

1  
00:00:01,070 --> 00:00:04,070  
you

2  
00:00:06,309 --> 00:00:14,079  
welcome to the skeptic zone the podcast

3  
00:00:09,500 --> 00:00:14,080  
from Australia for science and reason

4  
00:00:20,690 --> 00:00:27,150  
hello and welcome to the skeptic zone

5  
00:00:23,429 --> 00:00:28,980  
episode number 74 for the 19th of March

6  
00:00:27,149 --> 00:00:31,709  
Richard Saunders here with you once

7  
00:00:28,980 --> 00:00:34,549  
again on today's episode we have an

8  
00:00:31,710 --> 00:00:37,739  
interview of Stuart guff from Redeemer

9  
00:00:34,549 --> 00:00:40,469  
baptist school he's a science teacher

10  
00:00:37,738 --> 00:00:43,530  
now redeemer BAP to school based here in

11  
00:00:40,469 --> 00:00:47,820  
Sydney do very well each year in the

12  
00:00:43,530 --> 00:00:50,189  
young scientist Awards very well so we

13  
00:00:47,820 --> 00:00:53,250  
sent along our reporter Iran so give to

14  
00:00:50,189 --> 00:00:54,659  
us do it why they do so well I think

15  
00:00:53,250 --> 00:00:56,969  
you'll find this interview very

16  
00:00:54,659 --> 00:00:59,069  
interesting following that we have

17  
00:00:56,969 --> 00:01:01,799  
another blast from the past with myself

18  
00:00:59,070 --> 00:01:06,989  
and dr. Paul Willis appearing of Stefan

19  
00:01:01,799 --> 00:01:09,179  
Soyka on net FM in 2001 and Paul being a

20  
00:01:06,989 --> 00:01:13,769  
paleontologist the topic of discussion

21  
00:01:09,180 --> 00:01:16,320  
was creationism now thank you very much

22  
00:01:13,769 --> 00:01:18,659  
to all those people who wrote to me and

23  
00:01:16,319 --> 00:01:21,000  
told me what they do while they're

24  
00:01:18,659 --> 00:01:23,039  
listening to the skeptic zone last week

25  
00:01:21,000 --> 00:01:25,228  
I posed the question in the think tank I

26  
00:01:23,039 --> 00:01:27,209  
wonder what our listeners are doing now

27  
00:01:25,228 --> 00:01:29,189  
I've discovered people do the garden or

28  
00:01:27,209 --> 00:01:31,340  
they walk their dog or they take a long

29

00:01:29,189 --> 00:01:34,530  
walk to the end of the street and back

30  
00:01:31,340 --> 00:01:36,810  
some people drive some people are in the

31  
00:01:34,530 --> 00:01:39,390  
gym thank you everybody for letting you

32  
00:01:36,810 --> 00:01:43,280  
know I i really enjoy hearing about what

33  
00:01:39,390 --> 00:01:45,299  
the listeners are up to so I hope you

34  
00:01:43,280 --> 00:01:47,368  
carry on doing all those wonderful

35  
00:01:45,299 --> 00:01:50,959  
things while you listen to this episode

36  
00:01:47,368 --> 00:01:50,959  
of the skeptic sir

37  
00:02:05,939 --> 00:02:11,199  
I'm on you at redeemer baptist school in

38  
00:02:09,039 --> 00:02:14,919  
north parramatta with Garth who's the

39  
00:02:11,199 --> 00:02:17,709  
head teacher of funds no I just one of

40  
00:02:14,919 --> 00:02:19,959  
the class teachers of science okay we

41  
00:02:17,710 --> 00:02:22,030  
have is there a head teacher for time we

42  
00:02:19,960 --> 00:02:24,129  
do have a head teacher science we have

43  
00:02:22,030 --> 00:02:27,189

her number staff members who have been

44

00:02:24,129 --> 00:02:29,139

in our schools for over 20 years so the

45

00:02:27,189 --> 00:02:31,659

head teachers been here for about 28

46

00:02:29,139 --> 00:02:34,569

years I sit still started I've been here

47

00:02:31,659 --> 00:02:36,009

for there's my 25th year so I'm still

48

00:02:34,569 --> 00:02:38,889

one of the junior members of the

49

00:02:36,009 --> 00:02:40,419

scientific faculty we're walking around

50

00:02:38,889 --> 00:02:42,939

the campus here it's a beautiful campus

51

00:02:40,419 --> 00:02:47,169

very large now obviously the reason that

52

00:02:42,939 --> 00:02:49,270

we we met at the science teachers

53

00:02:47,169 --> 00:02:51,549

science teachers association with New

54

00:02:49,270 --> 00:02:54,880

South Wales event where the young

55

00:02:51,550 --> 00:02:57,250

scientist of the year awards and and the

56

00:02:54,879 --> 00:02:58,689

reason we met there was because ridhima

57

00:02:57,250 --> 00:03:02,439

baptist school traditionally does very

58  
00:02:58,689 --> 00:03:05,199  
well in those events can you tell us a

59  
00:03:02,439 --> 00:03:07,780  
little bit about that well in terms of

60  
00:03:05,199 --> 00:03:12,189  
statistics we have been entering young

61  
00:03:07,780 --> 00:03:14,289  
scientist since 1987 was our first entry

62  
00:03:12,189 --> 00:03:17,019  
that was actually called the Science

63  
00:03:14,289 --> 00:03:20,500  
Talent Search back then and we would

64  
00:03:17,019 --> 00:03:23,890  
have had a number of good results in

65  
00:03:20,500 --> 00:03:27,789  
those days mainly with video projects as

66  
00:03:23,889 --> 00:03:30,849  
a science teacher I was not happy with

67  
00:03:27,789 --> 00:03:33,579  
the amount of resources you have in

68  
00:03:30,849 --> 00:03:36,219  
terms of multimedia if you wanted to do

69  
00:03:33,580 --> 00:03:41,410  
a video you have to they didn't have VHS

70  
00:03:36,219 --> 00:03:43,239  
tapes back then easily accessible so you

71  
00:03:41,409 --> 00:03:46,870  
had to get these reels from the State

72  
00:03:43,239 --> 00:03:48,730  
Library sent by train through the school

73  
00:03:46,870 --> 00:03:51,670  
and it was and put on the big film

74  
00:03:48,729 --> 00:03:54,250  
projectors and so and at that time the

75  
00:03:51,669 --> 00:03:57,609  
video VHS was just coming in so and I

76  
00:03:54,250 --> 00:03:59,680  
had a video camera so I decided to make

77  
00:03:57,610 --> 00:04:02,049  
a lot of videos and get students to make

78  
00:03:59,680 --> 00:04:04,569  
videos which related to the content we

79  
00:04:02,049 --> 00:04:06,550  
were doing and we enter those into the

80  
00:04:04,568 --> 00:04:08,769  
original Science Talent Search we've got

81  
00:04:06,550 --> 00:04:09,370  
a first place one year a second and

82  
00:04:08,770 --> 00:04:11,620  
third the font

83  
00:04:09,370 --> 00:04:13,810  
year we then had a bit of a break

84  
00:04:11,620 --> 00:04:18,298  
because the competition started change

85  
00:04:13,810 --> 00:04:22,870  
and in 1992 is when the young scientists

86

00:04:18,298 --> 00:04:24,519  
the sensitives Association the molded

87  
00:04:22,870 --> 00:04:28,509  
competition called it the young

88  
00:04:24,519 --> 00:04:31,299  
scientist awards and since that time we

89  
00:04:28,509 --> 00:04:32,949  
have one I think it's 213 state awards

90  
00:04:31,300 --> 00:04:35,800  
in the young science competition we

91  
00:04:32,949 --> 00:04:38,830  
usually get about 10 to 15 per year and

92  
00:04:35,800 --> 00:04:41,410  
will easily have more Awards than any

93  
00:04:38,829 --> 00:04:45,129  
other school in that talking those

94  
00:04:41,410 --> 00:04:47,189  
competitions and you also your students

95  
00:04:45,129 --> 00:04:49,899  
also participate in the bhp billiton

96  
00:04:47,189 --> 00:04:51,038  
division yeah all that what happens is

97  
00:04:49,899 --> 00:04:53,019  
the best students from the young

98  
00:04:51,038 --> 00:04:56,500  
scientists gets selected to go to the

99  
00:04:53,019 --> 00:04:58,810  
National bhp awards and so this year we

100  
00:04:56,500 --> 00:05:02,199

would have had two of the 16 Australian

101

00:04:58,810 --> 00:05:04,600

finals with from our school and we have

102

00:05:02,199 --> 00:05:07,569

gone very well again at the bhp science

103

00:05:04,600 --> 00:05:11,800

Awards they have been going for 25 years

104

00:05:07,569 --> 00:05:14,288

or so now we've had more finalists than

105

00:05:11,800 --> 00:05:17,079

any other school in Australia and more

106

00:05:14,288 --> 00:05:18,788

winning entries in that as well and i

107

00:05:17,079 --> 00:05:22,029

just want to point out that we just went

108

00:05:18,788 --> 00:05:24,728

past a window and we in there were there

109

00:05:22,029 --> 00:05:27,728

was a huge big skeleton in there it's a

110

00:05:24,728 --> 00:05:29,288

large whale bone if we would have we

111

00:05:27,728 --> 00:05:33,459

have a school camp down the south coast

112

00:05:29,288 --> 00:05:34,839

and there was a while that has been you

113

00:05:33,459 --> 00:05:37,449

know washed up on the beach or in the

114

00:05:34,839 --> 00:05:40,719

rocks for many years and once you start

115  
00:05:37,449 --> 00:05:42,370  
decomposed we took samples of the that's

116  
00:05:40,720 --> 00:05:44,110  
a hip joint i bought the earth until

117  
00:05:42,370 --> 00:05:46,930  
whether young goes into the world to the

118  
00:05:44,110 --> 00:05:48,400  
backbone and yeah we've got a couple

119  
00:05:46,930 --> 00:05:51,160  
specimens we brought back they took a

120  
00:05:48,399 --> 00:05:53,888  
few months and years to remove the smell

121  
00:05:51,160 --> 00:05:56,410  
we left it outside that the answer eat

122  
00:05:53,889 --> 00:05:59,259  
it away but now it's um it's now inside

123  
00:05:56,410 --> 00:06:01,810  
is now inside the kids love live love

124  
00:05:59,259 --> 00:06:04,389  
that absolutely kids love the hands-on

125  
00:06:01,810 --> 00:06:08,759  
as you know and actually getting

126  
00:06:04,389 --> 00:06:12,490  
specimens live specimens in the class

127  
00:06:08,759 --> 00:06:15,459  
attract students straightaway so

128  
00:06:12,490 --> 00:06:17,019  
obviously there is

129

00:06:15,459 --> 00:06:20,138

there's obviously a lot of your

130

00:06:17,019 --> 00:06:21,939

information or a lot of knowledge that's

131

00:06:20,139 --> 00:06:23,410

being transferred to the children while

132

00:06:21,939 --> 00:06:25,300

they're here while they do science

133

00:06:23,410 --> 00:06:28,180

lessons how much focus is there on

134

00:06:25,300 --> 00:06:30,250

methodology on the science as a not as a

135

00:06:28,180 --> 00:06:32,889

process rather than as a body of

136

00:06:30,250 --> 00:06:36,870

knowledge well these science curriculum

137

00:06:32,889 --> 00:06:40,769

in yourself Wales does like to give a

138

00:06:36,870 --> 00:06:44,800

very good balance on process and skills

139

00:06:40,769 --> 00:06:47,258

