

1
00:00:17,199 --> 00:00:25,490
welcome to shattered reality with your

2
00:00:20,689 --> 00:00:28,519
hosts Kate Valentine and furs prepare to

3
00:00:25,489 --> 00:00:34,420
have your paradigm shifted in the truths

4
00:00:28,519 --> 00:00:37,460
questioned and now shattered reality

5
00:00:34,420 --> 00:00:40,929
well hi hi ferocious and here we are

6
00:00:37,460 --> 00:00:43,489
again yes Kate here we are

7
00:00:40,929 --> 00:00:48,859
here we are at shattered reality and

8
00:00:43,488 --> 00:00:53,929
today is May 9th 2017 got a slate that

9
00:00:48,859 --> 00:00:57,649
that time and place and we have a really

10
00:00:53,929 --> 00:01:00,229
really very very interesting show we

11
00:00:57,649 --> 00:01:03,109
love to present edge science here on

12
00:01:00,229 --> 00:01:06,408
channel reality because that's what our

13
00:01:03,109 --> 00:01:10,879
podcast is really all about is is edge

14
00:01:06,409 --> 00:01:13,820
science and this is a subject which is a

15
00:01:10,879 --> 00:01:17,810
particular interest to me and I've

16
00:01:13,819 --> 00:01:21,158
written a number of kind of layman's

17
00:01:17,810 --> 00:01:24,829
sort of thoughts about the study of

18
00:01:21,159 --> 00:01:26,659
panspermia as you know on my on my blog

19
00:01:24,829 --> 00:01:32,719
and we've discussed it a little bit on

20
00:01:26,659 --> 00:01:36,229
the webcast here so today we have dr.

