1
00:01:06,750 --> 00:01:23,200
you

2
00:01:23,210 --> 00:01:37,219
and morty baby

3
00:01:42,480 --> 00:01:39,180
welcome to this edition of the

4
00:01:44,520 --> 00:01:42,490
astronauts i'm lynn Bondurant during the

5
00:01:47,010 --> 00:01:44,530
next half hour we talk with former

6
00:01:48,990 --> 00:01:47,020
astronaut Michael Collins who was on the

7
00:01:53,070 --> 00:01:49,000
first manned mission to land on the moon

8
00:01:54,420 --> 00:01:53,080
that mission is called Apollo 11 and it

9
00:01:57,719 --> 00:01:54,430
culminated in one of the most

10
00:02:00,090 --> 00:01:57,729
significant events in known history his

11
00:02:03,660 --> 00:02:00,100
two companions astronauts Neil a

12
00:02:05,760 --> 00:02:03,670
Armstrong and Edwin Buzz Aldrin were the

13
00:02:08,580 --> 00:02:05,770

first two human beings to walk on the

14
00:02:14,670 --> 00:02:08,590
moon surface the mission took place from

15
00:02:19,710 --> 00:02:14,680
July 16 to 24 1969 it lasted 195 hours

16
00:02:22,410 --> 00:02:19,720
18 minutes and 35 seconds as call for by

17
00:02:24,809 --> 00:02:22,420
the Mission Plan Collins did not descend

18
00:02:28,259 --> 00:02:24,819
to the moon surface but remained in

19
00:02:30,240 --> 00:02:28,269
lunar orbit with a command module before

20
00:02:33,660 --> 00:02:30,250
we go to our interview with Michael

21
00:02:36,270 --> 00:02:33,670
Collins let's see part of a 1969 film

22
00:02:38,490 --> 00:02:36,280
documenting that historic flight the

23
00:02:47,340 --> 00:02:38,500
film is called eagle has landed

24
00:02:52,360 --> 00:02:50,140
other astronauts had made this journey

25
00:02:53,699 --> 00:02:52,370
to the launch pad but never with such

26
00:04:12,780 --> 00:02:53,709
anticipation

27
00:04:18,129 --> 00:04:15,580
three hours later the Apollo command

28
00:04:20,170 --> 00:04:18,139
module moves forward to extract the

29
00:04:22,659 --> 00:04:20,180
lunar module from the third stage of the

30
00:04:25,779 --> 00:04:22,669
launch vehicle both are moving at more

31
00:04:27,580 --> 00:04:25,789
than 17,000 miles an hour docked

32
00:04:29,620 --> 00:04:27,590
together they will sail a quarter

33
00:04:31,689 --> 00:04:29,630
million miles across the sea of space

34
00:04:40,150 --> 00:04:31,699
and into orbit around the Earth's

35
00:04:42,400 --> 00:04:40,160
nearest neighbour during the three-day

36
00:04:47,110 --> 00:04:42,410
journey to the moon the astronauts kept

37
00:04:48,749 --> 00:04:47,120
busy checklists navigation and

38
00:04:54,689 --> 00:04:48,759

observation

39
00:04:59,170 --> 00:04:56,439
they must work in a weightless

40
00:05:01,899 --> 00:04:59,180
environment keeping their spacecraft and

41
00:05:04,480 --> 00:05:01,909
themselves in good condition data must

42
00:05:06,730 --> 00:05:04,490
be collected and reported experiments

43
00:05:09,100 --> 00:05:06,740
must be performed including photography

44
00:05:11,890 --> 00:05:09,110
both inside and outside the spacecraft

45
00:05:34,180 --> 00:05:11,900
because of the film speed these actions

46
00:05:41,830 --> 00:05:38,950
July 19 Apollo 11 slows down and goes

47
00:05:46,210 --> 00:05:41,840
into orbit around the moon the bright

48
00:05:48,900 --> 00:05:46,220
blue planet of Earth now lies 238,000

49
00:05:51,610 --> 00:05:48,910
miles beyond the lunar horizon

50
00:05:53,650 --> 00:05:51,620
astronauts Armstrong and Aldrin now in

51
00:06:01,100 --> 00:05:53,660
the lunar module separate from the

52
00:06:06,630 --> 00:06:04,490
astronaut Collins remains behind

53
00:06:21,879 --> 00:06:06,640
preparation for the lunar module descent

54
00:06:21,889 --> 00:06:38,730
you

55
00:06:50,089 --> 00:06:41,760
the command module assumes the new name

56
00:06:57,640 --> 00:06:53,580
the lunar module will be called the

57
00:07:03,110 --> 00:07:00,380
from Colombia Michael Collins camera

58
00:07:05,090 --> 00:07:03,120
sees bright rays of the Sun reflecting

59
00:07:08,050 --> 00:07:05,100
patterns of color from the surface of

60
00:07:11,570 --> 00:07:08,060
the Eagle in this strange metallic bird

61
00:07:15,410 --> 00:07:11,580
rides the ancient and endless dream of

62
00:07:17,480 --> 00:07:15,420
all mankind the command pilot can see

63
00:07:19,910 --> 00:07:17,490

detail which his camera cannot record

64
00:07:21,980 --> 00:07:19,920