with knowledge so just just to do the

140

00:06:44,800 --> 00:06:49,020

curriculum we do wood stove a 50-50

141

00:06:47,259 --> 00:06:57,009

split between the knowledge and the

142

00:06:49,019 --> 00:07:01,689

process however will find that I try to

143

00:06:57,009 --> 00:07:03,990  
increase the process and skill side by

144  
00:07:01,689 --> 00:07:07,719  
getting students involved in these

145  
00:07:03,990 --> 00:07:10,900  
exterior competitions such as the young

146  
00:07:07,720 --> 00:07:12,430  
scientists because they learn and take

147  
00:07:10,899 --> 00:07:15,609  
away skills the rest of their life

148  
00:07:12,430 --> 00:07:19,750  
they'll never forget we're just coming

149  
00:07:15,610 --> 00:07:22,150  
up now to my main display students when

150  
00:07:19,750 --> 00:07:23,759  
they when we say with us do a science

151  
00:07:22,149 --> 00:07:27,719  
project don't know where to start and

152  
00:07:23,759 --> 00:07:29,650  
that is the biggest problem with most

153  
00:07:27,720 --> 00:07:32,830  
schools in New South Wales in Australia

154  
00:07:29,649 --> 00:07:36,668  
face all students have to do a

155  
00:07:32,829 --> 00:07:39,430  
compulsory student research project they

156  
00:07:36,668 --> 00:07:41,859  
have to do one in year 7 and 8 1 in year

157  
00:07:39,430 --> 00:07:43,478

9 and 10 and if you are seeing your

158

00:07:41,860 --> 00:07:46,598  
students you also have to do an

159

00:07:43,478 --> 00:07:48,968  
independent research project but the

160

00:07:46,598 --> 00:07:50,439  
thing is you can't just say given a

161

00:07:48,968 --> 00:07:54,069  
brochure and say this is what you have

162

00:07:50,439 --> 00:07:56,379  
to do they need guidelines and either

163

00:07:54,069 --> 00:07:59,468  
structure where to start where to get

164

00:07:56,379 --> 00:08:02,620  
ideas from and what makes our program

165

00:07:59,468 --> 00:08:05,439  
unique is that we have introduced a

166

00:08:02,620 --> 00:08:07,959  
program called the inspire program it's

167

00:08:05,439 --> 00:08:10,658  
an acronym the aspire stands for

168

00:08:07,959 --> 00:08:12,668  
informing and nurturing science projects

169

00:08:10,658 --> 00:08:16,269  
that are innovative rewarding and

170

00:08:12,668 --> 00:08:20,198  
enjoyable the most important part of

171

00:08:16,269 --> 00:08:22,949  
that is the informing stage kids just

172  
00:08:20,199 --> 00:08:26,189  
don't know where to start

173  
00:08:22,949 --> 00:08:28,439  
and really they don't know how to write

174  
00:08:26,189 --> 00:08:32,639  
a project up and what's what's needed to

175  
00:08:28,439 --> 00:08:34,320  
do a a good project so we have developed

176  
00:08:32,639 --> 00:08:37,580  
over the years collected a lot of

177  
00:08:34,320 --> 00:08:42,570  
resources I have a lot of video and DVD

178  
00:08:37,580 --> 00:08:45,090  
resources so I can actually show videos

179  
00:08:42,570 --> 00:08:47,280  
and kids of I can go to a like a

180  
00:08:45,090 --> 00:08:49,379  
kindergarten class and i have videos of

181  
00:08:47,279 --> 00:08:52,069  
kindergarten level projects where

182  
00:08:49,379 --> 00:08:55,610  
students are talking about their project

183  
00:08:52,070 --> 00:08:58,710  
so what year does that start in our

184  
00:08:55,610 --> 00:09:00,180  
inspired program is unique tough and

185  
00:08:58,710 --> 00:09:03,360  
kindergarten rough of the year 12

186  
00:09:00,179 --> 00:09:05,039  
there's a whole school program I will

187  
00:09:03,360 --> 00:09:07,440  
elaborate more some years it's more

188  
00:09:05,039 --> 00:09:09,719  
compulsory than others like for instance

189  
00:09:07,440 --> 00:09:12,900  
we have make it compulsory in year 5

190  
00:09:09,720 --> 00:09:15,540  
through the year 10 every second year

191  
00:09:12,899 --> 00:09:17,250  
the science curriculum New South Wales

192  
00:09:15,539 --> 00:09:20,129  
you have to the project every two years

193  
00:09:17,250 --> 00:09:22,799  
and so we generally have a year on and

194  
00:09:20,129 --> 00:09:25,379  
year off although can I say the year off

195  
00:09:22,799 --> 00:09:27,659  
year are still very busy this is our

196  
00:09:25,379 --> 00:09:29,970  
year off year that's for project there's

197  
00:09:27,659 --> 00:09:34,079  
lots of projects that's where they have

198  
00:09:29,970 --> 00:09:36,720  
to officially do a project and i still

199  
00:09:34,080 --> 00:09:40,139  
have even though it's it's a optional

200

00:09:36,720 --> 00:09:42,180  
year i still have at least 15 projects

201  
00:09:40,139 --> 00:09:44,039  
going on at the moment I know of kids

202  
00:09:42,179 --> 00:09:47,009  
are started right down those younger

203  
00:09:44,039 --> 00:09:49,769  
years we also have a number of our top

204  
00:09:47,009 --> 00:09:52,439  
level projects who have firstly won the

205  
00:09:49,769 --> 00:09:55,559  
science teachers young science Awards

206  
00:09:52,440 --> 00:09:57,780  
probably gone well and one at bhp they

207  
00:09:55,559 --> 00:09:59,429  
also represent an Australia the inter

208  
00:09:57,779 --> 00:10:02,850  
Intel International Science and

209  
00:09:59,429 --> 00:10:05,639  
Engineering Fair where's 1500 students

210  
00:10:02,850 --> 00:10:09,029  
from around the world and Australia this

211  
00:10:05,639 --> 00:10:11,159  
year is sending for students and we have

212  
00:10:09,029 --> 00:10:12,720  
two of those students going now the

213  
00:10:11,159 --> 00:10:16,439  
ideal the pot the good thing about this

214  
00:10:12,720 --> 00:10:18,540

is we can now use though displays when

215

00:10:16,440 --> 00:10:20,760

they come back to Australia as displays

216

00:10:18,539 --> 00:10:22,469

for other kids to see what to do of

217

00:10:20,759 --> 00:10:25,350

course and we have two displays here can

218

00:10:22,470 --> 00:10:28,860

you maybe describe one of them ok I'll

219

00:10:25,350 --> 00:10:31,139

have a display here which which was a

220

00:10:28,860 --> 00:10:33,090

which was that actually won the team

221

00:10:31,139 --> 00:10:35,970

display confusion they won a thousand US

222

00:10:33,090 --> 00:10:39,300

dollars for the best display

223

00:10:35,970 --> 00:10:43,019

it was a project that looked at the palm

224

00:10:39,299 --> 00:10:47,969

of colorblindness and they came up with

225

00:10:43,019 --> 00:10:49,709

a a optical device that you that tells

226

00:10:47,970 --> 00:10:51,480

you the color of an object so you put it

227

00:10:49,708 --> 00:10:53,878

on your shirt and we'll give you that

228

00:10:51,480 --> 00:10:56,909

color there's 729 colors programs

229  
00:10:53,879 --> 00:10:59,188  
excellent so if it's called a used red

230  
00:10:56,909 --> 00:11:01,980  
green and blue light it's called a try

231  
00:10:59,188 --> 00:11:03,838  
stimulus calorimeter and but it did

232  
00:11:01,980 --> 00:11:05,970  
something which is you can get those

233  
00:11:03,839 --> 00:11:10,800  
sort of things now on the market but

234  
00:11:05,970 --> 00:11:12,959  
what there's was that actually had a

235  
00:11:10,799 --> 00:11:15,149  
memory and it remembered one color and

236  
00:11:12,958 --> 00:11:17,518  
then you put it on the adjacent color

237  
00:11:15,149 --> 00:11:19,198  
and then can tell you the difference in

238  
00:11:17,519 --> 00:11:22,438  
luminosity of illuminance contrast

239  
00:11:19,198 --> 00:11:24,149  
between the two surfaces which is really

240  
00:11:22,438 --> 00:11:28,379  
important because in the building

241  
00:11:24,149 --> 00:11:30,539  
industry if you go near a train platform

242  
00:11:28,379 --> 00:11:32,310  
you'll have those tactile indicators

243  
00:11:30,539 --> 00:11:35,519  
which are the yellow strips or blue

244  
00:11:32,309 --> 00:11:39,000  
strips and they have to meet a color

245  
00:11:35,519 --> 00:11:41,459  
contrast so vision impaired people don't

246  
00:11:39,000 --> 00:11:44,429  
walk off the you know other on the

247  
00:11:41,458 --> 00:11:46,558  
tracks buildings also all stairways must

248  
00:11:44,429 --> 00:11:49,138  
have those treads are public

249  
00:11:46,558 --> 00:11:51,899  
thoroughfares and so what they the top

250  
00:11:49,139 --> 00:11:53,850  
problem is no one had actually designed

251  
00:11:51,899 --> 00:11:56,000  
a device to measure this lumen of

252  
00:11:53,850 --> 00:11:58,290  
contracts you must have a 30-percent

253  
00:11:56,000 --> 00:12:00,419  
contrast according to this drain

254  
00:11:58,289 --> 00:12:04,708  
standard so they have built a device

255  
00:12:00,419 --> 00:12:07,169  
that actually does that previously you'd

256  
00:12:04,708 --> 00:12:09,149  
have to get companies like CSIRO to come

257

00:12:07,169 --> 00:12:10,708  
in and take your measurements and it

258  
00:12:09,149 --> 00:12:13,259  
cost you over a thousand dollars to get

259  
00:12:10,708 --> 00:12:15,508  
a report time now you just get their

260  
00:12:13,259 --> 00:12:18,990  
color luminator put it on the two

261  
00:12:15,509 --> 00:12:20,370  
different objects and instantly took

262  
00:12:18,990 --> 00:12:22,829  
gives the measurement is quite amazing

263  
00:12:20,370 --> 00:12:25,198  
so high school high school there are

264  
00:12:22,828 --> 00:12:29,188  
high school students this has taken off

265  
00:12:25,198 --> 00:12:33,479  
in April an Australian company called

266  
00:12:29,188 --> 00:12:36,568  
pathfinders as is manufacturing the

267  
00:12:33,480 --> 00:12:38,789  
color illuminator and it's having its

268  
00:12:36,568 --> 00:12:41,429  
official opening up at the in Tweed

269  
00:12:38,789 --> 00:12:45,870  
Heads in April no official opening the

270  
00:12:41,429 --> 00:12:47,879  
official launch yeah and yeah and this

271  
00:12:45,870 --> 00:12:48,779

is going to be nearly every building

272

00:12:47,879 --> 00:12:52,460  
inspector

273

00:12:48,779 --> 00:12:54,990  
very every company the audits buildings

274

00:12:52,460 --> 00:12:57,300  
architects will need to get the device

275

00:12:54,990 --> 00:12:59,070  
such as this because they have to meet

276

00:12:57,299 --> 00:13:01,349  