21
00:01:32,719 --> 00:01:39,798
Milton Wainwright well professor Milton

22
00:01:36,228 --> 00:01:41,840
Wainwright okay PhD as a doctor of the

23
00:01:39,799 --> 00:01:43,909
University of Sheffield I think that

24
00:01:41,840 --> 00:01:45,950
they title things differently over there

25
00:01:43,909 --> 00:01:52,189
in the UK but I see that's what we have

26
00:01:45,950 --> 00:01:55,450
for today and he has been a person who

27
00:01:52,188 --> 00:02:00,199
has worked with one of my favorites

28
00:01:55,450 --> 00:02:03,950
Chandra Wickramasinghe so we have him

29

00:02:00,200 --> 00:02:05,359
here on a Skype line right now what

30
00:02:03,950 --> 00:02:08,688
would you like to how would you like to

31
00:02:05,359 --> 00:02:11,900
be spoken to how shall we call you today

32
00:02:08,688 --> 00:02:13,519
yeah just called me Milton well that's a

33
00:02:11,900 --> 00:02:15,528
very friendly answer and thank you

34
00:02:13,519 --> 00:02:20,580
because art art podcast is very

35
00:02:15,528 --> 00:02:22,229
conversational it's 10:00

36
00:02:20,580 --> 00:02:25,070
the evening to me so I may be a little

37
00:02:22,229 --> 00:02:27,750
bit drowsy oh I hope not

38
00:02:25,069 --> 00:02:31,169
we're sorry to keep you up but we're

39
00:02:27,750 --> 00:02:38,159
absolutely thrilled to have you on the

40
00:02:31,169 --> 00:02:43,199
podcast absolutely thrilled you started

41
00:02:38,159 --> 00:02:48,599
out as a botanist you were a small-town

42
00:02:43,199 --> 00:02:53,459
or semi-rural young man in it in a town

43
00:02:48,599 --> 00:02:56,639

in western England in the UK is that

44

00:02:53,460 --> 00:02:59,159

correct yeah I am I was brought up in a

45

00:02:56,639 --> 00:03:03,000

coal mining village in South Yorkshire

46

00:02:59,159 --> 00:03:04,469

which is the north of England and I was

47

00:03:03,000 --> 00:03:06,900

very interested in natural history as a

48

00:03:04,469 --> 00:03:09,209

kid I used to roam the fields and

49

00:03:06,900 --> 00:03:11,789

looking for insects caterpillars and and

50

00:03:09,209 --> 00:03:14,009

flowers and things and I had the great

51

00:03:11,789 --> 00:03:18,359

privilege to go to University to study

52

00:03:14,009 --> 00:03:21,959

botany that was way back in 68 1968 so

53

00:03:18,360 --> 00:03:24,989

from then I became a microbiology

54

00:03:21,959 --> 00:03:27,599

studying bacteria well with a background

55

00:03:24,989 --> 00:03:29,969

like that it's no wonder that you expect

56

00:03:27,599 --> 00:03:31,939

life-forms to exist other than on this

57

00:03:29,969 --> 00:03:35,039

planet I mean look at the plethora of

58
00:03:31,939 --> 00:03:37,769
life-forms you find just in a small walk

59
00:03:35,039 --> 00:03:41,340
through the woods or a drop of seawater

60
00:03:37,769 --> 00:03:43,709
or lake water I guess that's right I

61
00:03:41,340 --> 00:03:46,500
used to take little drops of pond water

62
00:03:43,709 --> 00:03:49,110
and look at the Paramecium the amoeba

63
00:03:46,500 --> 00:03:51,629
and so on and so I was really hooked

64
00:03:49,110 --> 00:03:53,190
from a very early age you know and I've

65
00:03:51,629 --> 00:03:53,639
kind of been a biologist all my life

66
00:03:53,189 --> 00:03:57,300
really

67
00:03:53,639 --> 00:03:59,458
what strange dad great because I suppose

68
00:03:57,300 --> 00:04:00,959
from a coal mining community you know

69
00:03:59,459 --> 00:04:02,789
not many kids were interested in these

70
00:04:00,959 --> 00:04:04,409
things but I I seem to naturally

71
00:04:02,789 --> 00:04:06,599
gravitate to Natural History

72
00:04:04,409 --> 00:04:09,209
I was just wondering did you ever note

73
00:04:06,599 --> 00:04:11,879
of any fossils in any other call that

74
00:04:09,209 --> 00:04:14,009
came out in fact I have a couple of

75
00:04:11,879 --> 00:04:17,069
these I didn't see any in fact I did I

76
00:04:14,009 --> 00:04:18,959
tell I tell fibs I saw a few ferns when

77
00:04:17,069 --> 00:04:21,779
we were kids when we we have to burn the

78
00:04:18,959 --> 00:04:23,970
coal of course lutely and I couldn't

79
00:04:21,779 --> 00:04:26,519
remember seeing some large ferns in the

80
00:04:23,970 --> 00:04:29,490
coal yeah and the cold dated back to God

81
00:04:26,519 --> 00:04:32,038
knows when so really young men I mean

82
00:04:29,490 --> 00:04:33,660
this planet if you had looked back 350

83
00:04:32,038 --> 00:04:36,120
million years ago you

84
00:04:33,660 --> 00:04:39,660
thought you're on an alien planet it was

85
00:04:36,120 --> 00:04:42,240
so different yeah so boy so you have

86

00:04:39,660 --> 00:04:44,610
quite a background in just the wide

87
00:04:42,240 --> 00:04:46,889
dispersion of various life-forms and I

88
00:04:44,610 --> 00:04:50,629
think that as we get into the podcast

89
00:04:46,889 --> 00:04:54,120
you are familiarity with these very tiny

90
00:04:50,629 --> 00:04:58,620
microbial and sub microbial life forms

91
00:04:54,120 --> 00:05:00,629
it begins to play very importantly in

92
00:04:58,620 --> 00:05:04,860
your story but let's not get ahead of

93
00:05:00,629 --> 00:05:08,370
ourselves what I would like to do is to

94
00:05:04,860 --> 00:05:12,270
talk about first of all exactly what

95
00:05:08,370 --> 00:05:16,560
panspermia is and how that differs from

96
00:05:12,269 --> 00:05:18,569
another term which is pan psychism that

97
00:05:16,560 --> 00:05:21,480
everything is conscious in the universe

98
00:05:18,569 --> 00:05:23,939
including stars so I think that pan

99
00:05:21,480 --> 00:05:26,970
psychism is what drew me initially to

100
00:05:23,939 --> 00:05:29,509

the idea of panspermia so could you give

101

00:05:26,970 --> 00:05:34,200

us an expert's view on what exactly

102

00:05:29,509 --> 00:05:36,349

panspermia and neo panspermia are Yeah

103

00:05:34,199 --> 00:05:39,899

right I don't know about the other term

104

00:05:36,350 --> 00:05:41,640

about being consciousness but pet spermy

105

00:05:39,899 --> 00:05:43,560

is a very straightforward idea most

106

00:05:41,639 --> 00:05:46,110

scientists believe that life on earth

107

00:05:43,560 --> 00:05:48,689

began here that chemicals got together

108

00:05:46,110 --> 00:05:50,340

in a warm pond as Darwin would say and

109

00:05:48,689 --> 00:05:53,009

these chemicals got together to make

110

00:05:50,339 --> 00:05:55,259

proto life early life and then this

111

00:05:53,009 --> 00:05:58,649

early life became microbial and then

112

00:05:55,259 --> 00:06:00,060

evolved into humans and so on we we all

113

00:05:58,649 --> 00:06:03,239

know this story this is called the

114

00:06:00,060 --> 00:06:04,769

chemical theory of evolution now people

115
00:06:03,240 --> 00:06:06,840
are interested in panspermia said well

116
00:06:04,769 --> 00:06:08,729
this didn't happen on earth necessarily

117
00:06:06,839 --> 00:06:11,819
it could have happened here but the main

118
00:06:08,730 --> 00:06:15,270
source of life was from outer space that

119
00:06:11,819 --> 00:06:17,849
organisms are proto organisms came from

120
00:06:15,269 --> 00:06:21,029
elsewhere and they were continually

121
00:06:17,850 --> 00:06:23,490
coming in all the time but obviously the

122
00:06:21,029 --> 00:06:26,149
her new hot now as soon as the earth

123
00:06:23,490 --> 00:06:29,759
cooled then these organisms could

124
00:06:26,149 --> 00:06:33,870
develop on earth and spread multiply and

125
00:06:29,759 --> 00:06:36,209
then they evolved into the full range of

126
00:06:33,870 --> 00:06:40,009
life on Earth so basically it's saying

127
00:06:36,209 --> 00:06:42,719
that life came from space okay but

128
00:06:40,009 --> 00:06:45,509
microbial sorts of life we're not

129
00:06:42,720 --> 00:06:47,490
speaking Heroes fully developed aliens

130
00:06:45,509 --> 00:06:48,719
or anything

131
00:06:47,490 --> 00:06:49,949
we're not talking about aliens now we're

132
00:06:48,720 --> 00:06:53,430
talking about a straightforward

133
00:06:49,949 --> 00:06:55,169
scientific theory but it just sort of

134
00:06:53,430 --> 00:06:57,150
begs the question though does it because

135
00:06:55,168 --> 00:06:58,469
I mean whether life began here or

136
00:06:57,149 --> 00:07:02,909
somewhere else

137
00:06:58,470 --> 00:07:05,610
it still began and philosophical point

138
00:07:02,910 --> 00:07:08,009
you know the human mind is wired to

139
00:07:05,610 --> 00:07:09,780
think in terms of beginnings and ends so

140
00:07:08,009 --> 00:07:11,848
quite naturally we think of life must

141
00:07:09,779 --> 00:07:15,029
beginning mm-hmm now it may well be that

142
00:07:11,848 --> 00:07:16,319
life was eternal now don't want to be

143

00:07:15,029 --> 00:07:18,839
ripped there this is not a religious

144
00:07:16,319 --> 00:07:22,259
notion it's just a philosophical notion

145
00:07:18,839 --> 00:07:23,489
that maybe life always was but we can't

146
00:07:22,259 --> 00:07:26,460
kind of get our minds around that

147
00:07:23,490 --> 00:07:28,400
because we think of being born dying

148
00:07:26,459 --> 00:07:31,198
getting married getting divorced

149
00:07:28,399 --> 00:07:33,000
starting a degree we're thinking - were

150
00:07:31,199 --> 00:07:34,680
hardwired to think in terms of

151
00:07:33,000 --> 00:07:36,240
beginnings and ends mm-hmm so it's

152
00:07:34,680 --> 00:07:38,819
almost impossible for us to get around

153
00:07:36,240 --> 00:07:41,610
the idea that life may always have been

154
00:07:38,819 --> 00:07:43,139
but that's a possibility mm-hmm well yes

155
00:07:41,610 --> 00:07:46,229
that is a possibility

156
00:07:43,139 --> 00:07:49,050
by all means and just to clear up what I

157
00:07:46,228 --> 00:07:51,538

meant by pants psychism for those

158

00:07:49,050 --> 00:07:55,408

listeners and something to the effect

159

00:07:51,538 --> 00:07:58,348

that many of the quantum physicists

160

00:07:55,408 --> 00:08:01,348

maintain especially Max Planck who said

161

00:07:58,348 --> 00:08:03,269

basically consciousness is fundamental

162

00:08:01,348 --> 00:08:04,769

you can't get behind consciousness and

163

00:08:03,269 --> 00:08:07,620

there are people out there including

164

00:08:04,769 --> 00:08:10,079

some astronomers I believe that that

165

00:08:07,620 --> 00:08:12,569

think that heavenly bodies such as

166

00:08:10,079 --> 00:08:14,968

neutron stars might have a form of

167

00:08:12,569 --> 00:08:17,879

consciousness and of course that this is

168

00:08:14,968 --> 00:08:23,908

a philosophical motion besides that that

169

00:08:17,879 --> 00:08:26,879

is very very akin to animism and in on

170

00:08:23,908 --> 00:08:29,279

earth people who believe in animism so

171

00:08:26,879 --> 00:08:31,288

just to clear that up a little bit I

172
00:08:29,279 --> 00:08:33,269
guess to a regular kind of scientist

173
00:08:31,288 --> 00:08:36,479
although I'm kind of a bit of a heretic

174
00:08:33,269 --> 00:08:37,889
I guess that would be you know quite

175
00:08:36,479 --> 00:08:40,139
well left field as you say over there

176
00:08:37,889 --> 00:08:42,629
but panspermia is a very straightforward

177
00:08:40,139 --> 00:08:46,289
scientific concept it's not to do with

178
00:08:42,629 --> 00:08:48,570
aliens or anything complex basically

179
00:08:46,289 --> 00:08:52,828
we're just saying that life came now

180
00:08:48,570 --> 00:08:55,320
Neil panspermia is a term that I coined

181
00:08:52,828 --> 00:08:57,448
saying that not only did life come and

182
00:08:55,320 --> 00:08:59,879
originated from space it's coming all

183
00:08:57,448 --> 00:09:00,449
the time so as you step outside the door

184
00:08:59,879 --> 00:09:03,379
this

185
00:09:00,450 --> 00:09:05,460
whatever all day long you will be

186
00:09:03,379 --> 00:09:06,899
potentially covered in microorganisms

187
00:09:05,460 --> 00:09:09,540
from space and this is what we've

188
00:09:06,899 --> 00:09:12,959
concentrated our research on this idea

189
00:09:09,539 --> 00:09:14,519
of neo neo meaning new of course so that

190
00:09:12,960 --> 00:09:16,500
life is coming in all the time not just

191
00:09:14,519 --> 00:09:17,250
that it originated but it's coming in

192
00:09:16,500 --> 00:09:20,370
all the time

193
00:09:17,250 --> 00:09:22,889
good well listen the question that I

194
00:09:20,370 --> 00:09:26,179
want to raise or this point that I want

195
00:09:22,889 --> 00:09:31,139
to make is that my personal interest in

196
00:09:26,179 --> 00:09:35,429
panspermia came a long time ago I guess

197
00:09:31,139 --> 00:09:37,439
it was in the 90s when it was somebody

198
00:09:35,429 --> 00:09:38,750
who you have worked with that Chandra

199
00:09:37,440 --> 00:09:42,390
Wickramasinghe

200

00:09:38,750 --> 00:09:44,789
when he was talking about the red rain

201
00:09:42,389 --> 00:09:46,189
that fell on parts of India and in the

202
00:09:44,789 --> 00:09:49,230
Indian Ocean

203
00:09:46,190 --> 00:09:52,920
can we go to a little bit to that and

204
00:09:49,230 --> 00:09:59,250
your your interactions with dr. wick

205
