 00:56:53,099

part thank you once again to those

1168

00:56:58,370 --> 00:56:54,779

people who contribute to the skeptic

1169

00:57:00,440 --> 00:56:58,380

zone and pity on or just a direct via

1170

00:57:03,890 --> 00:57:00,450

paypal you can do that at skeptic zone

1171

00:57:07,190 --> 00:57:03,900

dot TV without your support every week

1172

00:57:09,079 --> 00:57:07,200

the show simply couldn't go ahead so I

1173

00:57:10,789 --> 00:57:09,089

hope everybody enjoys the skeptic zone

1174

00:57:14,120 --> 00:57:10,799

that those people who do contribute I

1175

00:57:17,900 --> 00:57:14,130

hope you get that extra extra enjoyment

1176

00:57:19,519 --> 00:57:17,910

but i think it's now time for me to to

1177

00:57:21,950 --> 00:57:19,529

have a little rest on the couch while I

1178

00:57:23,839 --> 00:57:21,960

get over this last bit of jet lag thank

1179

00:57:25,640 --> 00:57:23,849

you once again for listening and for

1180

00:57:26,840 --> 00:57:25,650

this week this is Richard Saunders

1181

00:57:32,930 --> 00:57:26,850

signing off

1182

00:57:34,600 --> 00:57:32,940

from Sydney Australia you've been

1183

00:57:38,090 --> 00:57:34,610

listening to the skeptics own podcast

1184

00:57:41,150 --> 00:57:38,100

visit our website at wwc a petting zoo

1185

00:57:45,050 --> 00:57:41,160

TV for contacts and archive of all

1186

00:57:47,330 --> 00:57:45,060

episodes since 2008 and our online store

1187

00:57:50,050 --> 00:57:47,340

please support the skeptic zone by

1188

00:57:53,060 --> 00:57:50,060

following us on twitter at skeptic zone

1189

00:57:56,120 --> 00:57:53,070

liking us on facebook and leaving a

1190

00:57:59,000 --> 00:57:56,130

review on iTunes you can also show your

1191

00:58:02,450 --> 00:57:59,010

support by subscribing via PayPal or as

1192

00:58:04,820 --> 00:58:02,460

little as 99 cents a week the skeptic

1193

00:58:06,500 --> 00:58:04,830

zone is an independent production the

1194

00:58:08,600 --> 00:58:06,510

views and opinions expressed on the

1195

00:58:11,290 --> 00:58:08,610

skeptic zone and not necessarily those

1196

00:58:13,470 --> 00:58:11,300

of Australian skeptics or any other