this strange standard yeah but there's

277

00:12:59,070 --> 00:13:03,540  
also if i may just point out something

278

00:13:01,350 --> 00:13:06,960  
there's at the very center of the

279

00:13:03,539 --> 00:13:09,360  
display there's two pictures of of a

280

00:13:06,960 --> 00:13:10,560  
pair of bananas correct one shows them

281

00:13:09,360 --> 00:13:11,789  
under normal vision where they're a

282

00:13:10,559 --> 00:13:14,939  
little bit green you can tell that

283

00:13:11,789 --> 00:13:16,980  
they're not ripe yet yes the colorblind

284

00:13:14,940 --> 00:13:20,120  
according to the second picture shows

285

00:13:16,980 --> 00:13:23,070  
them as bright yellow right and ripe I

286  
00:13:20,120 --> 00:13:24,629  
didn't actually know that that would be

287  
00:13:23,070 --> 00:13:26,820  
the effect of color blindness as suppose

288  
00:13:24,629 --> 00:13:29,519  
that's a blue that's there's a red-green

289  
00:13:26,820 --> 00:13:33,420  
color blindness the most common form

290  
00:13:29,519 --> 00:13:35,240  
yeah so and maps say the topographical

291  
00:13:33,419 --> 00:13:37,829  
maps where they use colors to

292  
00:13:35,240 --> 00:13:40,560  
differentiate between like contours and

293  
00:13:37,830 --> 00:13:42,330  
elevation they can't tell and so for

294  
00:13:40,559 --> 00:13:43,949  
people with color blindness that that

295  
00:13:42,330 --> 00:13:46,710  
could be a huge help having that device

296  
00:13:43,950 --> 00:13:48,930  
around just being able to quickly yeah

297  
00:13:46,710 --> 00:13:51,240  
you know just just just use it to test

298  
00:13:48,929 --> 00:13:53,399  
whatever it is and another thing even

299  
00:13:51,240 --> 00:13:54,570  
people have normal vision it's very hard

300  
00:13:53,399 --> 00:13:56,159  
in the morning when you get up for work

301  
00:13:54,570 --> 00:13:58,680  
and you got to find your blue or your

302  
00:13:56,159 --> 00:14:00,329  
black trousers or your socks I mean it's

303  
00:13:58,679 --> 00:14:01,889  
a very embarrassing going out with you

304  
00:14:00,330 --> 00:14:03,270  
think you got your blue trousers on it's

305  
00:14:01,889 --> 00:14:05,220  
actually black because your lights not

306  
00:14:03,269 --> 00:14:07,019  
good enough whether you put this machine

307  
00:14:05,220 --> 00:14:09,269  
on your on your trousers and it will

308  
00:14:07,019 --> 00:14:11,039  
tell you well I must tell you that fifty

309  
00:14:09,269 --> 00:14:15,120  
percent of our listeners the female ones

310  
00:14:11,039 --> 00:14:16,319  
have noticed rolled their eyes your

311  
00:14:15,120 --> 00:14:17,610  
husband's won't have the wrong time I

312  
00:14:16,320 --> 00:14:20,010  
don't believe they can actually see if

313  
00:14:17,610 --> 00:14:22,919  
their colors do match first that is

314

00:14:20,009 --> 00:14:24,809  
actually thinking that these are high

315  
00:14:22,919 --> 00:14:26,399  
school students have been able to do

316  
00:14:24,809 --> 00:14:28,500  
something like this not just in terms of

317  
00:14:26,399 --> 00:14:30,269  
the research in following the

318  
00:14:28,500 --> 00:14:31,980  
methodology in passing the peer review

319  
00:14:30,269 --> 00:14:34,259  
but also actually getting it to the

320  
00:14:31,980 --> 00:14:36,690  
point where it's of international

321  
00:14:34,259 --> 00:14:39,840  
practical implications is quite

322  
00:14:36,690 --> 00:14:43,080  
admirable ok so this actually is a good

323  
00:14:39,840 --> 00:14:44,700  
time to ask so what is it obviously I

324  
00:14:43,080 --> 00:14:46,830  
mean the results are they we know that

325  
00:14:44,700 --> 00:14:49,759  
ridhima baptist school does better than

326  
00:14:46,830 --> 00:14:53,970  
other schools in

327  
00:14:49,759 --> 00:14:56,279  
so one thing is by ensuring that the

328  
00:14:53,970 --> 00:14:57,870

methodology is right okay so that that

329

00:14:56,279 --> 00:15:00,179

but that that can't be older the whole

330

00:14:57,870 --> 00:15:03,990

story it's got to be something else in

331

00:15:00,179 --> 00:15:07,169

terms of maybe the enthusiasm and you

332

00:15:03,990 --> 00:15:11,009

can't tell me what you think you do that

333

00:15:07,169 --> 00:15:12,809

makes this happen okay there's two

334

00:15:11,009 --> 00:15:14,700

levels of science projects you have

335

00:15:12,809 --> 00:15:16,889

those which get up to this international

336

00:15:14,700 --> 00:15:18,330

standard and then there's just a science

337

00:15:16,889 --> 00:15:20,059

project from the classroom to say you

338

00:15:18,330 --> 00:15:22,680

get a class to work on a project that

339

00:15:20,059 --> 00:15:25,019

question in two ways firstly for the

340

00:15:22,679 --> 00:15:27,629

science level with a science class

341

00:15:25,019 --> 00:15:28,799

project I say you've got 20 kids in your

342

00:15:27,629 --> 00:15:31,169

class and we're going to a science

343  
00:15:28,799 --> 00:15:33,539  
project we firstly try to do individual

344  
00:15:31,169 --> 00:15:38,399  
projects so kids can choose topics that

345  
00:15:33,539 --> 00:15:40,949  
are interesting to them secondly we

346  
00:15:38,399 --> 00:15:43,980  
would have those examples to show them

347  
00:15:40,950 --> 00:15:46,140  
what a good project is but that probably

348  
00:15:43,980 --> 00:15:48,149  
the main thing that separates us and

349  
00:15:46,139 --> 00:15:51,990  
most other schools so that I we try to

350  
00:15:48,149 --> 00:15:54,179  
get them to get on an industry get at

351  
00:15:51,990 --> 00:15:57,000  
the people who are experts in the field

352  
00:15:54,179 --> 00:15:58,859  
and they have to do a huge literature

353  
00:15:57,000 --> 00:16:01,200  
research to start with I get and make

354  
00:15:58,860 --> 00:16:03,149  
sure as this when they come to me with

355  
00:16:01,200 --> 00:16:05,730  
the idea said I say okay has this been

356  
00:16:03,149 --> 00:16:08,009  
done before go and fight out and so

357  
00:16:05,730 --> 00:16:09,330  
they'll they'll look up first let's

358  
00:16:08,009 --> 00:16:11,250  
start with the internet have a look at

359  
00:16:09,330 --> 00:16:13,620  
that and then we might look at journals

360  
00:16:11,250 --> 00:16:15,779  
and then if something's been done on

361  
00:16:13,620 --> 00:16:18,299  
that before we say okay well let's see

362  
00:16:15,779 --> 00:16:21,839  
can is earning kind of tangent you can

363  
00:16:18,299 --> 00:16:25,139  
go on to the main thing is I get them to

364  
00:16:21,840 --> 00:16:26,399  
ring people in industry like they need

365  
00:16:25,139 --> 00:16:28,379  
assistance that they're doing something

366  
00:16:26,399 --> 00:16:30,629  
because most things most of these

367  
00:16:28,379 --> 00:16:31,919  
science projects a go beyond the realm

368  
00:16:30,629 --> 00:16:36,659  
of the claw of a normal classroom

369  
00:16:31,919 --> 00:16:39,240  
teacher sweet so do you think it's the

370  
00:16:36,659 --> 00:16:41,100  
going out there in deerfield and talking

371

00:16:39,240 --> 00:16:42,509  
to organizations and maybe making it

372  
00:16:41,100 --> 00:16:44,279  
something that is not just based on the

373  
00:16:42,509 --> 00:16:46,200  
school you think that's that's the main

374  
00:16:44,279 --> 00:16:49,350  
thing okay yes for the high level

375  
00:16:46,200 --> 00:16:51,060  
projects within the school just over any

376  
00:16:49,350 --> 00:16:53,519  
general school vyas wanted run science

377  
00:16:51,059 --> 00:16:56,609  
projects obviously you need to have a

378  
00:16:53,519 --> 00:16:59,939  
teacher who is enthusiastic and it's

379  
00:16:56,610 --> 00:17:01,919  
time so I take life for instance this

380  
00:16:59,940 --> 00:17:03,000  
morning I walked into the classroom I

381  
00:17:01,919 --> 00:17:05,338  
just wanted to walk through the

382  
00:17:03,000 --> 00:17:07,500  
class they get some things prepared for

383  
00:17:05,338 --> 00:17:09,588  
a lesson three people stop me because

384  
00:17:07,500 --> 00:17:12,000  
they wanted to ask about their project

385  
00:17:09,588 --> 00:17:14,220

do you think this is a good idea and

386

00:17:12,000 --> 00:17:17,490

things like that and so you don't want

387

00:17:14,220 --> 00:17:19,799

to some one of the projects was wasn't a

388

00:17:17,490 --> 00:17:21,779

good ideas wanted to replace human blood

389

00:17:19,799 --> 00:17:23,730

into animal blood a civic and the things

390

00:17:21,779 --> 00:17:26,459

I don't know it said you cannot do that

391

00:17:23,730 --> 00:17:28,950

yeah this certain proteins do why don't

392

00:17:26,459 --> 00:17:30,509

you think and then with just discussing

393

00:17:28,950 --> 00:17:33,590

them they want to do veterinary science

394

00:17:30,509 --> 00:17:36,210

when they leave and they loved one to

395

00:17:33,589 --> 00:17:38,279

work of chickens or care to your kind of

396

00:17:36,210 --> 00:17:40,380

RC pro them what animals they have and

397

00:17:38,279 --> 00:17:43,250

then you kind of develop a project from

398

00:17:40,380 --> 00:17:46,850

that from what they're interested in but

399

00:17:43,250 --> 00:17:50,339

you then the thing is you think that a

400  
00:17:46,849 --> 00:17:52,169  
the research plan is huge you have to

401  
00:17:50,339 --> 00:17:54,299  
kind of sit them down generally a lunch

402  
00:17:52,170 --> 00:17:56,279  
time they come to you and I'll probably

403  
00:17:54,299 --> 00:17:59,220  
get to students at lunch time would come

404  
00:17:56,279 --> 00:18:00,149  
and would work out a research plan how

405  
00:17:59,220 --> 00:18:02,430  
you're going to do it in a controlled

406  
00:18:00,150 --> 00:18:04,440  
way what interesting thing are you going

407  
00:18:02,430 --> 00:18:08,039  
to do now the problem is most of those

408  
00:18:04,440 --> 00:18:11,610  
interesting things you can't just come

409  
00:18:08,039 --> 00:18:13,589  
up with initially the best is just gets

410  
00:18:11,609 --> 00:18:15,299  
to start on the project just start and

411  
00:18:13,589 --> 00:18:17,730  
you'll probably find as you get going

412  