00:09:52,919 --> 00:10:01,769
aramis Singh fine yeah Chandra was

206
00:09:59,250 --> 00:10:03,929
working with Fred Hoyle way back in the

207
00:10:01,769 --> 00:10:05,460
seventies in fact in fact at that time

208
00:10:03,929 --> 00:10:08,370
they were publishing most of their

209
00:10:05,460 --> 00:10:11,690
papers in the major scientific journal

210
00:10:08,370 --> 00:10:14,879
Nature and this was a new idea and

211
00:10:11,690 --> 00:10:16,980
people were quite open to the idea as

212
00:10:14,879 --> 00:10:19,500
time went by they produce more and more

213
00:10:16,980 --> 00:10:21,870
evidence but paradoxically it became

214
00:10:19,500 --> 00:10:23,399

less and less fashionable so they really

215

00:10:21,870 --> 00:10:26,279

had to work over the last twenty thirty

216

00:10:23,399 --> 00:10:29,819

years to kind of get this idea accepted

217

00:10:26,279 --> 00:10:31,259

by scientists now I never met Fred Hoyle

218

00:10:29,820 --> 00:10:33,900

fair dial of course a famous astronomer

219

00:10:31,259 --> 00:10:36,029

mathematician should have got the Nobel

220

00:10:33,899 --> 00:10:37,919

Prize but was denied it I never actually

221

00:10:36,029 --> 00:10:39,750

met him although I I heard him you have

222

00:10:37,919 --> 00:10:42,750

a lecture in Sheffield many years ago

223

00:10:39,750 --> 00:10:46,200

but Chandra and I had been working now

224

00:10:42,750 --> 00:10:49,730

for about 17 years because I first

225

00:10:46,200 --> 00:10:53,190

started working with Chandra just just

226

00:10:49,730 --> 00:10:54,750

after 2000 I think and basically what

227

00:10:53,190 --> 00:10:56,820

happened was very interesting I had been

228

00:10:54,750 --> 00:10:59,220

lecturing on panspermia to my students

229
00:10:56,820 --> 00:11:01,170
and taking an interest in it but I

230
00:10:59,220 --> 00:11:02,820
assume that Chandra would have all the

231
00:11:01,169 --> 00:11:04,769
microbiologists they ever needed because

232
00:11:02,820 --> 00:11:07,530
people would be interested in this

233
00:11:04,769 --> 00:11:10,470
fantastic idea so I never contacted him

234
00:11:07,529 --> 00:11:13,019
but I wrote a letter there was a lot of

235
00:11:10,470 --> 00:11:14,320
criticism of his work Fred Hoyles work I

236
00:11:13,019 --> 00:11:16,689
wrote a letter to a

237
00:11:14,320 --> 00:11:18,940
scientific journal saying this guy's you

238
00:11:16,690 --> 00:11:21,250
know extremely intelligent the idea of

239
00:11:18,940 --> 00:11:24,490
panspermia is very scientific etc

240
00:11:21,250 --> 00:11:27,070
defending the idea and to my amazement

241
00:11:24,490 --> 00:11:29,740
Chandra emailed me and said would you

242
00:11:27,070 --> 00:11:34,120
like to work with me cool

243
00:11:29,740 --> 00:11:35,649
I said Wow you know to my mind every

244
00:11:34,120 --> 00:11:38,289
microbiologist in the world would want

245
00:11:35,649 --> 00:11:41,110
to do this but he said no basically

246
00:11:38,289 --> 00:11:43,899
because of the question of of their

247
00:11:41,110 --> 00:11:46,360
career etc their status they didn't want

248
00:11:43,899 --> 00:11:50,169
to get involved in this it was too off

249
00:11:46,360 --> 00:11:52,450
the wall to kind of alien associated and

250
00:11:50,169 --> 00:11:54,449
so on so I was more than delighted to go

251
00:11:52,450 --> 00:11:57,310
down to Cardiff where he was working and

252
00:11:54,450 --> 00:12:01,060
joined this team and we worked now for

253
00:11:57,309 --> 00:12:04,149
17 years or more well that's fantastic I

254
00:12:01,059 --> 00:12:05,889
I have not only have admiration for what

255
00:12:04,149 --> 00:12:09,059
you're doing but I have enormous

256
00:12:05,889 --> 00:12:12,069
admiration for both sir Fred Hoyle and

257

00:12:09,059 --> 00:12:14,439
Chandra Wickramasinghe now sir Fred yeah

258
00:12:12,070 --> 00:12:16,840
what so neat the Royal astronomer at one

259
00:12:14,440 --> 00:12:20,260
time I don't think he was but he was

260
00:12:16,840 --> 00:12:22,000
extremely it was he extremely well I

261
00:12:20,259 --> 00:12:24,340
can't you know I honestly don't know

262
00:12:22,000 --> 00:12:27,370
that but he was certainly very eminence

263
00:12:24,340 --> 00:12:29,500
a very eminent science fiction writer of

264
00:12:27,370 --> 00:12:31,299
course as well wrote the black the book

265
00:12:29,500 --> 00:12:33,549
the black cloud which is can still be

266
00:12:31,299 --> 00:12:36,449
read and enjoyed today so Fred Hoyle was

267
00:12:33,549 --> 00:12:39,519
a genius beyond beyond all doubt now

268
00:12:36,450 --> 00:12:41,860
Chandra has been working on this idea

269
00:12:39,519 --> 00:12:44,259
now for a world best part of 20 or 30

270
00:12:41,860 --> 00:12:45,639
odd years and he's come in for a

271
00:12:44,259 --> 00:12:48,669

tremendous amount of ill-informed

272

00:12:45,639 --> 00:12:50,889

criticism mmm-hmm even racism he comes

273

00:12:48,669 --> 00:12:54,219

from Sri Lanka and he's add he showed me

274

00:12:50,889 --> 00:12:55,389

letters of abusive kind of interaction

275

00:12:54,220 --> 00:12:57,070

god knows what it gets on the internet

276

00:12:55,389 --> 00:12:57,819

because these were letters that's

277

00:12:57,070 --> 00:13:00,480

terrible

278

00:12:57,820 --> 00:13:03,490

a lot of trolling and so on and so forth

279

00:13:00,480 --> 00:13:08,560

very nasty racist comments because of

280

00:13:03,490 --> 00:13:10,779

course panspermia is very badly placed

281

00:13:08,559 --> 00:13:13,299

in the sense that it attacks always

282

00:13:10,779 --> 00:13:16,209

seems to attack religion and science or

283

00:13:13,299 --> 00:13:19,750

at least Darwinism right so the

284

00:13:16,210 --> 00:13:22,210

doughiness don't like it and the extreme

285

00:13:19,750 --> 00:13:23,440

religious people don't like it so your

286
00:13:22,210 --> 00:13:27,009
bang in the middle and you get a lot of

287
00:13:23,440 --> 00:13:28,319
criticism from either side well your

288
00:13:27,009 --> 00:13:32,559
work

289
00:13:28,318 --> 00:13:38,948
in the last years less recent years has

290
00:13:32,559 --> 00:13:42,338
been very very clever very wonderful

291
00:13:38,948 --> 00:13:46,028
ideas that a person could do without a

292
00:13:42,339 --> 00:13:48,759
lot of money I understand and it

293
00:13:46,028 --> 00:13:52,149
involves weather balloons and if I were

294
00:13:48,759 --> 00:13:55,959
to say in very plain language you send

295
00:13:52,149 --> 00:14:00,970
something like a disk drive you know in

296
00:13:55,958 --> 00:14:04,359
a an envelope which is impermeable until

297
00:14:00,970 --> 00:14:07,028
it reaches the stratosphere up on a a

298
00:14:04,360 --> 00:14:09,459
weather balloon at which point it opens

299
00:14:07,028 --> 00:14:14,198
up and reveals something like a petri

300
00:14:09,458 --> 00:14:17,198
dish and then the organisms are captured

301
00:14:14,198 --> 00:14:18,939
and then it's almost go ahead almost

302
00:14:17,198 --> 00:14:23,708
there but not quite okay let us know

303
00:14:18,940 --> 00:14:25,990
yeah our our initial work was done with

304
00:14:23,708 --> 00:14:27,818
scientists in India now the Indians are

305
00:14:25,990 --> 00:14:28,389
very good at sending balloons into the

306
00:14:27,818 --> 00:14:30,278
stratosphere

307
00:14:28,389 --> 00:14:31,870
they send massive balloons we were

308
00:14:30,278 --> 00:14:34,269
sending massive blooms a massive

309
00:14:31,870 --> 00:14:36,639
payloads and we will find him Adri

310
00:14:34,269 --> 00:14:39,068
bacteria in the stratosphere now for

311
00:14:36,639 --> 00:14:41,259
various reasons we were kind of

312
00:14:39,068 --> 00:14:42,969
sidelined out of that work make basic

313
00:14:41,259 --> 00:14:45,850
because we couldn't find the funding in

314

00:14:42,970 --> 00:14:47,829
the UK to continue with the work so I

315
00:14:45,850 --> 00:14:49,720
was in a bit of a loose end and then I

316
00:14:47,828 --> 00:14:51,489
got an email from a friend of mine

317
00:14:49,720 --> 00:14:53,319
saying that within the University of

318
00:14:51,490 --> 00:14:55,659
Sheffield in the engineering department

319
00:14:53,318 --> 00:14:57,338
of all places there were two PhD

320
00:14:55,659 --> 00:14:59,769
students who were making money out of

321
00:14:57,339 --> 00:15:02,319
little business send him balloons to the

322
00:14:59,769 --> 00:15:04,149
stratosphere now what what they were

323
00:15:02,318 --> 00:15:06,669
doing and they still do is say you

324
00:15:04,149 --> 00:15:08,559
wanted to propose to your loved one you

325
00:15:06,669 --> 00:15:10,870
could have a little proposal sent into

326
00:15:08,559 --> 00:15:12,338
the interspace it would be filmed and

327
00:15:10,870 --> 00:15:15,278
you could show this at your wedding you

328
00:15:12,339 --> 00:15:16,720

know ah he proposed to me in space so

329

00:15:15,278 --> 00:15:19,629

you pay a couple hundred dollars for

330

00:15:16,720 --> 00:15:21,278

this it's very good way of making a

331

00:15:19,629 --> 00:15:23,679

little bit of money so the students were

332

00:15:21,278 --> 00:15:26,110

doing this and I got them into my office

333

00:15:23,679 --> 00:15:29,349

and I said this is fantastic

334

00:15:26,110 --> 00:15:31,209

are you interested in sending these

335

00:15:29,350 --> 00:15:34,269

balloons to the stratosphere and doing

336

00:15:31,208 --> 00:15:36,068

scientific study and they said yeah

337

00:15:34,269 --> 00:15:37,629

we're interested obviously you have to

338

00:15:36,068 --> 00:15:40,649

pay us a little bit of money to cover

339

00:15:37,629 --> 00:15:42,328

the costs so I did and we then

340

00:15:40,649 --> 00:15:45,179

sat down a thought of an experiment now

341

00:15:42,328 --> 00:15:46,618

I want to do it simple and cheap as

342

00:15:45,179 --> 00:15:49,278

before because the large balloons from

343
00:15:46,619 --> 00:15:51,269
India were costing us around about

344
00:15:49,278 --> 00:15:54,088
three-quarters of a million dollars per

345
00:15:51,269 --> 00:15:55,589
flight Wow nope you can see that that

346
00:15:54,089 --> 00:15:58,019
was getting pretty ridiculous

347
00:15:55,589 --> 00:15:59,819
yeah though what we thought about I

348
00:15:58,019 --> 00:16:02,698
don't know exactly thought about it was

349
00:15:59,818 --> 00:16:06,808
we would make a box and put into this

350
00:16:02,698 --> 00:16:09,088
box essentially a CD drawer and we could

351
00:16:06,808 --> 00:16:11,458
then open the CD drawer as you say in

352
00:16:09,089 --> 00:16:14,670
the stratosphere at any height we chose

353
00:16:11,458 --> 00:16:16,289
by GPS and everything's sterile of

354
00:16:14,669 --> 00:16:19,259
course there's no point doing it if it's

355
00:16:16,289 --> 00:16:21,419
not sterile and the drawer would open

356
00:16:19,259 --> 00:16:24,928
and we put these little stubs little

357
00:16:21,419 --> 00:16:26,998
kind of round objects which we could

358
00:16:24,928 --> 00:16:29,458
then put into an electron microscope a

359
00:16:26,999 --> 00:16:31,740
very high-powered microscope directly

360
00:16:29,458 --> 00:16:34,469
now anything that fell from the

361
00:16:31,740 --> 00:16:36,360
stratosphere onto the stubs that the

362
00:16:34,470 --> 00:16:39,269
draw would close and it would be

363
00:16:36,360 --> 00:16:40,800
contained within the box so there was no

364
00:16:39,269 --> 00:16:43,409
way that you get contamination it was

365
00:16:40,799 --> 00:16:45,389
old them extremely sterile we would then

366
00:16:43,409 --> 00:16:48,448
take the box to a clean room where

367
00:16:45,389 --> 00:16:52,799
there's no microbes there's no complaint

368
00:16:48,448 --> 00:16:55,549
area we'd open the box and we put the

369
00:16:52,799 --> 00:16:58,620
stubs into the microscope and then we'd

370
00:16:55,549 --> 00:17:01,889
do a vision of the surface to see what

371

00:16:58,620 --> 00:17:06,419
was there and what did you find

372
00:17:01,889 --> 00:17:08,818
well let me admit that I kind of wasn't

373
00:17:06,419 --> 00:17:10,679
hoping to find very much I thought okay

374
00:17:08,818 --> 00:17:14,068
I'll do this because it's there as it

375
00:17:10,679 --> 00:17:18,949
were and when I looked at my screen the

376
00:17:14,068 --> 00:17:22,769
students brought this into my my office

377
00:17:18,949 --> 00:17:27,329
and I was just gobsmacked absolutely I

378
00:17:22,769 --> 00:17:29,460
just gasped with amazement because here

379
00:17:27,328 --> 00:17:32,970
we had some very unusual organisms

380
00:17:29,460 --> 00:17:36,240
remember before we'd been catching kind

381
00:17:32,970 --> 00:17:38,819
of ordinary bacteria but here we had

382
00:17:36,240 --> 00:17:42,630
some very strange organisms now I've

383
00:17:38,819 --> 00:17:45,298
been a microbiologist biologist I guess

384
00:17:42,630 --> 00:17:47,610
for 40 odd years now if you include my

385
00:17:45,298 --> 00:17:49,769

childhood I said suppose after century

386

00:17:47,609 --> 00:17:52,288

50 years I'd never seen anything like

387

00:17:49,769 --> 00:17:54,000

this and believe me I know my microbes

388

00:17:52,288 --> 00:17:56,129

after all that time

389

00:17:54,000 --> 00:18:00,569

I've never seen anything like it and I

390

00:17:56,130 --> 00:18:03,300

was just absolutely amazed just a quick

391

00:18:00,569 --> 00:18:07,319

question did you do a control send up a

392

00:18:03,299 --> 00:18:09,319

CD that didn't open and came back yeah

393

00:18:07,319 --> 00:18:13,500

yeah we do that we did that we found

394

00:18:09,319 --> 00:18:15,059

Audrey kind of pieces of grass pollen on

395

00:18:13,500 --> 00:18:18,539

the outside of the box we always find

396

00:18:15,059 --> 00:18:20,819

that but nothing inside so the contents

397

00:18:18,539 --> 00:18:23,309

inside remained totally sterile on the

398

00:18:20,819 --> 00:18:25,980

control flight and when you say was the

399

00:18:23,309 --> 00:18:30,629

differential was that just shape or was

400
00:18:25,980 --> 00:18:32,759
a morphology or was a shape slightly

401
00:18:30,630 --> 00:18:35,970
larger than bacteria around about 10 to

402
00:18:32,759 --> 00:18:39,720
40 microns understands the kind of size

403
00:18:35,970 --> 00:18:42,809
differential and very unusual shape so

404
00:18:39,720 --> 00:18:44,549
we're talking about morphology now the

405
00:18:42,809 --> 00:18:46,829
question is how do we know they are

406
00:18:44,549 --> 00:18:48,599
biological because when we do this we

407
00:18:46,829 --> 00:18:50,849
get a lot of cosmic dust we get little

408
00:18:48,599 --> 00:18:53,909
bits of cosmic dust which are in organic

409
00:18:50,849 --> 00:18:56,219
they're made up of silicon iron and on

410
00:18:53,910 --> 00:18:58,410
the electron microscope which can look

411
00:18:56,220 --> 00:19:02,370
at very small objects we have a special

412
00:18:58,410 --> 00:19:04,500
machine called an EDX or an EDX which we

413
00:19:02,369 --> 00:19:07,019
can put a crosshair onto the particle

414
00:19:04,500 --> 00:19:12,359
we're looking at press a button and get

415
00:19:07,019 --> 00:19:14,670
a total elemental analysis good yes

416
00:19:12,359 --> 00:19:19,589
amazing machine mm-hmm the inorganic

417
00:19:14,670 --> 00:19:22,920
stuff comes up as well as I say iron so

418
00:19:19,589 --> 00:19:24,809
any inorganic material silicon obviously

419
00:19:22,920 --> 00:19:28,289
but when we do it on the biological

420
00:19:24,809 --> 00:19:30,690
particles we only get carbon oxygen and

421
00:19:28,289 --> 00:19:32,519
a small amount of nitrogen now that

422
00:19:30,690 --> 00:19:38,610
tells us these are organic

423
00:19:32,519 --> 00:19:39,619
they are biological entities hydrogen as

424
00:19:38,609 --> 00:19:42,059
well right

425
00:19:39,619 --> 00:19:44,099
yeah but the Machine won't detect IG ah

426
00:19:42,059 --> 00:19:45,720
okay I'm cop surgeon and a little bit of

427
00:19:44,099 --> 00:19:50,399
nitrogen okay it's not very good at

428

00:19:45,720 --> 00:19:51,630
detecting nitrogen over so we we know

429
00:19:50,400 --> 00:19:55,680
they're organic we know they're not

430
00:19:51,630 --> 00:19:57,990
inorganic now we also know they've got

431
00:19:55,680 --> 00:20:00,750
what we call bilateral symmetry that's

432
00:19:57,990 --> 00:20:02,519
very important in biology you and I and

433
00:20:00,750 --> 00:20:05,579
all organisms if you put a line through

434
00:20:02,519 --> 00:20:07,079
the middle of us we have the symmetry

435
00:20:05,579 --> 00:20:09,808
and either side of us right

436
00:20:07,079 --> 00:20:13,168
all being well of course so you got two

437
00:20:09,808 --> 00:20:14,970
arms two etc and these are bilateral

438
00:20:13,169 --> 00:20:17,309
symmetry so if you put a line down the

439
00:20:14,970 --> 00:20:18,750
middle of them you get equal on either

440
00:20:17,308 --> 00:20:20,759
side now that's very important because

441
00:20:18,750 --> 00:20:23,159
if this were organic fluff

442
00:20:20,759 --> 00:20:27,980

I don't know from your bellybutton or

443

00:20:23,159 --> 00:20:30,210

somewhere then it would be kind of

444

00:20:27,980 --> 00:20:32,490

varied it would not show bilateral

445

00:20:30,210 --> 00:20:35,778

symmetry so this is why we know they're

446

00:20:32,490 --> 00:20:40,169

organisms and not just bits of fluff I

447

00:20:35,778 --> 00:20:43,308

was amazed by a picture that I saw it

448

00:20:40,169 --> 00:20:48,590

may have been on your website of

449

00:20:43,308 --> 00:20:51,839

titanium vanadium sphere Lucy and mucoid

450

00:20:48,589 --> 00:20:53,849

material and I said this is right out of

451

00:20:51,839 --> 00:20:56,009

a science fiction Wow

452

00:20:53,849 --> 00:21:00,119

this was amazing I mean you can imagine

453

00:20:56,009 --> 00:21:02,308

how amazed I was when I saw this when

454

00:21:00,119 --> 00:21:04,379

the e-tax came up on that it was as you

455

00:21:02,308 --> 00:21:08,788

say titanium mainly and a little bit of

456

00:21:04,380 --> 00:21:10,350

vanadium but when we zoomed in closer by

457
00:21:08,788 --> 00:21:12,569
the way the students are Chris rose and

458
00:21:10,349 --> 00:21:14,158
Alex Baker I must mention their names

459
00:21:12,569 --> 00:21:18,538
because they do a lot of the very

460
00:21:14,159 --> 00:21:21,419
important experimental work and when we

461
00:21:18,538 --> 00:21:24,960
zoomed in we saw organic material on the

462
00:21:21,419 --> 00:21:27,509
outside a bit like a kind of a woolly

463
00:21:24,960 --> 00:21:29,639
jumper as it were and that was exciting

464
00:21:27,509 --> 00:21:33,089
but for some reason and I don't know why

465
00:21:29,638 --> 00:21:34,979
I just said to the students is there any

466
00:21:33,089 --> 00:21:37,439
chance you can move the ball the sphere

467
00:21:34,980 --> 00:21:40,230
across and we'll see what's behind it

468
00:21:37,440 --> 00:21:43,558
I had no real understanding of why I

469
00:21:40,230 --> 00:21:45,569
said that but I just said it now these

470
00:21:43,558 --> 00:21:47,519
people work in an engineering department

471
00:21:45,569 --> 00:21:49,470
and their microscopes are far better

472
00:21:47,519 --> 00:21:53,099
than the ones we normally use in in

473
00:21:49,470 --> 00:21:55,740
biology they're incredibly sensitive etc

474
00:21:53,099 --> 00:21:58,859
and they have an amazing and amazing

475
00:21:55,740 --> 00:21:59,880
machine and this basically is a microbe

476
00:21:58,859 --> 00:22:03,778
manipulator

477
00:21:59,880 --> 00:22:07,080
it's extremely thin much thinner than a

478
00:22:03,778 --> 00:22:10,319
human hair and using this they could

479
00:22:07,079 --> 00:22:14,428
just move the ball across well when they

480
00:22:10,319 --> 00:22:18,629
move the ball across who's kind of guns

481
00:22:14,429 --> 00:22:20,559
came out of the ball to the side and we

482
00:22:18,630 --> 00:22:24,179
edex that is carbon so

483
00:22:20,558 --> 00:22:26,769
what we've got is a titanium bowl with

484
00:22:24,179 --> 00:22:30,548
biology inside it and biology on the

485

00:22:26,769 --> 00:22:32,829
outside of it and obviously this is not

486
00:22:30,548 --> 00:22:37,470
heard of on earth it's just completely

487
00:22:32,829 --> 00:22:40,839
unknown you know sounds like an egg well

488
00:22:37,470 --> 00:22:42,579
one of the things I did say and I had to

489
00:22:40,839 --> 00:22:44,769
say this for the sake of completeness I

490
00:22:42,579 --> 00:22:46,329
don't necessarily believe it but you

491
00:22:44,769 --> 00:22:47,740
know there's a theory of directed

492
00:22:46,329 --> 00:22:51,148
panspermia you must have heard about

493
00:22:47,740 --> 00:22:54,759
this yes this was the idea that aliens

494
00:22:51,148 --> 00:22:56,918
basically seed the cosmos with life and

495
00:22:54,759 --> 00:23:00,038
if this were the case this would make a

496
00:22:56,919 --> 00:23:01,778
perfect vehicle for sending life because

497
00:23:00,038 --> 00:23:05,558
it's got a titanium sphere which in

498
00:23:01,778 --> 00:23:08,528
connective of course very durable and

499
00:23:05,558 --> 00:23:10,960

let's go do it now I don't particularly

500

00:23:08,528 --> 00:23:13,419

kind of push this theory because one of

501

00:23:10,960 --> 00:23:15,778

the problems is apart from this if it

502

00:23:13,419 --> 00:23:18,249

were spent sent by an alien civilization

503

00:23:15,778 --> 00:23:20,648

you'd have to find the spaceship to find

504

00:23:18,249 --> 00:23:22,149

out you know how it was sent and most

505

00:23:20,648 --> 00:23:25,209

scientists would kind of laugh at this

506

00:23:22,148 --> 00:23:27,158

idea were it not for the facts that the

507

00:23:25,210 --> 00:23:30,610

main proponent of it was Francis Crick

508

00:23:27,159 --> 00:23:32,259

how do netplay yes so Francis came up

509

00:23:30,609 --> 00:23:34,569

with this idea wrote a book about it a

510

00:23:32,259 --> 00:23:35,980

few papers and people took him seriously

511

00:23:34,569 --> 00:23:37,868

now if I'd have come up with the idea

512

00:23:35,980 --> 00:23:40,058

they'd still be laughing of course but

513

00:23:37,868 --> 00:23:42,668

when you win a Nobel Prize people tend

514
00:23:40,058 --> 00:23:44,470
to open to other source okay a little

515
00:23:42,669 --> 00:23:46,389
more attention I guess but let me ask

516
00:23:44,470 --> 00:23:48,308
you something now I don't know

517
00:23:46,388 --> 00:23:49,719
everything and you probably know more

518
00:23:48,308 --> 00:23:53,230
than me but you don't know everything

519
00:23:49,720 --> 00:23:58,298
either but in your in your experience

520
00:23:53,230 --> 00:24:01,389
how how would a titanium vanadium sphere

521
00:23:58,298 --> 00:24:03,398
form in nature on the other hand well

522
00:24:01,388 --> 00:24:05,769
for example they do have that on earth

523
00:24:03,398 --> 00:24:10,859
though foraminifera are one celled

524
00:24:05,769 --> 00:24:13,569
organisms in the ocean yeah well is that

525
00:24:10,859 --> 00:24:16,569
maybe the titanium spheres exist

526
00:24:13,569 --> 00:24:17,859
naturally anyway and these organisms are

527
00:24:16,569 --> 00:24:21,038
acting like a hermit crab

528

00:24:17,859 --> 00:24:22,990

yeah so the shell is natural or it

529

00:24:21,038 --> 00:24:24,759

occurs wherever it occurs and the

530

00:24:22,990 --> 00:24:27,669

organisms just get in there and use it

531

00:24:24,759 --> 00:24:28,960

as their home because it's difficult to

532

00:24:27,669 --> 00:24:30,610

imagine well of course you don't know

533

00:24:28,960 --> 00:24:32,470

what you're talking about in terms of

534

00:24:30,609 --> 00:24:34,089

organisms but it's difficult to imagine

535

00:24:32,470 --> 00:24:36,579

them laying down a titanium

536

00:24:34,089 --> 00:24:41,139

fear like this although nothing's

537

00:24:36,579 --> 00:24:43,629

impossible so I suspect maybe they maybe

538

00:24:41,140 --> 00:24:46,450

they're just using it as a passenger or

539

00:24:43,630 --> 00:24:49,330

a vehicle to to move around I don't know

540

00:24:46,450 --> 00:24:51,490

these are the speculations yes but then

541

00:24:49,329 --> 00:24:54,730

you'd have to speculate where titanium

542

00:24:51,490 --> 00:24:57,609
spheres exist you know and if there was

543
00:24:54,730 --> 00:25:01,538
some you know some location in space

544
00:24:57,609 --> 00:25:03,308
where it was common yep tracer we

545
00:25:01,538 --> 00:25:05,470
obviously don't know a great deal about

546
00:25:03,308 --> 00:25:06,879
these because we we're at the beginning

547
00:25:05,470 --> 00:25:08,980
of our studies and no one else is

548
00:25:06,880 --> 00:25:10,659
joining in at the moment that we're very

549
00:25:08,980 --> 00:25:15,069
much limited to what we can do ourselves

550
00:25:10,659 --> 00:25:16,360
and you know you can speculate till

551
00:25:15,069 --> 00:25:17,859
you're blue in the face of course but

552
00:25:16,359 --> 00:25:20,379
until we get more and more information

553
00:25:17,859 --> 00:25:23,139
we know we're where they're coming from

554
00:25:20,380 --> 00:25:25,000
or what they are it's really distressing

555
00:25:23,140 --> 00:25:27,130
because really a long time ago I was

556
00:25:25,000 --> 00:25:29,648

interested in exobiology and everyone

557

00:25:27,130 --> 00:25:31,750

treated as if it were UFOs and then NASA

558

00:25:29,648 --> 00:25:33,579

started to call it astrobiology and

559

00:25:31,750 --> 00:25:35,710

suddenly yeah it's a wonder I feel

560

00:25:33,579 --> 00:25:36,939

didn't well you know it's a problem with

561

00:25:35,710 --> 00:25:38,558

us job well as you know around the world

562

00:25:36,940 --> 00:25:40,990

is a lot of people are jumping on the

563

00:25:38,558 --> 00:25:43,000

bandwagon most of it is not devoted to

564

00:25:40,990 --> 00:25:44,409

looking for life in space it's looking

565

00:25:43,000 --> 00:25:44,619

for life in extreme environments on

566

00:25:44,409 --> 00:25:47,230

earth

567

00:25:44,619 --> 00:25:49,089

great so people go to the Antarctic if