00:18:15,299 --> 00:18:19,950  
interesting site points will come up and

413  
00:18:17,730 --> 00:18:23,700  
then you can kind of may change the

414  
00:18:19,950 --> 00:18:26,190  
direction of your project but obviously

415  
00:18:23,700 --> 00:18:29,220  
the big thing is the teacher needs to

416  
00:18:26,190 --> 00:18:31,590  
spend time of the student you have to

417  
00:18:29,220 --> 00:18:33,240  
it's a personal thing and wire like

418  
00:18:31,589 --> 00:18:36,000  
science projects is that I actually get

419  
00:18:33,240 --> 00:18:39,210  
to have a you know relate to the

420  
00:18:36,000 --> 00:18:41,009  
students in a one-to-one way it's not

421  
00:18:39,210 --> 00:18:43,230  
just the teacher at the front get

422  
00:18:41,009 --> 00:18:47,190  
passing on their knowledge of a topic

423  
00:18:43,230 --> 00:18:49,529  
you also later on then go and personally

424  
00:18:47,190 --> 00:18:53,009  
work of students and they really respond

425  
00:18:49,529 --> 00:18:55,500  
to that even the little kids and I just

426  
00:18:53,009 --> 00:18:59,160  
have to give time it has no really other

427  
00:18:55,500 --> 00:19:00,660  
way I can't see so you think that it

428

00:18:59,160 --> 00:19:02,370  
seems reasonable reasonable enough do

429  
00:19:00,660 --> 00:19:05,130  
you think that expect one on one that

430  
00:19:02,369 --> 00:19:07,079  
also fits the enthusiasm of the students

431  
00:19:05,130 --> 00:19:11,880  
that that ability to work with the note

432  
00:19:07,079 --> 00:19:14,279  
and know the enthusiasm is you've got to

433  
00:19:11,880 --> 00:19:16,650  
try to generate the enthusiasm in the

434  
00:19:14,279 --> 00:19:19,769  
class to start with

435  
00:19:16,650 --> 00:19:22,710  
and usually another way of getting

436  
00:19:19,769 --> 00:19:24,359  
enthusiasm kids love publicity and media

437  
00:19:22,710 --> 00:19:27,690  
they like to be on the newspaper and the

438  
00:19:24,359 --> 00:19:30,179  
TV for instance is behind you these are

439  
00:19:27,690 --> 00:19:34,680  
all newspapers which have students from

440  
00:19:30,180 --> 00:19:36,299  
our school in different reading featured

441  
00:19:34,680 --> 00:19:38,400  
in different articles some of them

442  
00:19:36,299 --> 00:19:39,809

magazine I say I must point out that

443

00:19:38,400 --> 00:19:42,780

we're talking probably you know your

444

00:19:39,809 --> 00:19:44,609

nexus of 100 well in excess of 100 per

445

00:19:42,779 --> 00:19:46,259

year well some of them are multiple

446

00:19:44,609 --> 00:19:49,889

copies but generally I would have over

447

00:19:46,259 --> 00:19:53,730

100 different articles of students in

448

00:19:49,890 --> 00:19:56,070

the in the press so they get excited a

449

00:19:53,730 --> 00:19:57,900

lot of radio interviews some one of our

450

00:19:56,069 --> 00:20:00,960

students is interviewed by p.m. on the

451

00:19:57,900 --> 00:20:02,970

ABC last year and some so a lot of them

452

00:20:00,960 --> 00:20:04,440

on different different stations

453

00:20:02,970 --> 00:20:09,720

depending on what their projects about

454

00:20:04,440 --> 00:20:11,700

and I try to enthuse students by given

455

00:20:09,720 --> 00:20:16,470

the opportunity that be to have their

456

00:20:11,700 --> 00:20:19,019

work shown to the public you know that's

457  
00:20:16,470 --> 00:20:20,730  
a big factor how would a school that had

458  
00:20:19,019 --> 00:20:22,889  
doesn't have that history that you have

459  
00:20:20,730 --> 00:20:25,049  
raised able to show projects that I'd be

460  
00:20:22,890 --> 00:20:27,600  
known in the past how would a school get

461  
00:20:25,049 --> 00:20:31,079  
just starting or variable trains get

462  
00:20:27,599 --> 00:20:33,750  
into that okay I'll give an example I am

463  
00:20:31,079 --> 00:20:36,119  
currently involved in a my science

464  
00:20:33,750 --> 00:20:37,950  
program which is schools though it's a

465  
00:20:36,119 --> 00:20:40,739  
department of education program for

466  
00:20:37,950 --> 00:20:43,650  
schools in the western sydney and they

467  
00:20:40,740 --> 00:20:45,660  
have they want mentors to come into

468  
00:20:43,650 --> 00:20:48,830  
these schools that show them to help

469  
00:20:45,660 --> 00:20:52,529  
them kids with the science projects and

470  
00:20:48,829 --> 00:20:55,769  
so just so i'm going to the school where

471  
00:20:52,529 --> 00:20:57,990  
there was no background in science no

472  
00:20:55,769 --> 00:20:59,460  
background in anything of this and i've

473  
00:20:57,990 --> 00:21:01,519  
been there this is my fourth year i'm

474  
00:20:59,460 --> 00:21:05,069  
being each year each year their

475  
00:21:01,519 --> 00:21:07,650  
development and that we do it they all

476  
00:21:05,069 --> 00:21:11,819  
do projects i'll do a poster they have a

477  
00:21:07,650 --> 00:21:14,280  
fair but didn't get anywhere very

478  
00:21:11,819 --> 00:21:16,139  
similar to how we started because i

479  
00:21:14,279 --> 00:21:20,549  
didn't know what was needed I didn't

480  
00:21:16,140 --> 00:21:22,890  
have any guy to go by and so this the

481  
00:21:20,549 --> 00:21:25,889  
second year I said to the clerk the

482  
00:21:22,890 --> 00:21:28,860  
teacher I was working with would you

483  
00:21:25,890 --> 00:21:31,830  
mind if we spend

484  
00:21:28,859 --> 00:21:33,959  
it more time on you know just pick one

485

00:21:31,829 --> 00:21:35,308  
project let's spend a bit more time so

486  
00:21:33,960 --> 00:21:39,360  
you have a model for the rest of your

487  
00:21:35,308 --> 00:21:40,889  
class and so we did with one project we

488  
00:21:39,359 --> 00:21:43,619  
didn't spend much time but they looked

489  
00:21:40,890 --> 00:21:46,259  
at la casa lon long jumps and whether

490  
00:21:43,619 --> 00:21:48,269  
when you have most long job kids doing

491  
00:21:46,259 --> 00:21:50,400  
long jump look at the same the whole

492  
00:21:48,269 --> 00:21:52,109  
body goes downwards but if you look

493  
00:21:50,400 --> 00:21:53,580  
straight ahead how much extra distance

494  
00:21:52,109 --> 00:21:54,990  
can you get by just looking straight

495  
00:21:53,579 --> 00:21:57,779  
ahead as you're supposed to do and then

496  
00:21:54,990 --> 00:21:59,849  
look at the sand so I said well what you

497  
00:21:57,779 --> 00:22:02,190  
need to do is firstly see is how much of

498  
00:21:59,849 --> 00:22:03,689  
a problem that is so they had an effort

499  
00:22:02,190 --> 00:22:05,700

at carnival and they found that about

500

00:22:03,690 --> 00:22:08,370

ninety seven percent of kids look at the

501

00:22:05,700 --> 00:22:10,919

sand and only two I think three kids

502

00:22:08,369 --> 00:22:14,129

didn't and they were one of the some of

503

00:22:10,919 --> 00:22:16,169

the place getters obviously so they did

504

00:22:14,130 --> 00:22:18,929

this project and that so we had a model

505

00:22:16,169 --> 00:22:21,210

and I and they would have emailed their

506

00:22:18,929 --> 00:22:23,250

tables and I would have sent back you

507

00:22:21,210 --> 00:22:24,569

know well you should do this and there's

508

00:22:23,250 --> 00:22:27,808

a good communication with the teacher

509

00:22:24,569 --> 00:22:29,609

and so they now have a model of a good

510

00:22:27,808 --> 00:22:32,509

project this project that went on to be

511

00:22:29,609 --> 00:22:35,399

one of the top bhp national winners

512

00:22:32,509 --> 00:22:37,410

wasn't a big project as I would say is

513

00:22:35,400 --> 00:22:42,048

very small wasn't it doesn't it be huge

514  
00:22:37,410 --> 00:22:46,500  
but it was good method methodology and

515  
00:22:42,048 --> 00:22:49,500  
and they now have a model for the school

516  
00:22:46,500 --> 00:22:52,349  
to use so i said to the i said to that

517  
00:22:49,500 --> 00:22:56,579  
teacher you now need to either get it as

518  
00:22:52,349 --> 00:22:59,759  
a PDF document so all kids can have a

519  
00:22:56,579 --> 00:23:02,039  
look at it and and use it as a benchmark

520  
00:22:59,759 --> 00:23:03,990  
and say you know what to do because

521  
00:23:02,039 --> 00:23:05,879  
unless they have that they'll just

522  
00:23:03,990 --> 00:23:08,190  
continue every year just have projects

523  
00:23:05,880 --> 00:23:11,370  
will look good but don't go up to the

524  
00:23:08,190 --> 00:23:14,880  
same level as the top level projects so

525  
00:23:11,369 --> 00:23:17,939  
but now they have that they're now

526  
00:23:14,880 --> 00:23:20,030  
increasing the all classes new 3d or six

527  
00:23:17,940 --> 00:23:24,150  
are now doing science projects this year

528  
00:23:20,029 --> 00:23:26,009  
they have resmed a a company nearby at

529  
00:23:24,150 --> 00:23:28,919  
bella vista coming to their school and

530  
00:23:26,009 --> 00:23:31,410  
they have nearly 20 scientists working

531  
00:23:28,919 --> 00:23:33,509  
as mentors and at school and it's

532  
00:23:31,410 --> 00:23:36,450  
totally changed at school around now

533  
00:23:33,509 --> 00:23:38,279  
you're obviously value the science

534  
00:23:36,450 --> 00:23:39,870  
competitions of various kinds awards and

535  
00:23:38,279 --> 00:23:41,579  
science competitions can you tell me why

536  
00:23:39,869 --> 00:23:42,418  
that is what would you see what do you

537  
00:23:41,579 --> 00:23:48,239  
see there

538  
00:23:42,419 --> 00:23:52,549  
everybody to be we don't just enter a

539  
00:23:48,239 --> 00:23:52,548  
science competition just to win an award

540  
00:23:53,298 --> 00:23:58,259  
schools have a lot of different

541  
00:23:56,210 --> 00:24:00,389  
extracurricular stuff they can do I

542

00:23:58,259 --> 00:24:02,788  
first a science teacher I could enter my

543  
00:24:00,388 --> 00:24:05,638  
students into the science olympiads I

544  
00:24:02,788 --> 00:24:08,069  
could do Eureka awards as a whole series

545  
00:24:05,638 --> 00:24:10,829  
of wards you can solve card challenges

546  
00:24:08,069 --> 00:24:13,079  
so they're all great so you just gotta

547  
00:24:10,829 --> 00:24:14,548  
pick I just we just happen to pick the

548  
00:24:13,079 --> 00:24:17,908  
young Sciences Awards because we thought

549  
00:24:14,548 --> 00:24:19,858  
that if we get all kids doing science

550  
00:24:17,909 --> 00:24:24,269  
projects we're actually setting them up

551  
00:24:19,858 --> 00:24:25,918  
for life skills and it's not just

552  
00:24:24,269 --> 00:24:27,358  
something that will just do now and

553  
00:24:25,919 --> 00:24:29,429  
forget about that they're learning

554  
00:24:27,358 --> 00:24:31,489  
skills they can build on the next year

555  
00:24:29,429 --> 00:24:34,590  
they can develop their projects and

556  
00:24:31,489 --> 00:24:36,778

because we're k to 12 school if we can

557

00:24:34,589 --> 00:24:40,528

get kids in our preparatory school doing

558

00:24:36,778 --> 00:24:42,898

a project when they do it again two

559

00:24:40,528 --> 00:24:47,460

years time it's the next level up and it

560

00:24:42,898 --> 00:24:49,498

continues you to you and and so we have

561

00:24:47,460 --> 00:24:50,999

a kind of spiral curriculum so we have

562

00:24:49,499 --> 00:24:52,409

students who didn't win anything for

563

00:24:50,999 --> 00:24:55,649

first six years of their science

564

00:24:52,409 --> 00:24:59,129

projects now top projects just because

565

00:24:55,648 --> 00:25:02,069

they have built on their previous skills

566

00:24:59,128 --> 00:25:03,959

and now they are you know tops their top

567

00:25:02,069 --> 00:25:05,819

skills and stroke and so do you think

568

00:25:03,960 --> 00:25:07,850

the competition's the fact that there is

569

00:25:05,819 --> 00:25:11,489

an award a competition in a metal a

570

00:25:07,849 --> 00:25:15,480

place in the on the winning panel

571  
00:25:11,489 --> 00:25:17,100  
winning on the podium do you think that

572  
00:25:15,480 --> 00:25:18,929  
actually encourages students you think

573  
00:25:17,099 --> 00:25:20,878  
they're ever like so there's a value in

574  
00:25:18,929 --> 00:25:22,859  
the competition itself in terms of just

575  
00:25:20,878 --> 00:25:25,378  
the will to to win or to get some

576  
00:25:22,858 --> 00:25:27,749  
definitely yeah comp like every school

577  
00:25:25,378 --> 00:25:29,579  
has to do research project but these

578  
00:25:27,749 --> 00:25:32,788  
projects such as young science awards

579  
00:25:29,579 --> 00:25:34,618  
they have a like he can win a trip to

580  
00:25:32,788 --> 00:25:36,269  
America if in year 9 to 12 for two

581  
00:25:34,618 --> 00:25:38,148  
students or we can win a couple of

582  
00:25:36,269 --> 00:25:40,558  
hundred dollars if you win your category

583  
00:25:38,148 --> 00:25:42,808  
that does inspire students obviously

584  
00:25:40,558 --> 00:25:44,428  
there is a perception in certain parts

585  
00:25:42,808 --> 00:25:46,108  
of the public certainly in the

586  
00:25:44,429 --> 00:25:47,730  
non-religious possible public that there

587  
00:25:46,108 --> 00:25:50,460  
is a contradiction between science and

588  
00:25:47,730 --> 00:25:52,048  
religion now obviously here that

589  
00:25:50,460 --> 00:25:54,269  
contradiction does not exist because

590  
00:25:52,048 --> 00:25:55,980  
your religious school with a very

591  
00:25:54,269 --> 00:25:57,929  
successful science program

592  
00:25:55,980 --> 00:25:59,130  
you want to talk about that I do agree

593  
00:25:57,929 --> 00:26:03,240  
in history there have been a big

594  
00:25:59,130 --> 00:26:05,520  
potential conflict you can just look at

595  
00:26:03,240 --> 00:26:07,950  
the Copernicus and all the time with a

596  
00:26:05,519 --> 00:26:13,650  
with the heliocentric and geocentric

597  
00:26:07,950 --> 00:26:16,200  
view but um we don't in our science

598  
00:26:13,650 --> 00:26:18,090  
curriculum put it heavy on that conflict

599

00:26:16,200 --> 00:26:21,569  
we will we have a quick on which we

600  
00:26:18,089 --> 00:26:25,619  
teach we if we if evolution is there

601  
00:26:21,569 --> 00:26:28,619  
will teach the theory of evolution we

602  
00:26:25,619 --> 00:26:31,829  
don't spend time giving necessarily our

603  
00:26:28,619 --> 00:26:33,928  
opinions how right or wrong it is we

604  
00:26:31,829 --> 00:26:36,329  
will definitely if there's loophole

605  
00:26:33,929 --> 00:26:39,570  
there's a gap in the evolution model

606  
00:26:36,329 --> 00:26:43,319  
would say that if there is if we talked

607  
00:26:39,569 --> 00:26:45,119  
about the we go back to the the earth

608  
00:26:43,319 --> 00:26:48,689  
being the center of the universe where

609  
00:26:45,119 --> 00:26:50,189  
the church was against science that's

610  
00:26:48,690 --> 00:26:55,500  
probably the biggest point in history

611  
00:26:50,190 --> 00:26:58,590  
where there was a conflict and and would

612  
00:26:55,500 --> 00:27:00,058  
say yeah the church in the Bible did

613  
00:26:58,589 --> 00:27:05,609

talk about the Sun going out of the

614

00:27:00,058 --> 00:27:06,928

earth and so but you can still both were

615

00:27:05,609 --> 00:27:10,798

correct in the way you know what I mean

616

00:27:06,929 --> 00:27:13,950

like the Bible might or not have laid it

617

00:27:10,798 --> 00:27:16,918

out this is how the universe is

618

00:27:13,950 --> 00:27:19,259

structured I mean it was to the people

619

00:27:16,919 --> 00:27:21,990

who was written to and the Sun obviously

620

00:27:19,259 --> 00:27:24,000

appears to go over was not saying that

621

00:27:21,990 --> 00:27:27,000

bob was wrong it's just that to the

622

00:27:24,000 --> 00:27:30,089

audience it was written it was logical

623

00:27:27,000 --> 00:27:38,119

you're not gonna so in terms of in a

624

00:27:30,089 --> 00:27:41,490

normal class situation we see that

625

00:27:38,119 --> 00:27:45,418

religion and science are not opposites

626

00:27:41,490 --> 00:27:48,660

we're very clear about that there may be

627

00:27:45,419 --> 00:27:50,630

ethical issues where science is kind of

628  
00:27:48,660 --> 00:27:53,220  
going the area which they shouldn't be

629  
00:27:50,630 --> 00:27:56,540  
it's going too far and it should leave

630  
00:27:53,220 --> 00:27:58,589  
things alone especially human life and

631  
00:27:56,539 --> 00:28:01,649  
obviously we don't not be happy with

632  
00:27:58,589 --> 00:28:05,609  
that but we don't see them as opposite

633  
00:28:01,650 --> 00:28:07,230  
of conflicting views maybe if I can just

634  
00:28:05,609 --> 00:28:08,490  
point out something you mentioned the

635  
00:28:07,230 --> 00:28:10,079  
son of the

636  
00:28:08,490 --> 00:28:11,789  
I'm going around the earth as long as

637  
00:28:10,079 --> 00:28:13,199  
you do not treat the Bible as a science

638  
00:28:11,789 --> 00:28:16,740  
book you do not expect you to actually

639  
00:28:13,200 --> 00:28:18,360  
explain the underlying scientific facts

640  
00:28:16,740 --> 00:28:19,920  
then I don't think that would

641  
00:28:18,359 --> 00:28:21,689  
necessarily be a problem you skirt you

642  
00:28:19,920 --> 00:28:25,950  
know I don't think it's a problem not at

643  
00:28:21,690 --> 00:28:27,600  
all like you get what this morning on

644  
00:28:25,950 --> 00:28:31,500  
the music port they talk about the

645  
00:28:27,599 --> 00:28:33,149  
permafrost that methane gas is leaking

646  
00:28:31,500 --> 00:28:37,650  
through the permafrost and that's

647  
00:28:33,150 --> 00:28:40,679  
another example of dangers of global

648  
00:28:37,650 --> 00:28:42,630  
warming but they made a phrase that said

649  
00:28:40,679 --> 00:28:45,450  
this has been the highest level of

650  
00:28:42,630 --> 00:28:48,450  
methane in Antarctica for the last 60

651  
00:28:45,450 --> 00:28:52,110  
million years and when I heard that I

652  
00:28:48,450 --> 00:28:54,090  
often have a question how they know how

653  
00:28:52,109 --> 00:28:57,689  
can they say that what about in the art

654  
00:28:54,089 --> 00:28:59,939  
of an ice age that that is where I would

655  
00:28:57,690 --> 00:29:01,500  
if I had that situation of class where

656

00:28:59,940 --> 00:29:05,400  
they watch a video and they make a

657  
00:29:01,500 --> 00:29:08,130  
comment which has no real evidence or

658  
00:29:05,400 --> 00:29:10,679  
measurement to go with it I say you need

659  
00:29:08,130 --> 00:29:13,050  
to be careful what you hear when those

660  
00:29:10,679 --> 00:29:17,570  
things are said and so we're also

661  
00:29:13,049 --> 00:29:20,759  
teaching students to discriminate are

662  
00:29:17,569 --> 00:29:23,069  
back from possible fact in our I mean

663  
00:29:20,759 --> 00:29:24,539  
Thank You rights your God for being with

664  
00:29:23,069 --> 00:29:27,200  
me under Skippy's out thank you are

665  
00:29:24,539 --> 00:29:27,200  
thank you very much

666  
00:29:33,549 --> 00:29:40,119  
this is Eugenie Scott National Center

667  
00:29:36,410 --> 00:29:44,660  
for Science Education you can find us at

668  
00:29:40,119 --> 00:29:46,579  
www CSC com come see us if you want to

669  
00:29:44,660 --> 00:29:48,830  
know anything about the creationism and

670  
00:29:46,579 --> 00:29:51,829

evolution conflict in the United States

671

00:29:48,829 --> 00:29:53,599

or more's the pity internationally these

672

00:29:51,829 --> 00:29:56,869

days we are a clearinghouse for

673

00:29:53,599 --> 00:29:59,539

information on this vexing but certainly

674

00:29:56,869 --> 00:30:01,959

very interesting problem come and find

675

00:29:59,539 --> 00:30:01,960

out more about

676

00:30:03,299 --> 00:30:07,809

can I get enough of euphoria with one in

677

00:30:06,009 --> 00:30:09,160

a million araneta fam and it's after six

678

00:30:07,809 --> 00:30:12,369

o'clock mark here on Thursday which

679

00:30:09,160 --> 00:30:14,710

means it is time for the skip kick tank

680

00:30:12,369 --> 00:30:18,250

good evening skeptics evening and good

681

00:30:14,710 --> 00:30:21,730

inning I don't believe it that's a good

682

00:30:18,250 --> 00:30:24,910

one I we have in the studio a very well

683

00:30:21,730 --> 00:30:27,370

renowned paleontologist dr. Paul Willis

684

00:30:24,910 --> 00:30:29,830

good afternoon how are ya very good and

685  
00:30:27,369 --> 00:30:31,869  
of course our regular skeptic dude mr.