568

00:25:47,230 --> 00:25:51,548

they get money to do this well it's not

569

00:25:49,089 --> 00:25:53,139

really related to space because space is

570

00:25:51,548 --> 00:25:55,119

gonna be far more extreme than the

571
00:25:53,140 --> 00:25:57,759
Antarctic or whatever so it's a good

572
00:25:55,119 --> 00:25:59,259
little bandwagon you can jump on but the

573
00:25:57,759 --> 00:26:01,839
great thing about this is we're actually

574
00:25:59,259 --> 00:26:03,730
doing something at least away from the

575
00:26:01,839 --> 00:26:05,769
earth in the stratosphere so you

576
00:26:03,730 --> 00:26:07,269
basically go ahead basically what we're

577
00:26:05,769 --> 00:26:09,450
doing is we're hoping to catch things

578
00:26:07,269 --> 00:26:13,648
that are coming in right mm-hmm

579
00:26:09,450 --> 00:26:16,360
so what you need is some really great

580
00:26:13,648 --> 00:26:18,579
scientists in other places to replicate

581
00:26:16,359 --> 00:26:20,229
your studies is that the case that's

582
00:26:18,579 --> 00:26:23,470
exactly what we need we need people to

583
00:26:20,230 --> 00:26:25,929
be open-minded as I said you intimidated

584
00:26:23,470 --> 00:26:28,058
earlier on this approach costs

585
00:26:25,929 --> 00:26:30,399
relatively nothing it's a few thousand

586
00:26:28,058 --> 00:26:32,740
dollars a few thousand pounds now you

587
00:26:30,398 --> 00:26:35,019
know NASA sent sixty spent sixty billion

588
00:26:32,740 --> 00:26:36,490
dollars I don't know sending a lander to

589
00:26:35,019 --> 00:26:37,778
mark they could do this tomorrow they

590
00:26:36,490 --> 00:26:40,120
have the technology there's nothing

591
00:26:37,778 --> 00:26:42,279
complicated about it they obviously have

592
00:26:40,119 --> 00:26:43,750
the money to do it most universities

593
00:26:42,279 --> 00:26:45,369
with an electron microscope and a

594
00:26:43,750 --> 00:26:47,900
balloon we're talking about a cheap

595
00:26:45,369 --> 00:26:50,959
weather below nothing expensive

596
00:26:47,900 --> 00:26:52,850
but every scientist in the world nearly

597
00:26:50,960 --> 00:26:55,940
everyone it could be having a go at this

598
00:26:52,849 --> 00:26:59,149
but we've heard rumors of Japanese

599

00:26:55,940 --> 00:27:00,950
workers and but as yet no one is

600
00:26:59,150 --> 00:27:02,990
repeating it which is quite amazing I

601
00:27:00,950 --> 00:27:05,000
mean what the hell are they doing you

602
00:27:02,990 --> 00:27:08,089
know well why don't you give your

603
00:27:05,000 --> 00:27:10,730
website oh good I mean right now so that

604
00:27:08,089 --> 00:27:14,509
anybody who listens to this and has an

605
00:27:10,730 --> 00:27:16,819
interest they may want to do it we're

606
00:27:14,509 --> 00:27:21,980
talk to someone they know who can do it

607
00:27:16,819 --> 00:27:23,569
yeah well it's my right okay can't

608
00:27:21,980 --> 00:27:25,519
remember actually you've caught me a but

609
00:27:23,569 --> 00:27:26,990
the actual website address but if you go

610
00:27:25,519 --> 00:27:28,309
onto Google and just put Milton

611
00:27:26,990 --> 00:27:31,579
Wainwright you'll get a lot of the news

612
00:27:28,309 --> 00:27:33,259
and the the the input that and I think

613
00:27:31,579 --> 00:27:36,019

that will direct you to my website I

614

00:27:33,259 --> 00:27:38,900

said it'd be a perfect PhD thesis may be

615

00:27:36,019 --> 00:27:41,119

excellent yeah really would be very good

616

00:27:38,900 --> 00:27:44,480

yeah yeah I mean you know it would

617

00:27:41,119 --> 00:27:46,219

fantastic for pH DS or cyan't even if

618

00:27:44,480 --> 00:27:48,170

you have access to the microscope that

619

00:27:46,220 --> 00:27:49,309

the big requirement I mean you can

620

00:27:48,170 --> 00:27:50,720

collect the samples but the big

621

00:27:49,309 --> 00:27:53,690

requirement is the electron microscope

622

00:27:50,720 --> 00:27:55,490

of course so theoretically colleges

623

00:27:53,690 --> 00:27:58,250

could do it if they had a microscope and

624

00:27:55,490 --> 00:28:00,259

so on now one important point I need to

625

00:27:58,250 --> 00:28:04,730

emphasize it when we first published

626

00:28:00,259 --> 00:28:06,950

this now two points in fact we tried the

627

00:28:04,730 --> 00:28:09,259

top journals and they wouldn't even open

628
00:28:06,950 --> 00:28:11,330
the envelope as it works so we have to

629
00:28:09,259 --> 00:28:14,119
use journals which are regarded not as

630
00:28:11,329 --> 00:28:16,369
kind of like nature etc now this is one

631
00:28:14,119 --> 00:28:19,759
of the problems with doing exciting new

632
00:28:16,369 --> 00:28:21,289
work it's often the case that the top

633
00:28:19,759 --> 00:28:23,690
journals weren't entertaining now this

634
00:28:21,289 --> 00:28:26,180
is not special pleading this is the way

635
00:28:23,690 --> 00:28:28,160
of the world right now the other thing

636
00:28:26,180 --> 00:28:30,470
is that a lot of people said these

637
00:28:28,160 --> 00:28:32,900
organisms are coming from Earth it was a

638
00:28:30,470 --> 00:28:35,600
total major reaction because in our

639
00:28:32,900 --> 00:28:37,940
papers we explain why they're not coming

640
00:28:35,599 --> 00:28:39,730
from Earth now the two reasons why that

641
00:28:37,940 --> 00:28:42,230
what main two reasons are first of all

642
00:28:39,730 --> 00:28:45,110
we can do and other people have done

643
00:28:42,230 --> 00:28:47,720
this we can do calculations we can do

644
00:28:45,109 --> 00:28:50,299
modelling that says that particles

645
00:28:47,720 --> 00:28:53,420
bigger than 6 microns so just keep in

646
00:28:50,299 --> 00:28:56,359
mind the number 6 anything bigger than 6

647
00:28:53,420 --> 00:29:00,230
can't escape into the stratosphere at

648
00:28:56,359 --> 00:29:01,990
the heights we sample from we're looking

649
00:29:00,230 --> 00:29:05,798
at organisms which are in

650
00:29:01,990 --> 00:29:08,380
10 to 40 microns so six four so

651
00:29:05,798 --> 00:29:11,200
theoretically they can't escape into the

652
00:29:08,380 --> 00:29:13,570
stratosphere now you might say okay well

653
00:29:11,200 --> 00:29:15,548
that your thickness your theories are

654
00:29:13,569 --> 00:29:19,869
wrong your numbers are wrong and etc etc

655
00:29:15,548 --> 00:29:22,839
the clincher is this we've done about

656

00:29:19,869 --> 00:29:26,949
ten flights now and on no occasion do we

657
00:29:22,839 --> 00:29:31,000
find any grass pollen or anything other

658
00:29:26,950 --> 00:29:32,590
than these microbes on the stubs now if

659
00:29:31,000 --> 00:29:34,269
they were coming from Earth you would

660
00:29:32,589 --> 00:29:36,099
expect them to be covered in all this

661
00:29:34,269 --> 00:29:37,869
material sure right mm-hmm

662
00:29:36,099 --> 00:29:40,089
you'll expect the organisms will look

663
00:29:37,869 --> 00:29:42,069
you know to be in the middle of a mass

664
00:29:40,089 --> 00:29:44,109
of this stuff because obviously there's

665
00:29:42,069 --> 00:29:45,369
so much I don't know this in fact we

666
00:29:44,109 --> 00:29:47,798
might never see what we're looking at

667
00:29:45,369 --> 00:29:50,408
but these organisms are occurring in

668
00:29:47,798 --> 00:29:52,929
pristine condition they're on the stubs

669
00:29:50,409 --> 00:29:53,500
alone or in pairs there's nothing around

670
00:29:52,929 --> 00:29:57,429

them

671

00:29:53,500 --> 00:30:00,190

now unless there's a sieve which is

672

00:29:57,429 --> 00:30:04,090

impossible which takes out all the grass

673

00:30:00,190 --> 00:30:06,940

from Earth in the stratosphere and only

674

00:30:04,089 --> 00:30:10,709

lets our organisms through they must be

675

00:30:06,940 --> 00:30:13,028

coming from space or from outside earth

676

00:30:10,710 --> 00:30:15,069

the other point is that there's the

677

00:30:13,028 --> 00:30:18,069

sphere you are talking about made an

678

00:30:15,069 --> 00:30:21,009

impact event on the sampler you made a

679

00:30:18,069 --> 00:30:23,950

little crater mm-hmm now you can't get a

680

00:30:21,009 --> 00:30:27,490

crater if you're being wafted up from

681

00:30:23,950 --> 00:30:31,028

Earth the velocity is too low it must be

682

00:30:27,490 --> 00:30:33,460

coming at speed from outside so for

683

00:30:31,028 --> 00:30:35,950

these reasons we're confident and

684

00:30:33,460 --> 00:30:38,470

nobody's kind of arguing against our

685
00:30:35,950 --> 00:30:40,600
theories I mean I give these talks all

686
00:30:38,470 --> 00:30:42,370
over the world and I get the usual

687
00:30:40,599 --> 00:30:45,099
questions and everybody says oh it's

688
00:30:42,369 --> 00:30:47,949
contamination mm-hmm but at the end of

689
00:30:45,099 --> 00:30:49,778
the talk no one can say well you know I

690
00:30:47,950 --> 00:30:51,730
can shoot you down in flames this is

691
00:30:49,778 --> 00:30:53,349
nonsense

692
00:30:51,730 --> 00:30:54,849
I'd love it if somebody could tell us

693
00:30:53,349 --> 00:30:57,490
well we're going wrong because I don't I

694
00:30:54,849 --> 00:30:59,079
don't believe we are but no one can

695
00:30:57,490 --> 00:31:01,839
shoot us down in flames so I've said

696
00:30:59,079 --> 00:31:03,970
I'll well I actually I've I've run out

697
00:31:01,839 --> 00:31:06,069
of money now but I did say earlier on

698
00:31:03,970 --> 00:31:08,829
when I had some finance that I would go

699
00:31:06,069 --> 00:31:12,398
anywhere in the world to any meeting of

700
00:31:08,829 --> 00:31:14,048
scientists of whatever and they could

701
00:31:12,398 --> 00:31:15,119
shoot me down in flame reduce me to

702
00:31:14,048 --> 00:31:19,558
tears

703
00:31:15,119 --> 00:31:23,339
they could by explaining to us why we're

704
00:31:19,558 --> 00:31:26,308
going wrong and we've done that we've

705
00:31:23,339 --> 00:31:30,419
been to Sri Lanka I've been to various

706
00:31:26,308 --> 00:31:31,109
other countries in the UK a lot and no

707
00:31:30,420 --> 00:31:33,870
one yet

708
00:31:31,109 --> 00:31:36,000
shut us down in flames two two things

709
00:31:33,869 --> 00:31:37,829
here that come to my mind and one thing

710
00:31:36,000 --> 00:31:40,829
is something that we started out with

711
00:31:37,829 --> 00:31:43,259
today in our introduction with you in

712
00:31:40,829 --> 00:31:46,470
your background the other big thing is

713

00:31:43,259 --> 00:31:50,039
that these microorganisms that you are

714
00:31:46,470 --> 00:31:52,950
seeing most of them don't occur on earth

715
00:31:50,039 --> 00:31:55,799
correct now the answer to that of course

716
00:31:52,950 --> 00:31:57,450
is well we've just not seen them so you

717
00:31:55,799 --> 00:31:59,849
know I mean the criticism would be quite

718
00:31:57,450 --> 00:32:01,710
you know quite obvious well you say

719
00:31:59,849 --> 00:32:04,500
you've never seen them but maybe they

720
00:32:01,710 --> 00:32:06,509
come from a deep-sea vent you know off

721
00:32:04,500 --> 00:32:09,750
on jurors which nobody's nobody's family

722
00:32:06,509 --> 00:32:12,000
so it but that's a good comment but it

723
00:32:09,750 --> 00:32:14,099
could always be circumvented by a critic

724
00:32:12,000 --> 00:32:17,220
saying well we're just not seeing them

725
00:32:14,099 --> 00:32:19,769
yet and you just happen well the other

726
00:32:17,220 --> 00:32:22,279
comment that I was going to say is that

727
00:32:19,769 --> 00:32:25,589

maybe your critics are victims of

728

00:32:22,279 --> 00:32:27,960

scientism and and they just say well it

729

00:32:25,589 --> 00:32:31,919

can't be so that's why it's not true

730

00:32:27,960 --> 00:32:33,299

because sir it can't I don't I don't

731

00:32:31,920 --> 00:32:35,460

really want to go into this but we've

732

00:32:33,299 --> 00:32:37,529

had tremendous about a negative not

733

00:32:35,460 --> 00:32:41,759

scientific negative criticism but a lot

734

00:32:37,529 --> 00:32:44,178

of attacks on us charleen etc and also

735

00:32:41,759 --> 00:32:48,269

from the scientific community in general

736

00:32:44,179 --> 00:32:49,380

so you know I don't I I wanted people to

737

00:32:48,269 --> 00:32:51,629

attack us I want them to do

738

00:32:49,380 --> 00:32:53,820

scientifically I want us you know I am

739

00:32:51,630 --> 00:32:55,320

about to retire although I continue

740

00:32:53,819 --> 00:32:56,579

doing this work but I'm retiring from

741

00:32:55,319 --> 00:32:59,879

lecturing and so on

742
00:32:56,579 --> 00:33:01,889
I'm 67 now I'm getting a bit tired but I

743
00:32:59,880 --> 00:33:06,210
will continue with this this kind of

744
00:33:01,890 --> 00:33:09,450
work obviously but you know I I don't

745
00:33:06,210 --> 00:33:11,308
want to die thinking well you know say

746
00:33:09,450 --> 00:33:13,620
about 20 years left I'd like somebody to

747
00:33:11,308 --> 00:33:17,730
tell me exactly where we're going wrong

748
00:33:13,619 --> 00:33:21,899
or tell me we're right obviously now I

749
00:33:17,730 --> 00:33:24,569