686  
00:30:29,829 --> 00:30:33,970  
Richard song hello step how you doing

687  
00:30:31,869 --> 00:30:36,339  
out there really well as good nice of

688  
00:30:33,970 --> 00:30:38,559  
you to both drop in the studio and what

689  
00:30:36,339 --> 00:30:41,169  
do we have in store tonight with the

690  
00:30:38,559 --> 00:30:43,359  
skeptic tank well tonight we're going to

691  
00:30:41,170 --> 00:30:46,630  
be looking at the subject of evolution

692  
00:30:43,359 --> 00:30:48,459  
and creationism ah that's always a very

693  
00:30:46,630 --> 00:30:51,160  
very a bit of a contentious the

694  
00:30:48,460 --> 00:30:53,289  
contentious controversial the visual it

695  
00:30:51,160 --> 00:30:55,600  
shouldn't be actually but it is Eddie

696  
00:30:53,289 --> 00:30:57,879  
it's a debate that was one in science

697  
00:30:55,599 --> 00:31:01,599  
150 years ago and people still arguing

698  
00:30:57,880 --> 00:31:04,180  
it well no no the people that want to

699  
00:31:01,599 --> 00:31:06,730  
argue it are religious fundamentalists

700  
00:31:04,180 --> 00:31:09,009  
who find it offensive when reality

701  
00:31:06,730 --> 00:31:10,930  
clashes were their beliefs right if that

702  
00:31:09,009 --> 00:31:13,509  
hasn't got some people's backs up but I

703  
00:31:10,930 --> 00:31:15,160  
don't know we can always try a little

704  
00:31:13,509 --> 00:31:17,769  
bit harder yeah well essentially the

705  
00:31:15,160 --> 00:31:19,509  
debate was 150 years ago when Charles

706  
00:31:17,769 --> 00:31:21,609  
Darwin put out a blue origin of the

707  
00:31:19,509 --> 00:31:23,410  
species Robin I'm even add some

708  
00:31:21,609 --> 00:31:24,849  
scientists study so you say oh no no

709  
00:31:23,410 --> 00:31:27,490  
that's not even that might not be true

710  
00:31:24,849 --> 00:31:29,019  
and then growling issue again there

711  
00:31:27,490 --> 00:31:31,720  
there is an interesting book that came

712  
00:31:29,019 --> 00:31:33,970  
out a couple years ago called in six

713

00:31:31,720 --> 00:31:36,789  
days 50 scientists explain why they

714  
00:31:33,970 --> 00:31:38,079  
accept creationism and if you read that

715  
00:31:36,789 --> 00:31:39,609  
book there's a couple of things to

716  
00:31:38,079 --> 00:31:41,679  
notice first of all most of them are not

717  
00:31:39,609 --> 00:31:43,809  
buy orders so don't actually understand

718  
00:31:41,680 --> 00:31:45,789  
evolution yeah and that if you

719  
00:31:43,809 --> 00:31:47,379  
understand evolution and read at you

720  
00:31:45,789 --> 00:31:48,700  
it's quite obvious then don't really

721  
00:31:47,380 --> 00:31:50,080  
understand what's going on the other

722  
00:31:48,700 --> 00:31:52,259  
thing is is that they're all religious

723  
00:31:50,079 --> 00:31:54,970  
testimonials yeah they're all people who

724  
00:31:52,259 --> 00:31:57,190  
are working as scientists in various

725  
00:31:54,970 --> 00:31:59,680  
areas of science are computing or

726  
00:31:57,190 --> 00:32:00,970  
hydraulics and do things but the thing

727  
00:31:59,680 --> 00:32:03,000

is as the days of what they've sold

728

00:32:00,970 --> 00:32:05,670  
themselves on is

729

00:32:03,000 --> 00:32:09,569  
their belief in the Bible will not allow

730

00:32:05,670 --> 00:32:12,060  
them to do anything else hmm so they

731

00:32:09,569 --> 00:32:13,679  
know nothing about about about evolution

732

00:32:12,059 --> 00:32:16,589  
at all but they're still claiming that

733

00:32:13,680 --> 00:32:18,990  
they do which hold it yeah yeah that's

734

00:32:16,589 --> 00:32:22,289  
probably it in a nutshell yeah hasten

735

00:32:18,990 --> 00:32:24,750  
their cake oh we're getting in their 30

736

00:32:22,289 --> 00:32:26,670  
area hi folks oh yes indeed sir and you

737

00:32:24,750 --> 00:32:29,009  
as a paleontologist you are able to

738

00:32:26,670 --> 00:32:31,529  
share lots of compelling evidence of

739

00:32:29,009 --> 00:32:33,240  
course that over billions of years lots

740

00:32:31,529 --> 00:32:34,710  
of things happen with the different

741

00:32:33,240 --> 00:32:36,930  
life-forms on the planet it is one of

742  
00:32:34,710 --> 00:32:39,690  
the problems in arguing against

743  
00:32:36,930 --> 00:32:41,549  
creationists and that is that in order

744  
00:32:39,690 --> 00:32:44,850  
to actually understand the evidence

745  
00:32:41,549 --> 00:32:47,099  
against them hmm I mean I've spent like

746  
00:32:44,849 --> 00:32:48,990  
12 years at University doing an

747  
00:32:47,099 --> 00:32:51,689  
undergraduate degree and then a PhD

748  
00:32:48,990 --> 00:32:53,670  
going up there splitting rocks looking

749  
00:32:51,690 --> 00:32:56,250  
at the evidence firsthand there to

750  
00:32:53,670 --> 00:32:57,360  
evidence I don't like to bout have to

751  
00:32:56,250 --> 00:33:00,240  
turn around with people to say we'll

752  
00:32:57,359 --> 00:33:01,740  
look take it from me but but the thing

753  
00:33:00,240 --> 00:33:04,620  
is is that you know unless you've got

754  
00:33:01,740 --> 00:33:06,990  
this fair grasp on on the the basic

755  
00:33:04,619 --> 00:33:08,759  
science behind it which does take in a

756  
00:33:06,990 --> 00:33:11,549  
university degree to get under your belt

757  
00:33:08,759 --> 00:33:13,589  
and it can all sing a bit mystified yeah

758  
00:33:11,549 --> 00:33:16,619  
well I think sublimate may have a hard

759  
00:33:13,589 --> 00:33:19,169  
time comprehending the amount of time in

760  
00:33:16,619 --> 00:33:21,509  
the involved in evolution of our of

761  
00:33:19,170 --> 00:33:24,750  
where we are right now that millions or

762  
00:33:21,509 --> 00:33:26,339  
even billions of us yes i do i I have I

763  
00:33:24,750 --> 00:33:27,720  
have immense problems come in terms of

764  
00:33:26,339 --> 00:33:29,639  
those lengths of it so why not

765  
00:33:27,720 --> 00:33:31,680  
conveniently just make it seven days

766  
00:33:29,640 --> 00:33:33,990  
well the thing is is that I have a

767  
00:33:31,680 --> 00:33:36,210  
greater greater ease of disbelieving the

768  
00:33:33,990 --> 00:33:38,009  
claim to world's only saved six to ten

769  
00:33:36,210 --> 00:33:39,390  
thousand years old yeah for instance

770

00:33:38,009 --> 00:33:41,250  
where we're sitting right here in the

771  
00:33:39,390 --> 00:33:43,170  
middle of Sydney yeah we're sitting on

772  
00:33:41,250 --> 00:33:45,630  
top of about two kilometres of sandstone

773  
00:33:43,170 --> 00:33:47,730  
too and if you look at that sandstone

774  
00:33:45,630 --> 00:33:50,190  
you can work out how was laid down it

775  
00:33:47,730 --> 00:33:52,740  
was laid down in a river s3 and was laid

776  
00:33:50,190 --> 00:33:56,340  
down at a rate that was probably less

777  
00:33:52,740 --> 00:33:57,839  
than a meter every decade right across

778  
00:33:56,339 --> 00:34:00,089  
the whole basin in fact probably less

779  
00:33:57,839 --> 00:34:02,579  
than a meter every hundred years and see

780  
00:34:00,089 --> 00:34:05,879  
that you know many many thousands of

781  
00:34:02,579 --> 00:34:08,190  
years just in that bed two kilometers of

782  
00:34:05,880 --> 00:34:10,919  
sound so underneath that there's cold in

783  
00:34:08,190 --> 00:34:11,240  
order to make coal these coal beds our

784  
00:34:10,918 --> 00:34:13,309

own

785

00:34:11,239 --> 00:34:15,878

now a few feet thick but we know in

786

00:34:13,309 --> 00:34:18,469

order to make that cool you need to have

787

00:34:15,878 --> 00:34:20,089

swamps that were hundreds of feet thick

788

00:34:18,469 --> 00:34:21,799

that have been compressed yeah how long

789

00:34:20,090 --> 00:34:23,419

does it take to make that I think that

790

00:34:21,800 --> 00:34:25,940

there are rocks that have been folded up

791

00:34:23,418 --> 00:34:28,429

and have got life or evidence of sea

792

00:34:25,940 --> 00:34:30,110

life folded up in deny them here so the

793

00:34:28,429 --> 00:34:32,090

normal isn't it doesn't take long to

794

00:34:30,110 --> 00:34:34,309

realize you might not be able to come to

795

00:34:32,090 --> 00:34:35,629

terms with a million years with 10

796

00:34:34,309 --> 00:34:37,279

million years with a hundred million

797

00:34:35,628 --> 00:34:39,230

years but it doesn't take long to

798

00:34:37,280 --> 00:34:41,929

realize that the earth is a very old

799  
00:34:39,230 --> 00:34:44,960  
place and stuff was happening way back

800  
00:34:41,929 --> 00:34:46,970  
most definitely yes well well well well

801  
00:34:44,960 --> 00:34:49,820  
well we're getting into it now we have a

802  
00:34:46,969 --> 00:34:51,109  
scientist in the room yes we do I'm

803  
00:34:49,820 --> 00:34:53,269  
gonna find a little song it's Billy

804  
00:34:51,110 --> 00:34:54,980  
Piper's she's young Billy Piper's only

805  
00:34:53,269 --> 00:34:57,949  
yo she's only been around for what six

806  
00:34:54,980 --> 00:35:00,320  
or seven years I think I think you've

807  
00:34:57,949 --> 00:35:03,529  
ever Surrey rooms are 60 it's getting

808  
00:35:00,320 --> 00:35:05,180  
close it's something deep inside that's

809  
00:35:03,530 --> 00:35:08,800  
not something young person would be

810  
00:35:05,179 --> 00:35:08,799  
talking about it here we go

811  
00:35:15,179 --> 00:35:20,098  
we're back into the skeptic taglia poor

812  
00:35:17,550 --> 00:35:22,680  
Willis doctor or Willis and dr.

813  
00:35:20,099 --> 00:35:24,119  
Richardson oh thank you I just given you

814  
00:35:22,679 --> 00:35:25,858  
an honorary doctorate being promoted

815  
00:35:24,119 --> 00:35:27,630  
from many family the hell won't we give

816  
00:35:25,858 --> 00:35:29,460  
unto every one who's listens and is it

817  
00:35:27,630 --> 00:35:31,230  
yourself doctors focus ring up we'll

818  
00:35:29,460 --> 00:35:35,358  
give you an honorary doctorate at nfa a

819  
00:35:31,230 --> 00:35:37,588  
doctor in Neda homology now Paul you've

820  
00:35:35,358 --> 00:35:39,328  
you've obviously had a bit of fun over

821  
00:35:37,588 --> 00:35:41,519  
the years with you with the the

822  
00:35:39,329 --> 00:35:43,950  
creationists they've been trying to

823  
00:35:41,519 --> 00:35:46,469  
challenge all the evidence that you've

824  
00:35:43,949 --> 00:35:48,269  
been digging up over the last 12 15 20

825  
00:35:46,469 --> 00:35:49,739  
the thing is I don't actually come

826  
00:35:48,269 --> 00:35:53,400  
directly out and want to challenge you

827

00:35:49,739 --> 00:35:55,729  
personally now because it would be like

828  
00:35:53,400 --> 00:35:59,039  
pulling wings off of a fly to respond

829  
00:35:55,730 --> 00:36:00,869  
the thing is is that creationists do

830  
00:35:59,039 --> 00:36:03,179  
have a very well-organized system

831  
00:36:00,869 --> 00:36:07,200  
whereby they go round to country schools

832  
00:36:03,179 --> 00:36:08,730  
and country churches and put on these

833  
00:36:07,199 --> 00:36:10,769  
little seminars there's there's some

834  
00:36:08,730 --> 00:36:12,690  
regular features of them and one of them

835  
00:36:10,769 --> 00:36:15,150  
will be at the most outstanding one to

836  
00:36:12,690 --> 00:36:16,409  
me is that they generally run out of

837  
00:36:15,150 --> 00:36:19,170  
time and so they can't have any

838  
00:36:16,409 --> 00:36:21,239  
questions in the air right which is

839  
00:36:19,170 --> 00:36:22,680  
fortunate for them because you know

840  
00:36:21,239 --> 00:36:25,229  
there's so much of the stuff that can be

841  
00:36:22,679 --> 00:36:26,969

questioned sure now I have made a point

842

00:36:25,230 --> 00:36:29,969

over the years of when one of these is

843

00:36:26,969 --> 00:36:32,639

not too far from my home I will gladly

844

00:36:29,969 --> 00:36:36,509

go along and make a point of challenging

845

00:36:32,639 --> 00:36:39,088

them and forcing questions yeah the

846

00:36:36,510 --> 00:36:42,180

thing is the whole creation evolution

847

00:36:39,088 --> 00:36:43,529

discussion you've got to realize as that

848

00:36:42,179 --> 00:36:45,480

evolutionists you're never going to win

849

00:36:43,530 --> 00:36:48,089

you're up against people who are not

850

00:36:45,480 --> 00:36:51,659

interested about what is right and what

851

00:36:48,088 --> 00:36:54,690

is wrong it's a case of their whole life

852

00:36:51,659 --> 00:36:56,519

is unbounded is founded on a literal

853

00:36:54,690 --> 00:36:59,670

interpretation of the Bible and so

854

00:36:56,519 --> 00:37:01,769

therefore they can't begin to conceive

855

00:36:59,670 --> 00:37:03,900

that anything else might be grown now

856  
00:37:01,769 --> 00:37:07,108  
they can't the thing is what's important

857  
00:37:03,900 --> 00:37:09,599  
is is we're not out there to blow them

858  
00:37:07,108 --> 00:37:12,088  
out for that or to change creationists

859  
00:37:09,599 --> 00:37:13,890  
but if we don't challenge them they will

860  
00:37:12,088 --> 00:37:15,838  
win by default they will change other

861  
00:37:13,889 --> 00:37:18,480  
people exactly so they're actually going

862  
00:37:15,838 --> 00:37:20,969  
around that organizing seminars they

863  
00:37:18,480 --> 00:37:22,469  
have the creation science bus which

864  
00:37:20,969 --> 00:37:26,250  
tours are only

865  
00:37:22,469 --> 00:37:27,868  
and this this goes to may need to place

866  
00:37:26,250 --> 00:37:29,670  
the outside the major cities because

867  
00:37:27,869 --> 00:37:32,309  
most major cities have a strong

868  
00:37:29,670 --> 00:37:34,710  
anti-creationists movements I yourself

869  
00:37:32,309 --> 00:37:37,710  
and people from the various museums who

870  
00:37:34,710 --> 00:37:39,539  
will go out and challenge them at these

871  
00:37:37,710 --> 00:37:42,150  
sort of event will be the same creation

872  
00:37:39,539 --> 00:37:43,858  
science so this there's somehow saying

873  
00:37:42,150 --> 00:37:46,980  
that yes God did all this wonderful

874  
00:37:43,858 --> 00:37:49,348  
stuff is in in a what a different length

875  
00:37:46,980 --> 00:37:51,179  
of time you have the term creation

876  
00:37:49,349 --> 00:37:53,400  
science that they're using the word

877  
00:37:51,179 --> 00:37:54,809  
science right and straight away it gives

878  
00:37:53,400 --> 00:37:55,680  
people the wrong impression like this

879  
00:37:54,809 --> 00:37:57,750  
starter they're not talking about

880  
00:37:55,679 --> 00:37:59,309  
science at all at all there's nothing to

881  
00:37:57,750 --> 00:38:01,800  
do with science but that they use

882  
00:37:59,309 --> 00:38:04,889  
designs now use scientific term yeah and

883  
00:38:01,800 --> 00:38:06,599  
the giveaway point is that when you

884

00:38:04,889 --> 00:38:09,449  
actually go along to a creationist

885  
00:38:06,599 --> 00:38:11,730  
meeting they don't talk about the

886  
00:38:09,449 --> 00:38:13,379  
evidence in favor of creationism because

887  
00:38:11,730 --> 00:38:16,230  
there is not there isn't what they try

888  
00:38:13,380 --> 00:38:17,970  
and do is attack the ability revolution

889  
00:38:16,230 --> 00:38:19,440  
now and they're not really just

890  
00:38:17,969 --> 00:38:22,230  
attacking evolution of taking science

891  
00:38:19,440 --> 00:38:24,300  
they will attack geology we just really

892  
00:38:22,230 --> 00:38:26,760  
got nothing to do with evolution but

893  
00:38:24,300 --> 00:38:29,250  
they will attack geology because it

894  
00:38:26,760 --> 00:38:31,050  
contradicts their worldview and they

895  
00:38:29,250 --> 00:38:33,480  
attack physics they say things like the

896  
00:38:31,050 --> 00:38:35,369  
speed of light is slowing down well hang

897  
00:38:33,480 --> 00:38:37,740  
on no it's none of the great constants

898  
00:38:35,369 --> 00:38:40,108

of the universe they will say that the

899

00:38:37,739 --> 00:38:41,848

second law of thermodynamics precludes

900

00:38:40,108 --> 00:38:44,219

evolution would they obviously don't

901

00:38:41,849 --> 00:38:45,990

understand some basic physics such as

902

00:38:44,219 --> 00:38:47,519

the second or third of the night I don't

903

00:38:45,989 --> 00:38:49,169

want to get into the nitty-gritty the

904

00:38:47,519 --> 00:38:51,059

argument life but that's what I doing

905

00:38:49,170 --> 00:38:52,500

yep they're having a full-out onslaught

906

00:38:51,059 --> 00:38:54,779

against all of science not just

907

00:38:52,500 --> 00:38:56,880

evolution because I thought that some

908

00:38:54,780 --> 00:38:59,190

some people that were taking the Bible

909

00:38:56,880 --> 00:39:00,510

literally were beginning to sort of turn

910

00:38:59,190 --> 00:39:02,880

come around a little bit and start to

911

00:39:00,510 --> 00:39:04,380

say well okay well it wasn't seven days

912

00:39:02,880 --> 00:39:08,130

that the basic concept was it was

913  
00:39:04,380 --> 00:39:10,440  
created by God there are reformed what

914  
00:39:08,130 --> 00:39:13,619  
are they called theistic ever be a stick

915  
00:39:10,440 --> 00:39:16,800  
evolution cos they they believe God sort

916  
00:39:13,619 --> 00:39:19,680  
of directed evolution look the thing is

917  
00:39:16,800 --> 00:39:21,690  
is that there's no evidence for man and

918  
00:39:19,679 --> 00:39:24,000  
science is based on evidence you know

919  
00:39:21,690 --> 00:39:26,190  
the reason why I accept evolution is

920  
00:39:24,000 --> 00:39:28,139  
there is the explanation to why we're

921  
00:39:26,190 --> 00:39:30,179  
here on the face of the earth is because

922  
00:39:28,139 --> 00:39:32,608  
when I go out and I split the rocks open

923  
00:39:30,179 --> 00:39:33,539  
that patterns that I see in the fossils

924  
00:39:32,608 --> 00:39:36,059  
and Matt

925  
00:39:33,539 --> 00:39:37,800  
what ought to be there if life has

926  
00:39:36,059 --> 00:39:41,549  
changed fruit too short over here time

927  
00:39:37,800 --> 00:39:43,110  
but still changing through time yeah is

928  
00:39:41,550 --> 00:39:45,780  
the only thing that's determining those

929  
00:39:43,110 --> 00:39:48,539  
changes there's environmental things

930  
00:39:45,780 --> 00:39:51,120  
always because that's what yeah when you

931  
00:39:48,539 --> 00:39:53,340  
look at the actual design of creatures

932  
00:39:51,119 --> 00:39:54,869  
we've got a skeleton it's like my god

933  
00:39:53,340 --> 00:39:56,039  
that's that is pretty amazing you so

934  
00:39:54,869 --> 00:39:58,049  
remember that what we're talking about

935  
00:39:56,039 --> 00:40:00,059  
before in the time scale involved that's

936  
00:39:58,050 --> 00:40:02,070  
right and even though long I'm flattered

937  
00:40:00,059 --> 00:40:04,110  
that's right there's another thing to

938  
00:40:02,070 --> 00:40:06,539  
there if you take it backwards a step

939  
00:40:04,110 --> 00:40:09,150  
and say okay so you're a perfect design

940  
00:40:06,539 --> 00:40:10,949  
and you sort of think well mainly this

941

00:40:09,150 --> 00:40:12,809  
did there must be of God behind better

942  
00:40:10,949 --> 00:40:14,489  
design the thing is is that most cases

943  
00:40:12,809 --> 00:40:16,170  
that you put up from the biological

944  
00:40:14,489 --> 00:40:18,269  
world of supposed perfect design bring

945  
00:40:16,170 --> 00:40:20,639  
ain't that good not perfect human eye is

946  
00:40:18,269 --> 00:40:22,530  
not a perfect way of seeing the world if

947  
00:40:20,639 --> 00:40:24,750  
you were God and you would have sit down

948  
00:40:22,530 --> 00:40:26,730  
from scratch and decide and I you would

949  
00:40:24,750 --> 00:40:28,110  
not come up with the design of hey you

950  
00:40:26,730 --> 00:40:29,730  
know and you probably wouldn't come up

951  
00:40:28,110 --> 00:40:31,829  
with the millions of different creatures

952  
00:40:29,730 --> 00:40:34,050  
that are on this earth or eating each

953  
00:40:31,829 --> 00:40:36,360  
other and go my banker how come God is

954  
00:40:34,050 --> 00:40:38,789  
so fascinated with beetles but not so

955  
00:40:36,360 --> 00:40:41,039

you know there's there are so many of

956

00:40:38,789 --> 00:40:42,690

them any answers well I mean the thing

957

00:40:41,039 --> 00:40:44,820

is is that there's no argument one way

958

00:40:42,690 --> 00:40:46,829

or the other under creationism as to why

959

00:40:44,820 --> 00:40:49,350

you would have millions of species of

960

00:40:46,829 --> 00:40:52,619

ants bacteria and an evolution it makes

961

00:40:49,349 --> 00:40:55,019

perfect sense right it is it makes

962

00:40:52,619 --> 00:40:56,880

matching a pattern another a good test

963

00:40:55,019 --> 00:40:58,860

if I can just burn this one it does this

964

00:40:56,880 --> 00:41:00,780

one comes from paleontology for a long

965

00:40:58,860 --> 00:41:02,190

time the creationist has been saying

966

00:41:00,780 --> 00:41:05,070

well you know something this complicated

967

00:41:02,190 --> 00:41:06,630

as a bird's wing like half a wings not

968

00:41:05,070 --> 00:41:08,610

going to work so you can't have half a

969

00:41:06,630 --> 00:41:10,380

bird's wing and so therefore you

970  
00:41:08,610 --> 00:41:12,030  
evolutionists show me half a bird's wing

971  
00:41:10,380 --> 00:41:15,900  
and I believe that they evolved from

972  
00:41:12,030 --> 00:41:17,790  
something else yep only in 1999 caught

973  
00:41:15,900 --> 00:41:21,539  
it tricks was found in China it's a

974  
00:41:17,789 --> 00:41:24,269  
small dinosaur with hards wing it is the

975  
00:41:21,539 --> 00:41:25,909  
biggest it is like God's on our side is

976  
00:41:24,269 --> 00:41:29,389  
actually giving us all the goodness

977  