kind of fantasize that maybe let's say I

750
00:33:21,900 --> 00:33:27,509
live until I'm 80 of 20 years less or

751
00:33:24,569 --> 00:33:29,668
whatever there may be a compendium you

752
00:33:27,509 --> 00:33:31,950
know we've found like 10 or

753
00:33:29,669 --> 00:33:34,350
there may be this amazing compendium

754
00:33:31,950 --> 00:33:36,269
that they give to me showing thousands

755
00:33:34,349 --> 00:33:37,889
of these organisms coming in you know

756
00:33:36,269 --> 00:33:39,779
they're being collected over the next

757
00:33:37,890 --> 00:33:42,030
10-15 years or so

758
00:33:39,779 --> 00:33:43,980
well that would be tremendous yeah that

759
00:33:42,029 --> 00:33:46,259
would be wonderful excitement wouldn't

760
00:33:43,980 --> 00:33:47,849
it in fact it's very excited to come

761
00:33:46,259 --> 00:33:50,910
towards the end of my career and to get

762
00:33:47,849 --> 00:33:52,259
this you know as a scientist there's

763
00:33:50,910 --> 00:33:54,798
nothing more exciting than something

764
00:33:52,259 --> 00:33:57,359
finding something new

765
00:33:54,798 --> 00:33:58,859
absolutely and I'm hoping though

766
00:33:57,359 --> 00:34:01,048
although you pay although you pay for

767
00:33:58,859 --> 00:34:03,509
novelty by being attacked you know

768
00:34:01,048 --> 00:34:04,500
scientists we get this impression of

769
00:34:03,509 --> 00:34:05,940
science where we're given this

770

00:34:04,500 --> 00:34:08,668
impression of scientists being open

771
00:34:05,940 --> 00:34:12,389
minded etc etc but in fact there's a lot

772
00:34:08,668 --> 00:34:13,969
of antagonism to new ideas as you know

773
00:34:12,389 --> 00:34:18,720
mm-hm

774
00:34:13,969 --> 00:34:20,480
yes well I'm hoping that this podcast

775
00:34:18,719 --> 00:34:24,949
and other lectures that you've given

776
00:34:20,480 --> 00:34:27,628
inspire some person to replicate your

777
00:34:24,949 --> 00:34:29,309
you're finding somewhere around the

778
00:34:27,628 --> 00:34:31,559
world and I I can't see why they

779
00:34:29,309 --> 00:34:33,509
wouldn't do it well this is a very

780
00:34:31,559 --> 00:34:36,090
interesting could I just mention other

781
00:34:33,510 --> 00:34:37,889
thing of course people say well why is

782
00:34:36,090 --> 00:34:39,840
it important that these organisms are

783
00:34:37,889 --> 00:34:41,789
coming in and wells to things that

784
00:34:39,840 --> 00:34:43,950

people always say first of all why it's

785

00:34:41,789 --> 00:34:45,750

important well one of the things it may

786

00:34:43,949 --> 00:34:48,000

be bringing in is new information you

787

00:34:45,750 --> 00:34:49,349

know evolution we always think of and

788

00:34:48,000 --> 00:34:51,690

this is why the Darwinists don't like

789

00:34:49,349 --> 00:34:54,118

this idea they're so kind of stuck on

790

00:34:51,690 --> 00:34:56,668

the idea that information has come from

791

00:34:54,119 --> 00:34:59,070

within the biological community over

792

00:34:56,668 --> 00:35:01,409

millions of years what if information is

793

00:34:59,070 --> 00:35:04,440

coming out from out us out of space what

794

00:35:01,409 --> 00:35:07,769

is DNA and organisms coming in it will

795

00:35:04,440 --> 00:35:09,960

add new information to evolution now so

796

00:35:07,769 --> 00:35:12,840

it opens up a completely new idea of

797

00:35:09,960 --> 00:35:15,119

biology it's kind of exobiology it opens

798

00:35:12,840 --> 00:35:16,829

up our view of life in the cosmos

799

00:35:15,119 --> 00:35:20,730
yeah they don't just on this little

800

00:35:16,829 --> 00:35:21,989
rocky island a rocky planet rather now

801

00:35:20,730 --> 00:35:24,449
the other thing is people always said to

802

00:35:21,989 --> 00:35:25,879
me are they going to kill us is this the

803

00:35:24,449 --> 00:35:29,219
end of the world you know some kind of

804

00:35:25,880 --> 00:35:31,619
b-movie and my simple answer to that is

805

00:35:29,219 --> 00:35:33,149
well they've been coming in longer than

806

00:35:31,619 --> 00:35:35,340
they've been around longer than we have

807

00:35:33,150 --> 00:35:37,650
and they haven't destroyed as yet there

808

00:35:35,340 --> 00:35:41,430
is much of their much part of biology as

809

00:35:37,650 --> 00:35:42,840
we are so that I lost them Chandra and

810

00:35:41,429 --> 00:35:44,669
Fred Hoyle

811

00:35:42,840 --> 00:35:46,740
yesterday diseases might come from space

812

00:35:44,670 --> 00:35:50,700
so there's a there's a possibility of

813
00:35:46,739 --> 00:35:54,959
that but wasn't there a study awhile

814
00:35:50,699 --> 00:35:59,009
back up like it before the 20th century

815
00:35:54,960 --> 00:36:02,190
where somebody equated the passage of

816
00:35:59,010 --> 00:36:06,420
large comets through the center of the

817
00:36:02,190 --> 00:36:08,789
solar system with like flus that came

818
00:36:06,420 --> 00:36:11,849
about a few months later up to a year

819
00:36:08,789 --> 00:36:13,889
later but well from the Year dot people

820
00:36:11,849 --> 00:36:18,750
have associated comments with tragedies

821
00:36:13,889 --> 00:36:20,730
with natural disasters Halley's comet

822
00:36:18,750 --> 00:36:22,440
Halley's Comet if you will was

823
00:36:20,730 --> 00:36:25,469
associated with plagues and famines

824
00:36:22,440 --> 00:36:28,050
Celeste and Fred Hoyle and Chandra came

825
00:36:25,469 --> 00:36:30,839
up with this idea that diseases modern

826
00:36:28,050 --> 00:36:35,510
diseases like SARS and even possibly

827

00:36:30,840 --> 00:36:38,579
AIDS come from space and mutate here and

828
00:36:35,510 --> 00:36:41,700
they had new diseases now that really is

829
00:36:38,579 --> 00:36:44,340
kind of an extreme possibility problem

830
00:36:41,699 --> 00:36:46,949
with I mean if people don't believe in

831
00:36:44,340 --> 00:36:50,160
panspermia the idea of viruses from

832
00:36:46,949 --> 00:36:52,559
space is gonna be even more unbelievable

833
00:36:50,159 --> 00:36:55,489
but it's an interesting possibility yes

834
00:36:52,559 --> 00:36:58,199
okay well there's one other thing that

835
00:36:55,489 --> 00:37:00,599
ties into that and I'm trying to think

836
00:36:58,199 --> 00:37:04,129
of the gentleman's name he's recently

837
00:37:00,599 --> 00:37:07,909
deceased prematurely deceased but he

838
00:37:04,130 --> 00:37:10,619
talked about spores from mushrooms

839
00:37:07,909 --> 00:37:13,949
possibly coming in this very same way

840
00:37:10,619 --> 00:37:16,250
from space and that the spores from the

841
00:37:13,949 --> 00:37:19,409

mushrooms that crea they created

842

00:37:16,250 --> 00:37:24,949

mushrooms that were mind-expanding on

843

00:37:19,409 --> 00:37:27,539

earth and thereby a widened our oh

844

00:37:24,949 --> 00:37:29,639

that's interesting because I just looked

845

00:37:27,539 --> 00:37:31,559

at the internet before you before you

846

00:37:29,639 --> 00:37:34,230

contacted me and there's some work

847

00:37:31,559 --> 00:37:37,949

saying that Morning Glory seeds can

848

00:37:34,230 --> 00:37:40,260

survive in space Wow high levels of UV

849

00:37:37,949 --> 00:37:41,909

now Morning Glory of course as you

850

00:37:40,260 --> 00:37:45,150

possibly know he's an elusive Jen yes

851

00:37:41,909 --> 00:37:49,079

indeed some people take it like LSD

852

00:37:45,150 --> 00:37:51,950

it could be careful my dad take an awful

853

00:37:49,079 --> 00:37:55,829

lot of it though LSD cat you've tried

854

00:37:51,949 --> 00:37:56,639

obviously tried a few pounds yes I tried

855

00:37:55,829 --> 00:37:58,798

two or three

856
00:37:56,639 --> 00:38:02,278
and absolutely nothing happened I'm not

857
00:37:58,798 --> 00:38:04,170
ashamed to say yeah well so they're

858
00:38:02,278 --> 00:38:07,349
saying that maybe Morning Glory seeds

859
00:38:04,170 --> 00:38:09,389
came from soup and spare me I don't know

860
00:38:07,349 --> 00:38:11,160
about this I mean we concentrate on on

861
00:38:09,389 --> 00:38:12,989
microbes see the great thing about

862
00:38:11,159 --> 00:38:15,719
microbes is they're small and they can

863
00:38:12,989 --> 00:38:18,028
be protected from if they're covered in

864
00:38:15,719 --> 00:38:19,558
in cosmic dust or they're covered in if

865
00:38:18,028 --> 00:38:22,199
they're in a meteorite they can be

866
00:38:19,559 --> 00:38:24,269
protected from UV and radiation and the

867
00:38:22,199 --> 00:38:27,689
other thing is microbes of an extremely

868
00:38:24,268 --> 00:38:29,548
rapid reproduction rate so you can

869
00:38:27,690 --> 00:38:31,740
imagine let's just have a scenario where

870
00:38:29,548 --> 00:38:35,159
the earth is just cooling to the point

871
00:38:31,739 --> 00:38:38,038
where life is possible can exist on the

872
00:38:35,159 --> 00:38:41,068
on the planet the new planet one single

873
00:38:38,039 --> 00:38:42,990
proto life-form or a single bacterium or

874
00:38:41,068 --> 00:38:46,920
a single one of these entities if it

875
00:38:42,989 --> 00:38:48,989
lands it reproduces every 20 minutes now

876
00:38:46,920 --> 00:38:52,139
by the law of doubling which you know

877
00:38:48,989 --> 00:38:53,969
about I guess within a month or six

878
00:38:52,139 --> 00:38:56,098
months the whole of the surface of the

879
00:38:53,969 --> 00:38:58,858
earth would be covered in these life

880
00:38:56,099 --> 00:39:00,900
forms imagine that wouldn't take long

881
00:38:58,858 --> 00:39:02,818
because there's no competition there's

882
00:39:00,900 --> 00:39:04,980
nothing to eat them they've got plenty

883
00:39:02,818 --> 00:39:07,139
of nutrients they just double they

884

00:39:04,980 --> 00:39:09,269
double they double they double and so on

885
00:39:07,139 --> 00:39:10,889
and by that by six months the whole of

886
00:39:09,268 --> 00:39:13,469
the surface a if they were green for

887
00:39:10,889 --> 00:39:16,828
example will be coated in green life and

888
00:39:13,469 --> 00:39:18,808
that could then evolve it could perhaps

889
00:39:16,829 --> 00:39:20,430
interact with life that form I mean the

890
00:39:18,809 --> 00:39:22,380
possibilities that two things happened

891
00:39:20,429 --> 00:39:24,750
you should never be mutually exclusive

892
00:39:22,380 --> 00:39:26,519
maybe life did form on the earth and

893
00:39:24,750 --> 00:39:29,639
maybe a life supplement was supplemented

894
00:39:26,518 --> 00:39:32,399
from life coming in you know the two are

895
00:39:29,639 --> 00:39:34,078
not mutually exclusive but you can

896
00:39:32,400 --> 00:39:38,460
imagine how quickly they would develop

897
00:39:34,079 --> 00:39:42,230
if they this happened have you tried to

898
00:39:38,460 --> 00:39:47,039

grow like colonies of these on peat and

899

00:39:42,230 --> 00:39:50,250

well one of the problems we have we're

900

00:39:47,039 --> 00:39:52,380

limited by techniques with our

901

00:39:50,250 --> 00:39:55,018

microscope we have to cover the surface

902

00:39:52,380 --> 00:39:56,970

with gold so that we can image the

903

00:39:55,018 --> 00:39:59,368

images now once they're covered in gold

904

00:39:56,969 --> 00:40:03,298

of course we can't grow them so if we

905

00:39:59,369 --> 00:40:05,608

want to see them we can't grow them and

906

00:40:03,298 --> 00:40:07,768

if we grow them we can't see them so

907

00:40:05,608 --> 00:40:09,538

there's a problem here but there are

908

00:40:07,768 --> 00:40:10,978

other microscopes around the world which

909

00:40:09,539 --> 00:40:12,179

could do this

910

00:40:10,978 --> 00:40:14,338

now I'll tell you a very interesting

911

00:40:12,179 --> 00:40:16,039

story one of the things we want to do is

912

00:40:14,338 --> 00:40:18,208

what's called an isotope fractionation

913
00:40:16,039 --> 00:40:20,729
now an isotope fractionation is

914
00:40:18,208 --> 00:40:24,808
basically saying that say carbon has a

915
00:40:20,728 --> 00:40:26,668
different isotope ratio on earth from

916
00:40:24,809 --> 00:40:29,459
microbes in space this is what we

917
00:40:26,668 --> 00:40:31,650
theorized so if you could do a carbon or

918
00:40:29,458 --> 00:40:34,409
another element isotope fractionation on

919
00:40:31,650 --> 00:40:36,749
the on the organisms we finding and you

920
00:40:34,409 --> 00:40:39,418
may find a different ratio so they this

921
00:40:36,748 --> 00:40:42,598
would demonstrate excuse me

922
00:40:39,418 --> 00:40:44,699
hello they're coming from space now we

923
00:40:42,599 --> 00:40:47,099
don't have this machinery very expensive

924
00:40:44,699 --> 00:40:49,469
and complicated and on two or three

925
00:40:47,099 --> 00:40:51,479
occasions I've contacted laboratories

926
00:40:49,469 --> 00:40:53,099
and friends of mine have contacted

927
00:40:51,478 --> 00:40:57,389
laboratories around the world Cambridge

928
00:40:53,099 --> 00:40:59,429
for example and they've said ok we can

929
00:40:57,389 --> 00:41:02,219
do this we'll do it next month or so and

930
00:40:59,429 --> 00:41:03,959
in all cases just before they're

931
00:41:02,219 --> 00:41:07,469