00:41:25,909 --> 00:41:32,460  
hallelujah is the swagger to these guys

978  
00:41:29,389 --> 00:41:35,549  
creators the hell and unlike you know

979  
00:41:32,460 --> 00:41:37,139  
dr. then they say well okay so no it's a

980  
00:41:35,550 --> 00:41:38,940  
bird it's lost its you know that's this

981  
00:41:37,139 --> 00:41:40,980  
long to swing at the time he said

982  
00:41:38,940 --> 00:41:42,929  
feedback if their mutant because like

983  
00:41:40,980 --> 00:41:44,369  
it's also got a reptiles tail it's got a

984  
00:41:42,929 --> 00:41:45,899  
reptile skull it's got all these

985  
00:41:44,369 --> 00:41:46,339  
dinosaur features if it didn't have a

986  
00:41:45,900 --> 00:41:48,680  
pen

987  
00:41:46,340 --> 00:41:51,170  
and we wouldn't know that it was a dart

988  
00:41:48,679 --> 00:41:52,190  
little vague and further finna do so all

989  
00:41:51,170 --> 00:41:54,349  
those people out there when the

990  
00:41:52,190 --> 00:41:56,150  
Christian Science bus comes your way the

991  
00:41:54,349 --> 00:41:58,219  
creation science I creation creative

992  
00:41:56,150 --> 00:41:59,930  
innovation for creation let's not put

993  
00:41:58,219 --> 00:42:01,759  
the word sites in there let's just take

994  
00:41:59,929 --> 00:42:03,799  
that away from when the creationist bus

995  
00:42:01,760 --> 00:42:05,630  
comes your way get out your eggs and

996  
00:42:03,800 --> 00:42:09,920  
tell them yes it's like what attracts

997  
00:42:05,630 --> 00:42:11,809  
you swine good into thing okay is amber

998

00:42:09,920 --> 00:42:16,730  
sun shell with running song in the

999  
00:42:11,809 --> 00:42:18,259  
skeptical tank the big exit with PJ Harvey

1000  
00:42:16,730 --> 00:42:20,030  
here in an event stiffened with you till

1001  
00:42:18,260 --> 00:42:21,440  
seven o'clock and we're in the middle of

1002  
00:42:20,030 --> 00:42:22,730  
a skeptical tag actually coming to the

1003  
00:42:21,440 --> 00:42:25,519  
tail hinder but we're draining the tank

1004  
00:42:22,730 --> 00:42:26,719  
and getting this even as we speak we're

1005  
00:42:25,519 --> 00:42:29,239  
shoving all sorts of things in it

1006  
00:42:26,719 --> 00:42:30,859  
solvents to try and dry it up and we

1007  
00:42:29,239 --> 00:42:32,869  
have gotten together look let me plug

1008  
00:42:30,860 --> 00:42:34,789  
the leak all right plug that leak I will

1009  
00:42:32,869 --> 00:42:37,849  
actually I you can plug anything you

1010  
00:42:34,789 --> 00:42:39,739  
like look like the skeptics skeptics in

1011  
00:42:37,849 --> 00:42:41,360  
fact a couple of people would like to

1012  
00:42:39,739 --> 00:42:43,849

plug the skylight explore the way I

1013

00:42:41,360 --> 00:42:45,410

believe it here creationist especially

1014

00:42:43,849 --> 00:42:48,710

head right that man that's right yeah

1015

00:42:45,409 --> 00:42:50,059

look I work at the ABC in the science

1016

00:42:48,710 --> 00:42:53,750

unit and if you want to check out the

1017

00:42:50,059 --> 00:42:57,949

sort of stuff we get up to go to ww ABC

1018

00:42:53,750 --> 00:42:59,599

met a you / science and you'll find

1019

00:42:57,949 --> 00:43:01,609

catalyst which is a program i work on

1020

00:42:59,599 --> 00:43:03,650

radio national we've got the science

1021

00:43:01,610 --> 00:43:05,599

show on earth beaten all sorts of good

1022

00:43:03,650 --> 00:43:07,940

is on there if you got a scientific

1023

00:43:05,599 --> 00:43:09,199

leaning it able slice to contact ABC

1024

00:43:07,940 --> 00:43:12,440

doesn't good stuff with science there

1025

00:43:09,199 --> 00:43:14,149

babe well they try to thank they do this

1026

00:43:12,440 --> 00:43:15,170

I'd send you today we do what we can do

1027  
00:43:14,150 --> 00:43:17,030  
as camera lights in tonight that's

1028  
00:43:15,170 --> 00:43:20,269  
pretty good still eight cents a day here

1029  
00:43:17,030 --> 00:43:23,510  
now now Richard you've you just came

1030  
00:43:20,269 --> 00:43:25,400  
back from a water divining Chalabi gear

1031  
00:43:23,510 --> 00:43:26,540  
I'm in one month i'm in india the next

1032  
00:43:25,400 --> 00:43:29,180  
month i'm in the high country of

1033  
00:43:26,539 --> 00:43:31,699  
victoria a little place called meta meta

1034  
00:43:29,179 --> 00:43:33,289  
one yeah wonderful little village but

1035  
00:43:31,699 --> 00:43:35,059  
every year they have the mighty mitr

1036  
00:43:33,289 --> 00:43:37,550  
master which is a big cattle and horse

1037  
00:43:35,059 --> 00:43:39,590  
and wood chopping show yeah yeehaw and

1038  
00:43:37,550 --> 00:43:41,990  
the local skeptics put on a great water

1039  
00:43:39,590 --> 00:43:44,990  
divining or water dousing challenge okay

1040  
00:43:41,989 --> 00:43:46,969  
so i went along this year partly to have

1041  
00:43:44,989 --> 00:43:48,739  
a look and I'm also putting together a

1042  
00:43:46,969 --> 00:43:51,199  
little documentary about it okay

1043  
00:43:48,739 --> 00:43:53,029  
wonderful and so 30 water divine is

1044  
00:43:51,199 --> 00:43:53,879  
running around a tennis court with what

1045  
00:43:53,030 --> 00:43:55,860  
will rods

1046  
00:43:53,880 --> 00:43:57,769  
ones and pendulums and all sorts of

1047  
00:43:55,860 --> 00:44:00,180  
things waiving all around the place and

1048  
00:43:57,769 --> 00:44:02,369  
now trying to win the hundred thousand

1049  
00:44:00,179 --> 00:44:04,500  
dollars is that right there's \$100,000

1050  
00:44:02,369 --> 00:44:08,130  
on this case I think 110 thousand

1051  
00:44:04,500 --> 00:44:09,840  
dollars up for grab GST I don't know

1052  
00:44:08,130 --> 00:44:13,349  
we're all skeptical about that I hacker

1053  
00:44:09,840 --> 00:44:15,210  
and well sadly for the diviners although

1054  
00:44:13,349 --> 00:44:16,949  
beforehand they were predicting a

1055

00:44:15,210 --> 00:44:19,980  
hundred percent success rate oh

1056  
00:44:16,949 --> 00:44:22,079  
absolutely ah strangely enough they

1057  
00:44:19,980 --> 00:44:24,780  
their results at the end of the day fall

1058  
00:44:22,079 --> 00:44:26,250  
he fell exactly as per chance as per

1059  
00:44:24,780 --> 00:44:29,070  
chance much better than tossing a coin

1060  
00:44:26,250 --> 00:44:31,789  
so they completely failed no water was

1061  
00:44:29,070 --> 00:44:34,830  
divined well water was divine but

1062  
00:44:31,789 --> 00:44:37,079  
overall they failed yes right and i

1063  
00:44:34,829 --> 00:44:38,909  
guess i guess that even though they they

1064  
00:44:37,079 --> 00:44:40,590  
probably like to say they got one out of

1065  
00:44:38,909 --> 00:44:42,269  
three or something is that way what do

1066  
00:44:40,590 --> 00:44:45,390  
you do you had some empty aware there

1067  
00:44:42,269 --> 00:44:47,909  
were 25 milk but plastic milk bottles

1068  
00:44:45,389 --> 00:44:50,039  
okay wrapped in paper and plastic so you

1069  
00:44:47,909 --> 00:44:53,159

couldn't tell what was inside right some

1070

00:44:50,039 --> 00:44:54,929

had water and some had sand ok and they

1071

00:44:53,159 --> 00:44:56,460

ran around and their rods will react and

1072

00:44:54,929 --> 00:44:58,109

say right this one's got water and their

1073

00:44:56,460 --> 00:45:01,440

rods would not react to the next one

1074

00:44:58,110 --> 00:45:02,789

they say right that's got sand and as I

1075

00:45:01,440 --> 00:45:04,170

said the results at the end of the day

1076

00:45:02,789 --> 00:45:05,880

we're like if you walked around and

1077

00:45:04,170 --> 00:45:08,159

tossed a coin over each one you'd get

1078

00:45:05,880 --> 00:45:10,559

similar it's also the dowsers their guys

1079

00:45:08,159 --> 00:45:13,739

so all you douse is out there forget it

1080

00:45:10,559 --> 00:45:15,570

drop it well give it up well until they

1081

00:45:13,739 --> 00:45:17,579

can come to us and actually demonstrates

1082

00:45:15,570 --> 00:45:19,440

there is such a thing as dowsing for

1083

00:45:17,579 --> 00:45:20,909

water or anything else we just have to

1084  
00:45:19,440 --> 00:45:22,440  
take it as another funny cleaning it

1085  
00:45:20,909 --> 00:45:23,969  
don't give it up just keep coming back

1086  
00:45:22,440 --> 00:45:25,440  
to the skeptics cool someone's got to

1087  
00:45:23,969 --> 00:45:29,599  
get it soon all right if I all day will

1088  
00:45:25,440 --> 00:45:32,010  
vote on a millionth person I think yeah

1089  
00:45:29,599 --> 00:45:33,119  
wonderful stuff and that will dr. Boris

1090  
00:45:32,010 --> 00:45:35,190  
think it's been absolutely fantastic

1091  
00:45:33,119 --> 00:45:37,319  
having you in having a real doctor a

1092  
00:45:35,190 --> 00:45:39,269  
real paleontologist or someone that can

1093  
00:45:37,320 --> 00:45:40,900  
hold off for someone who's got a bone to

1094  
00:45:39,269 --> 00:45:45,039  
pick with

1095  
00:45:40,900 --> 00:45:46,210  
with the creationist and there's only

1096  
00:45:45,039 --> 00:45:47,710  
eight people out there that if you see

1097  
00:45:46,210 --> 00:45:50,139  
the Croatia starts coming along just

1098  
00:45:47,710 --> 00:45:52,929  
just stay away from it all other Nordic

1099  
00:45:50,139 --> 00:45:55,119  
reckons cause if tricks that is at the

1100  
00:45:52,929 --> 00:45:56,769  
heart bird or look just for eggs what

1101  
00:45:55,119 --> 00:45:58,630  
and don't forget what came first the

1102  
00:45:56,769 --> 00:46:01,509  
chicken or the egg egg laying reptiles

1103  
00:45:58,630 --> 00:46:02,890  
gave evolved into birds so definitely

1104  
00:46:01,510 --> 00:46:06,340  
the eggs came long before the chickens

1105  
00:46:02,889 --> 00:46:08,109  
right the years the annids official fan

1106  
00:46:06,340 --> 00:46:10,300  
okay well thanks guys been a wonderful

1107  
00:46:08,110 --> 00:46:12,160  
skeptic take this week back into the

1108  
00:46:10,300 --> 00:46:13,720  
music again ray listeners this is st.

1109  
00:46:12,159 --> 00:46:24,489  
lunatics batter up we'll see you next

1110  
00:46:13,719 --> 00:46:26,589  
week goodbye astronomy cast it takes a

1111  
00:46:24,489 --> 00:46:28,599  
fact space journey through the cosmos as

1112

00:46:26,590 --> 00:46:31,000  
it offers listeners weekly discussions

1113  
00:46:28,599 --> 00:46:33,759  
on astronomical topics ranging from

1114  
00:46:31,000 --> 00:46:36,309  
planets to cosmology hosted by Fraser

1115  
00:46:33,760 --> 00:46:37,720  
Cain of Universe Today and myself dr.

1116  
00:46:36,309 --> 00:46:40,389  
Pamela gave southern illinois university

1117  
00:46:37,719 --> 00:46:42,250  
edwardsville this show brings the

1118  
00:46:40,389 --> 00:46:44,710  
questions of an avid astronomy lover

1119  
00:46:42,250 --> 00:46:46,809  
directly to an astronomer together

1120  
00:46:44,710 --> 00:46:48,340  
Fraser and I explore what is known and

1121  
00:46:46,809 --> 00:46:51,099  
being discovered about the universe

1122  
00:46:48,340 --> 00:46:53,170  
around us join us each week as we take a

1123  
00:46:51,099 --> 00:46:56,730  
fact space journey through the cosmos at

1124  
00:46:53,170 --> 00:46:56,730  
astronomy cast calm

1125  
00:47:09,199 --> 00:47:15,239  
thank you for listening to this episode

1126  
00:47:11,849 --> 00:47:18,719

of the skeptic zone next week I hope we

1127

00:47:15,239 --> 00:47:21,059

have our think tank back again and thank

1128

00:47:18,719 --> 00:47:23,699

you all so very much to those people who

1129

00:47:21,059 --> 00:47:26,340

subscribe or donate to the skeptic zone

1130

00:47:23,699 --> 00:47:30,149

to help us keep the show online and

1131

00:47:26,340 --> 00:47:31,890

hopefully entertaining so on till our

1132

00:47:30,150 --> 00:47:38,700

next episode this is Richard Saunders

1133

00:47:31,889 --> 00:47:41,099

signing off from Sydney Australia you've

1134

00:47:38,699 --> 00:47:45,689

been listening to the skeptic zone visit

1135

00:47:41,099 --> 00:47:48,179

our website at [www.skeptics on TV](http://www.skepticsontv.com) for

1136

00:47:45,690 --> 00:47:50,840

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1137

00:47:48,179 --> 00:47:50,839

reports

1138

00:47:51,108 --> 00:47:55,489

skin

1139

00:47:53,460 --> 00:47:55,490

Oh

1140

00:48:02,030 --> 00:48:04,060

Oh

1141

00:48:09,150 --> 00:48:11,210

you