supposed to do it I get an email saying

932
00:41:03,958 --> 00:41:11,639
sorry we can't do it and in all cases

933
00:41:07,469 --> 00:41:13,380
it's because generally the head of the

934
00:41:11,639 --> 00:41:17,219
Institute said we're not getting

935
00:41:13,380 --> 00:41:19,108
involved in this work because they they

936
00:41:17,219 --> 00:41:21,749
are worried it will attack their funding

937
00:41:19,108 --> 00:41:23,848
as you know science is all about funding

938
00:41:21,748 --> 00:41:25,379
now if you get associated with these

939
00:41:23,849 --> 00:41:27,599
cranks or saying light comes in from

940
00:41:25,380 --> 00:41:30,088
space mm-hmm it'll give the Institute a

941

00:41:27,599 --> 00:41:33,479
bad name so again this is not special

942
00:41:30,088 --> 00:41:35,818
pleading this is happening so it's quite

943
00:41:33,478 --> 00:41:38,218
amazing that you know this wonderful

944
00:41:35,818 --> 00:41:41,909
freedom that we expect from science it's

945
00:41:38,219 --> 00:41:44,548
not happening why I think it comes down

946
00:41:41,909 --> 00:41:46,890
to money but what interests me most

947
00:41:44,548 --> 00:41:49,949
about these things that you have found

948
00:41:46,889 --> 00:41:54,088
most of them do have carbon and oxygen

949
00:41:49,949 --> 00:41:55,949
and nitrogen and have you looked were

950
00:41:54,088 --> 00:41:58,798
there other elements present or just

951
00:41:55,949 --> 00:42:00,809
those well I mean Never Say Never but if

952
00:41:58,798 --> 00:42:03,719
you look by ok and I give lectures on

953
00:42:00,809 --> 00:42:05,669
this to my students mm-hmm you would say

954
00:42:03,719 --> 00:42:08,909
that all life by definition is

955
00:42:05,668 --> 00:42:11,129

carbon-based all right you cannot I mean

956

00:42:08,909 --> 00:42:12,630

you know unless there's some kind of

957

00:42:11,130 --> 00:42:16,588

weird chemistry that we don't know about

958

00:42:12,630 --> 00:42:17,969

and who knows life is based on carbon so

959

00:42:16,588 --> 00:42:19,978

we would expect life elsewhere in the

960

00:42:17,969 --> 00:42:21,329

cosmos to be carbon-based you know the

961

00:42:19,978 --> 00:42:22,618

science fiction writers talk about

962

00:42:21,329 --> 00:42:24,059

silicon-based life

963

00:42:22,619 --> 00:42:25,949

well silicon is that

964

00:42:24,059 --> 00:42:28,199

nonsense as far as we know I keep on

965

00:42:25,949 --> 00:42:30,509

kind of adding the caveat that as far as

966

00:42:28,199 --> 00:42:32,420

we know because as a heretic I don't

967

00:42:30,509 --> 00:42:35,818

want to suggest that everything to me

968

00:42:32,420 --> 00:42:38,608

these things are limited by my mind but

969

00:42:35,818 --> 00:42:44,728

as far as we can tell silicon for

970
00:42:38,608 --> 00:42:47,308
example it is climate right no yeah it's

971
00:42:44,728 --> 00:42:49,978
determine the source of energies no but

972
00:42:47,309 --> 00:42:53,069
so silicones out of the picture

973
00:42:49,978 --> 00:42:55,379
yeah it is but what also you also hint

974
00:42:53,068 --> 00:42:58,228
that there's a hint of a DNA type

975
00:42:55,380 --> 00:42:59,548
structure well we find it we are finding

976
00:42:58,228 --> 00:43:01,348
DNA in the stratosphere

977
00:42:59,548 --> 00:43:03,630
oh well that's pretty that's pretty

978
00:43:01,349 --> 00:43:05,670
phenomenal yeah I mean again I would

979
00:43:03,630 --> 00:43:08,759
expect I mean there's got to be some

980
00:43:05,670 --> 00:43:10,019
information system and the you know if a

981
00:43:08,759 --> 00:43:11,759
number of people are saying well maybe

982
00:43:10,018 --> 00:43:14,488
on earth even there's a different type

983
00:43:11,759 --> 00:43:15,719
of information that's not DNA now I

984
00:43:14,489 --> 00:43:17,068
don't know how they're going to

985
00:43:15,719 --> 00:43:18,150
demonstrate this because if you don't

986
00:43:17,068 --> 00:43:20,248
know what you're looking for how are you

987
00:43:18,150 --> 00:43:22,199
going to find it but some people are

988
00:43:20,248 --> 00:43:25,169
making a lot of head will making a lot

989
00:43:22,199 --> 00:43:26,880
of noise about this idea but I am kind

990
00:43:25,170 --> 00:43:29,099
of conservative about this I think life

991
00:43:26,880 --> 00:43:32,479
forms around the cosmos would be based

992
00:43:29,099 --> 00:43:35,519
on carbon they would be based on DNA and

993
00:43:32,478 --> 00:43:37,588
they would essentially be what we what

994
00:43:35,518 --> 00:43:39,748
we expect to find me here but different

995
00:43:37,588 --> 00:43:42,349
obviously they'd be modified by their

996
00:43:39,748 --> 00:43:45,948
conditions in which they're living in

997
00:43:42,349 --> 00:43:49,439
now I want to just ask you about another

998

00:43:45,949 --> 00:43:52,079
scientists work that you may be familiar

999
00:43:49,438 --> 00:43:54,178
with and I'm not asking you to critique

1000
00:43:52,079 --> 00:43:57,089
it as a given a good or bad but just

1001
00:43:54,179 --> 00:43:59,459
kind of what do you think about what

1002
00:43:57,088 --> 00:44:03,150
he's done and I'm talking about doctor

1003
00:43:59,458 --> 00:44:05,698
Richard Hoover in the US and the the

1004
00:44:03,150 --> 00:44:10,259
crinoids fassl's he seems to think he

1005
00:44:05,699 --> 00:44:12,059
found on the moment I know Mars no rich

1006
00:44:10,259 --> 00:44:14,548
in a lot of his talks in the States

1007
00:44:12,059 --> 00:44:17,910
mainly and I will critique him his works

1008
00:44:14,548 --> 00:44:19,438
amazing okay this is the kind of work

1009
00:44:17,909 --> 00:44:22,608
that people should be taking seriously

1010
00:44:19,438 --> 00:44:26,009
and repeated as you know this man was

1011
00:44:22,608 --> 00:44:28,130
kicked out where he was kind of he'd

1012
00:44:26,009 --> 00:44:31,219

retired he was working with NASA and

1013

00:44:28,130 --> 00:44:34,499

producing these amazing images of

1014

00:44:31,219 --> 00:44:36,630

fossilized not these are not living

1015

00:44:34,498 --> 00:44:37,028

organism these are fossilized organisms

1016

00:44:36,630 --> 00:44:39,278

they meet

1017

00:44:37,028 --> 00:44:41,650

rights and to microbiologists these

1018

00:44:39,278 --> 00:44:43,059

images are amazing but the people again

1019

00:44:41,650 --> 00:44:44,380

pooh-poohed them I don't think they look

1020

00:44:43,059 --> 00:44:46,659

at the evidence I think it's a knee-jerk

1021

00:44:44,380 --> 00:44:48,400

reaction and they completely ignore it

1022

00:44:46,659 --> 00:44:49,838

now every time I go to one of these

1023

00:44:48,400 --> 00:44:52,088

lectures I'm just I just come out

1024

00:44:49,838 --> 00:44:54,548

gobsmacked I'm just amazed by what he

1025

00:44:52,088 --> 00:44:58,739

shows you and yet it doesn't register in

1026

00:44:54,548 --> 00:45:01,228

the norm you know I mean it's kind of I

1027
00:44:58,739 --> 00:45:03,728
just can't understand the disconnect

1028
00:45:01,228 --> 00:45:05,649
really be people listening maybe they

1029
00:45:03,728 --> 00:45:06,368
don't want to listen maybe but it's it's

1030
00:45:05,650 --> 00:45:09,329
very good

1031
00:45:06,369 --> 00:45:11,259
extremely good work and he should be

1032
00:45:09,329 --> 00:45:14,400
they should be praised for it not

1033
00:45:11,259 --> 00:45:18,998
criticized well there was apparently a

1034
00:45:14,400 --> 00:45:23,798
what looked like a fossil on on Mars but

1035
00:45:18,998 --> 00:45:27,848
the rover the rover sorry about that the

1036
00:45:23,798 --> 00:45:31,449
rover found it and then they destroyed

1037
00:45:27,849 --> 00:45:33,249
it are you I don't know about I mean

1038
00:45:31,449 --> 00:45:35,380
obviously I read all these conspiracy

1039
00:45:33,248 --> 00:45:37,028
theories I don't like to get involved

1040
00:45:35,380 --> 00:45:40,499
too much in comes person series because

1041
00:45:37,028 --> 00:45:42,759
you know I've got enough on as it is yes

1042
00:45:40,498 --> 00:45:44,618
the you know where's the where's the

1043
00:45:42,759 --> 00:45:48,789
where can you find the proof unless I

1044
00:45:44,619 --> 00:45:50,439
mean I think there's a one of the things

1045
00:45:48,789 --> 00:45:53,039
that always amazing man written letters

1046
00:45:50,438 --> 00:45:56,558
to the London Times about this is that

1047
00:45:53,039 --> 00:46:00,789
NASA is sending these expensive Rovers

1048
00:45:56,559 --> 00:46:03,219
to planets and to cause a comments etc

1049
00:46:00,789 --> 00:46:04,900
and they're not looking for life now why

1050
00:46:03,219 --> 00:46:06,458
are they not looking for life like you

1051
00:46:04,900 --> 00:46:08,739
know any microbiologist can tell them

1052
00:46:06,458 --> 00:46:11,379
out to find life I mean they did this in

1053
00:46:08,739 --> 00:46:15,309
the 1970s with the biking issue and of

1054
00:46:11,380 --> 00:46:17,409
course there are people who suggest get

1055

00:46:15,309 --> 00:46:20,259
11 for example suggest that they did

1056
00:46:17,409 --> 00:46:22,329
demonstrate life on Mars and they kind

1057
00:46:20,259 --> 00:46:24,969
of overlooked it if you want to use that

1058
00:46:22,329 --> 00:46:27,400
expression now I don't know why that's

1059
00:46:24,969 --> 00:46:29,979
maybe it's political maybe it's kind of

1060
00:46:27,400 --> 00:46:31,989
something to do with the religious right

1061
00:46:29,978 --> 00:46:34,178
I don't know I don't I'm not party to

1062
00:46:31,989 --> 00:46:35,739
what they get up to but I would have

1063
00:46:34,179 --> 00:46:37,329
thought that they should spend more time

1064
00:46:35,739 --> 00:46:39,759
looking for life under the book they

1065
00:46:37,329 --> 00:46:41,739
they're working now on water follow the

1066
00:46:39,759 --> 00:46:44,259
water if you find water you may have

1067
00:46:41,739 --> 00:46:46,418
life well you know the argument to that

1068
00:46:44,259 --> 00:46:48,159
is well you found the water but maybe

1069
00:46:46,418 --> 00:46:50,889

there's not life so why not look for the

1070

00:46:48,159 --> 00:46:52,000

life and this really as you can imagine

1071

00:46:50,889 --> 00:46:54,098

you can hear from my the tone in my

1072

00:46:52,000 --> 00:46:56,559

voice getting excited I get really

1073

00:46:54,099 --> 00:46:58,359

annoyed about this because I think the

1074

00:46:56,559 --> 00:47:00,880

American taxpayers who are funding NASA

1075

00:46:58,358 --> 00:47:01,869

want to know one thing about the cosmos

1076

00:47:00,880 --> 00:47:03,970

is their life

1077

00:47:01,869 --> 00:47:06,579

great and they using all this taxpayers

1078

00:47:03,969 --> 00:47:10,118

money not to look for life now why is

1079

00:47:06,579 --> 00:47:13,000

that I don't know well I certainly want

1080

00:47:10,119 --> 00:47:15,190

to know I'm among the American taxpayers

1081

00:47:13,000 --> 00:47:17,469

who want to know what about you Kate I

1082

00:47:15,190 --> 00:47:19,389

would definitely like but I believe that

1083

00:47:17,469 --> 00:47:21,788

there is life so for me it's not even a

1084
00:47:19,389 --> 00:47:23,558
question you know the old UFO specialist

1085
00:47:21,789 --> 00:47:25,660
has no doubt but that there's life

1086
00:47:23,559 --> 00:47:28,809
elsewhere I mean just if you just take

1087
00:47:25,659 --> 00:47:33,460
the law of fractals alone there has to

1088
00:47:28,809 --> 00:47:34,990
be I mean it so I just think and I

1089
00:47:33,460 --> 00:47:36,760
really don't think you should waste a

1090
00:47:34,989 --> 00:47:38,409
lot of your time and money arguing with

1091
00:47:36,760 --> 00:47:40,359
skeptics just plow ahead with what

1092
00:47:38,409 --> 00:47:48,098
you're doing and produce that one great

1093
00:47:40,358 --> 00:47:51,308
paper and then tell them all it's very

1094
00:47:48,099 --> 00:47:51,730
depressing and it yeah it does you know

1095
00:47:51,309 --> 00:47:53,680
I mean I

1096
00:47:51,730 --> 00:47:55,599
they came a point when I thought I might

1097
00:47:53,679 --> 00:47:58,419
be sucked from my university position

1098
00:47:55,599 --> 00:48:00,400
yeah and a lot of people yes I'm not

1099
00:47:58,420 --> 00:48:02,889
against special pleading but you know

1100
00:48:00,400 --> 00:48:05,230
the reality of this is the reality if

1101
00:48:02,889 --> 00:48:08,409
you try and do anything outside the box

1102
00:48:05,230 --> 00:48:10,630
to use the expression you get a lot of

1103
00:48:08,409 --> 00:48:13,118
trouble and if you want to call me a

1104
00:48:10,630 --> 00:48:15,430
heretic heretics come in for a lot of

1105
00:48:13,119 --> 00:48:17,318
problems and I feel interesting heretics

1106
00:48:15,429 --> 00:48:18,489
actually have done a lot of I'm

1107
00:48:17,318 --> 00:48:20,558
interested in history of science and

1108
00:48:18,489 --> 00:48:23,439
I've done a lot of research on heretics

1109
00:48:20,559 --> 00:48:26,349
for example Jack benveniste the memory

1110
00:48:23,440 --> 00:48:28,720
of water this idea that water may have a

1111
00:48:26,349 --> 00:48:30,220
memory that aids or me on the APPA the--

1112

00:48:28,719 --> 00:48:32,409
although he never actually linked it

1113
00:48:30,219 --> 00:48:36,009
with homeopathy now I went over to Paris

1114
00:48:32,409 --> 00:48:38,230
and I met this guy and very very

1115
00:48:36,009 --> 00:48:40,240
charming he recently died unfortunately

1116
00:48:38,230 --> 00:48:41,769
but he said you know Milton I can't

1117
00:48:40,239 --> 00:48:43,808
understand this he said I was one of the

1118
00:48:41,768 --> 00:48:46,659
top scientists in France

1119
00:48:43,809 --> 00:48:48,880
Legion of Honor or whatever and then I

1120
00:48:46,659 --> 00:48:51,730
did an experiment but suddenly I'm a bad

1121
00:48:48,880 --> 00:48:54,700
scientist why why am ia bad scientist

1122
00:48:51,730 --> 00:48:56,679
this happens though many times I think

1123
00:48:54,699 --> 00:48:59,108
it's just because science has become its

1124
00:48:56,679 --> 00:49:01,028
own religion and religion and politics

1125
00:48:59,108 --> 00:49:03,068
always go hand in hand and when you

1126
00:49:01,028 --> 00:49:04,630

threaten the power structure you're out

1127

00:49:03,068 --> 00:49:06,820

yeah well

1128

00:49:04,630 --> 00:49:09,670

as you say certainly money is a major

1129

00:49:06,820 --> 00:49:11,170

factor I mean grants have always been a

1130

00:49:09,670 --> 00:49:12,909

major problem major thing

1131

00:49:11,170 --> 00:49:14,349

factor in the United States I mean

1132

00:49:12,909 --> 00:49:17,920

obviously science is doing extremely

1133

00:49:14,349 --> 00:49:20,230

well so it does work but in this country

1134

00:49:17,920 --> 00:49:22,389

we are getting more and more organized

1135

00:49:20,230 --> 00:49:24,599

around money for example in in my

1136

00:49:22,389 --> 00:49:27,639

university and most university in the UK

1137

00:49:24,599 --> 00:49:30,279

youngsuk I find this up seeing young

1138

00:49:27,639 --> 00:49:31,869

scientists taken on and if they don't

1139

00:49:30,280 --> 00:49:34,330

get a big grant within three years

1140

00:49:31,869 --> 00:49:36,730

they're sacked hmm now the reason I

1141
00:49:34,329 --> 00:49:38,949
think that's obscene is it because you

1142
00:49:36,730 --> 00:49:42,280
know scientists have to develop they

1143
00:49:38,949 --> 00:49:43,719
have to mature sure like saintil

1144
00:49:42,280 --> 00:49:45,250
Leonardo DaVinci if you don't come up

1145
00:49:43,719 --> 00:49:50,049
with the Mona Lisa in three years you're

1146
00:49:45,250 --> 00:49:54,840
sacked you know well we we agree with

1147
00:49:50,050 --> 00:49:57,970
you on that that idea that money has

1148
00:49:54,840 --> 00:50:01,769
while it has helped science it has also

1149
00:49:57,969 --> 00:50:05,309
in in other ways destroyed the

1150
00:50:01,769 --> 00:50:08,110
entrepreneurial single person like

1151
00:50:05,309 --> 00:50:10,360
working on something well that's they

1152
00:50:08,110 --> 00:50:12,010
used to call an attic scientists and

1153
00:50:10,360 --> 00:50:14,680
that's I would say you're the classic

1154
00:50:12,010 --> 00:50:16,510
example of one you have an idea it's

1155
00:50:14,679 --> 00:50:19,359
you've proven it and you've used just

1156
00:50:16,510 --> 00:50:20,950
basic basic tools to do it well you know

1157
00:50:19,360 --> 00:50:22,539
most of the most of the major

1158
00:50:20,949 --> 00:50:24,489
developments in science have come

1159
00:50:22,539 --> 00:50:28,179
through there in dippity chance disk um

1160
00:50:24,489 --> 00:50:29,949
you know if you try and plan to find a

1161
00:50:28,179 --> 00:50:31,779
cure for cancer chances are you won't

1162
00:50:29,949 --> 00:50:34,000
find it I can almost predict that

1163
00:50:31,780 --> 00:50:35,410
someone will find the cause or a cure

1164
00:50:34,000 --> 00:50:35,949
for cancer when they're looking for

1165
00:50:35,409 --> 00:50:39,339
something else

1166
00:50:35,949 --> 00:50:42,730
mm-hmm they're just working on I don't

1167
00:50:39,340 --> 00:50:44,890
I'll spiders knees yeah the work on

1168
00:50:42,730 --> 00:50:46,389
spiders knees and they find the a this

1169

00:50:44,889 --> 00:50:49,449
looks like cancer or something you know

1170
00:50:46,389 --> 00:50:51,009
that is how the most most of the

1171
00:50:49,449 --> 00:50:53,230
developments are made but modern science

1172
00:50:51,010 --> 00:50:56,740
goes against that it wants to predict it

1173
00:50:53,230 --> 00:50:59,440
wants to control organize it becomes

1174
00:50:56,739 --> 00:51:01,899
some kind of you know organizational

1175
00:50:59,440 --> 00:51:04,570
bureaucratic bureaucracy yeah rather

1176
00:51:01,900 --> 00:51:06,550
than this beautiful wonder of people

1177
00:51:04,570 --> 00:51:10,000
just bumping into things you know mm-hmm

1178
00:51:06,550 --> 00:51:13,360
for the purpose of curiosity what Curia

1179
00:51:10,000 --> 00:51:15,940
where curiosity takes you right now I am

1180
00:51:13,360 --> 00:51:18,230
afraid that our time with shattered

1181
00:51:15,940 --> 00:51:22,789
reality is basic

1182
00:51:18,230 --> 00:51:24,289
/ well I was just warming up though well

1183
00:51:22,789 --> 00:51:27,949

we would love for you to come back on

1184

00:51:24,289 --> 00:51:31,730

sometime and if I was a not an associate

1185

00:51:27,949 --> 00:51:34,759

member but a full member of the sse that

1186

00:51:31,730 --> 00:51:37,130

is if I were Emma Craddock accredited

1187

00:51:34,760 --> 00:51:41,840

scientist well I would certainly invite

1188

00:51:37,130 --> 00:51:46,730

you to one of of those those conventions

1189

00:51:41,840 --> 00:51:49,400

suppose I let my membership lapse and

1190

00:51:46,730 --> 00:51:51,440

you know I used to go to a lot of

1191

00:51:49,400 --> 00:51:53,180

conferences and a lot of the time I was

1192

00:51:51,440 --> 00:51:55,070

pretty well bored because I would hear

1193

00:51:53,179 --> 00:51:57,919

the same old stuff but I went to these

1194

00:51:55,070 --> 00:51:59,960

conferences and I would go if they start

1195

00:51:57,920 --> 00:52:01,639

at 7:00 in the morning I'd go at 7:00

1196

00:51:59,960 --> 00:52:04,460

and I stay there until 10 o'clock

1197

00:52:01,639 --> 00:52:06,650

because the soul full of amazing stuff

1198
00:52:04,460 --> 00:52:09,139
it isn't enough didn't always believe

1199
00:52:06,650 --> 00:52:12,820
some of it but it was unbelievable

1200
00:52:09,139 --> 00:52:16,039
fantastic range of very exciting ideas

1201
00:52:12,820 --> 00:52:19,460
and to me as well as a layperson it's a

1202
00:52:16,039 --> 00:52:22,789
very exciting event to go to and to have

1203
00:52:19,460 --> 00:52:25,820
my thoughts broadened and meet a lot of

1204
00:52:22,789 --> 00:52:28,610
wonderful guests foreshadowed reality ya

1205
00:52:25,820 --> 00:52:30,820
know you know to my mind that's the kind

1206
00:52:28,610 --> 00:52:33,170
of science that should be done more of

1207
00:52:30,820 --> 00:52:36,769
more money and more interest should go

1208
00:52:33,170 --> 00:52:39,079
into it and stop you know stop this kind

1209
00:52:36,769 --> 00:52:41,570
of mundane inside the box stuff that

1210
00:52:39,079 --> 00:52:43,819
people are doing yeah this sort of

1211
00:52:41,570 --> 00:52:46,550
glorified technicians and not really in

1212
00:52:43,820 --> 00:52:48,230
good investigators anymore expression

1213
00:52:46,550 --> 00:52:51,440
English expression called journeyman you

1214
00:52:48,230 --> 00:52:56,179
know yeah yeah yeah what a lot of my

1215
00:52:51,440 --> 00:52:57,740
journey man who careerists you know it's

1216
00:52:56,179 --> 00:53:01,909
finished I think I mean I'm an old man

1217
00:52:57,739 --> 00:53:03,829
getting probably an old man got but you

1218
00:53:01,909 --> 00:53:07,039
know to me science is a wonder

1219
00:53:03,829 --> 00:53:09,139
it's a fascination is it's beautiful and

1220
00:53:07,039 --> 00:53:11,659
often I see that it's turning into a

1221
00:53:09,139 --> 00:53:13,909
regular churning out of the yep you know

1222
00:53:11,659 --> 00:53:16,159
the stock ideas and the stock responses

1223
00:53:13,909 --> 00:53:20,619
mm-hmm it's pretty sad

1224
00:53:16,159 --> 00:53:24,349
I agree thank you so much for being on

1225
00:53:20,619 --> 00:53:27,109
shattered reality podcast and our

1226

00:53:24,349 --> 00:53:30,829
intentions are for you to prosper and to

1227
00:53:27,110 --> 00:53:31,880
get some somebody somebody's in the

1228
00:53:30,829 --> 00:53:35,239
barrel out there

1229
00:53:31,880 --> 00:53:37,789
to do replicate studies for you and we

1230
00:53:35,239 --> 00:53:39,949
couldn't wish that more so I thought if

1231
00:53:37,789 --> 00:53:43,519
everybody wants to contact me for some

1232
00:53:39,949 --> 00:53:45,379
advice I have no money but we don't need

1233
00:53:43,518 --> 00:53:48,258
a lot of money but advice I'll certainly

1234
00:53:45,380 --> 00:53:49,430
provide well thank you so much and we're

1235
00:53:48,259 --> 00:53:53,719
gonna say goodbye now

1236
00:53:49,429 --> 00:53:57,129
yeah dr. Wainwright thank you so much I

1237
00:53:53,719 --> 00:54:02,088
wish you best of luck in your future

1238
00:53:57,130 --> 00:54:05,838
thank you thank you okay so that is

1239
00:54:02,088 --> 00:54:07,369
really a wonderful yeah I had a bunch of

1240
00:54:05,838 --> 00:54:09,048

questions I would have liked have asked

1241

00:54:07,369 --> 00:54:11,960

him oh yeah we ran out of time I'll have

1242

00:54:09,048 --> 00:54:13,489

to get him back on Bobi fascinating to

1243

00:54:11,960 --> 00:54:14,838

think that they rained viruses and

1244

00:54:13,489 --> 00:54:19,459

that's what actually got rid of the

1245

00:54:14,838 --> 00:54:21,259

dinosaurs it could but then I think the

1246

00:54:19,460 --> 00:54:24,650

other question that would have come up

1247

00:54:21,259 --> 00:54:26,539

would in that if this much life forms

1248

00:54:24,650 --> 00:54:28,338

are raining constantly we really should

1249

00:54:26,539 --> 00:54:30,710

see a lot more different life forms

1250

00:54:28,338 --> 00:54:32,599

today but then maybe we do maybe we just

1251

00:54:30,710 --> 00:54:36,318

haven't found them well the ones that

1252

00:54:32,599 --> 00:54:38,240

originally may have come down when the

1253

00:54:36,318 --> 00:54:40,880

earth first cooled as he had mentioned

1254

00:54:38,239 --> 00:54:43,578

they were able to prosper right

1255
00:54:40,880 --> 00:54:45,318
immediately because they were it was a

1256
00:54:43,579 --> 00:54:47,000
fertile ground and they weren't eaten

1257
00:54:45,318 --> 00:54:50,329
they weren't eaten but today many of

1258
00:54:47,000 --> 00:54:51,980
these things could be eaten hmm and I'm

1259
00:54:50,329 --> 00:54:55,700
I'm gonna have to write in our show

1260
00:54:51,980 --> 00:54:58,849
notes who the fellow was whose name just

1261
00:54:55,699 --> 00:55:01,669
escapes me who speculated on spores

1262
00:54:58,849 --> 00:55:05,838
coming in the same way and I know that

1263
00:55:01,670 --> 00:55:07,519
sir Fred Hoyle speculated on that too so

1264
00:55:05,838 --> 00:55:09,619
we'll put that in the show notes and I I

1265
00:55:07,518 --> 00:55:12,348
apologize for not remembering the

1266
00:55:09,619 --> 00:55:15,108
gentleman's name at the moment so what's

1267
00:55:12,349 --> 00:55:18,259
coming up next for us Papa - papa papa

1268
00:55:15,108 --> 00:55:20,179
drum roll May 20th and 21st I believe

1269
00:55:18,259 --> 00:55:21,588
well it's May 20th with the rain date of

1270
00:55:20,179 --> 00:55:25,399
May 21st okay

1271
00:55:21,588 --> 00:55:30,018
we will be up at PI beautiful downtown

1272
00:55:25,400 --> 00:55:32,950
Pineville New York and both Kate and I

1273
00:55:30,018 --> 00:55:39,758
Ferruccio will be there as well as our

1274
00:55:32,949 --> 00:55:39,759
illustrious engineer of mr. Phil and we

1275
00:55:45,338 --> 00:55:50,528
but we'd love to see you there we would

1276
00:55:48,400 --> 00:55:52,559
love to see you if you are in the New

1277
00:55:50,528 --> 00:55:56,650
York New Jersey Connecticut Pennsylvania

1278
00:55:52,559 --> 00:55:59,979
area you should be accessible to this

1279
00:55:56,650 --> 00:56:02,170
wonderful UFO it's sort of fun it's a

1280
00:55:59,978 --> 00:56:05,858
lot of fun good food and and there's

1281
00:56:02,170 --> 00:56:08,920
plenty of food local vendors and the

1282
00:56:05,858 --> 00:56:10,389
Flying Saucer diner that's incumbent

1283

00:56:08,920 --> 00:56:13,719
source of whatever it is up there

1284
00:56:10,389 --> 00:56:17,288
wonderful places to be and be seen and

1285
00:56:13,719 --> 00:56:20,650
where you are UFO costume if you like I

1286
00:56:17,289 --> 00:56:24,609
will just be my normal alien self no

1287
00:56:20,650 --> 00:56:28,690
costume needed okay all right so I guess

1288
00:56:24,608 --> 00:56:33,568
that's it okay so shall we say goodbye

1289
00:56:28,690 --> 00:56:33,568
from shattered reality

1290
00:56:51,889 --> 00:56:55,279
what was it

1291
00:57:01,039 --> 00:57:03,099
you