the four landing pads of the lunar

65
00:07:25,220 --> 00:07:21,990
module are fully extended and locked in

66
00:07:30,930 --> 00:07:25,230
place the Eagle is poised and prepared

67
00:07:30,940 --> 00:07:41,520
you

68
00:07:47,409 --> 00:07:44,320
the moon landing craft rocket engine

69
00:07:49,480 --> 00:07:47,419
fires to slow it down and to place it on

70
00:07:52,330 --> 00:07:49,490
the pathway to the landing site in the

71
00:07:55,600 --> 00:07:52,340
Sea of Tranquility there is tension than

72
00:07:57,580 --> 00:07:55,610
caution as the eagle flies lower warning

73
00:07:59,260 --> 00:07:57,590
lights blink on as the computer tries to

74
00:08:06,909 --> 00:07:59,270
keep up with a demand for control data

75
00:08:13,180 --> 00:08:06,919
but the status remains go eagle we got

76
00:08:16,330 --> 00:08:13,190
you down looking good over Houston after

77
00:08:21,250 --> 00:08:16,340
you're around angle s van pitch - I know

78
00:08:23,320 --> 00:08:21,260
y'all +18 rocket you're ago - can you go

79
00:08:29,350 --> 00:08:23,330
to continue park you're a go to continue

80
00:08:31,960 --> 00:08:29,360
quality altitude now 21,000 feet still

81
00:08:33,730 --> 00:08:31,970
looking very good velocity down out of

82
00:08:37,240 --> 00:08:33,740
1,200 feet per second looking great that

83
00:08:40,390 --> 00:08:37,250
vehicle with the reading on the 1202

84
00:08:43,719 --> 00:08:40,400
program for life rocket we got you we're

85
00:08:45,250 --> 00:08:43,729
going at alarm good radar data we're now

86
00:08:47,280 --> 00:08:45,260
in the approach phase everything looking

87
00:08:49,630 --> 00:08:47,290
good

88
00:08:54,600 --> 00:08:49,640

altitude 4200 thing you're go for

89
00:09:00,810 --> 00:08:56,940
I'd read it then go for landing 3,000

90
00:09:02,690 --> 00:09:00,820
feet dive alarm altitude 1,600 1,400

91
00:09:07,199 --> 00:09:02,700
feet still looking very good

92
00:09:13,699 --> 00:09:07,209
100 feet 21 down 33 degrees 100 feet

93
00:09:17,670 --> 00:09:13,709
down at 1900 1 1201 rocket 1201 alarm

94
00:09:22,230 --> 00:09:17,680
we're go think I will go altitude

95
00:09:26,250 --> 00:09:22,240
velocity light it is down to 20 feet 15

96
00:09:29,600 --> 00:09:26,260
forward forward go down I plate 200 feet

97
00:09:35,460 --> 00:09:29,610
point a nap down five and a half

98
00:09:35,470 --> 00:09:39,480
down two and a half

99
00:09:44,900 --> 00:09:43,190
alright alright

100
00:09:47,690 --> 00:09:44,910
but

101
00:09:48,170 --> 00:09:47,700
20 feet down to a nap picking up some

102
00:09:51,650 --> 00:09:48,180
dust

103
00:09:58,220 --> 00:09:51,660
fall forward forward ripped into the

104
00:10:04,250 --> 00:10:01,280
I'm back right okay engine stop we copy

105
00:10:04,260 --> 00:10:13,670
Bangor eBay PayPal I've landed

106
00:10:18,590 --> 00:10:15,670
through the window of the eagle

107
00:10:21,889 --> 00:10:18,600
armstrong and aldrin see what no human

108
00:10:24,980 --> 00:10:21,899
eyes have ever seen before their

109
00:10:36,720 --> 00:10:24,990
spacecraft casts a long shadow across

110
00:10:41,760 --> 00:10:39,480
seven hours after landing after careful

111
00:10:44,220 --> 00:10:41,770
preparations for later air scent were

112
00:10:46,830 --> 00:10:44,230
completed Armstrong opens the Eagle

113
00:11:21,050 --> 00:10:46,840

hatch and begins his climb down to the

114
00:11:27,630 --> 00:11:24,150
the first footsteps on this strange new

115
00:11:30,510 --> 00:11:27,640
world must be taken cautiously the moon

116
00:11:33,170 --> 00:11:30,520
has only 1/6 the gravity of Earth the

117
00:11:39,730 --> 00:11:33,180
nature of its surface was still unknown

118
00:11:51,160 --> 00:11:49,180
upon all fifth man one giant leaf now

119
00:11:53,560 --> 00:11:51,170
that we've seen some of the historic

120
00:11:55,240 --> 00:11:53,570
film of the Apollo 11 mission we're

121
00:11:57,639 --> 00:11:55,250
almost ready to go to the interview I

122
00:11:59,800 --> 00:11:57,649
had with Michael Collins following the

123
00:12:02,500 --> 00:11:59,810
publication of his second book liftoff

124
00:12:06,310 --> 00:12:02,510
but first here's a little background on

125
00:12:08,620 --> 00:12:06,320
Collins Michael Collins is a retired

126
00:12:13,420 --> 00:12:08,630
Major General in the US Air Force

127
00:12:16,150 --> 00:12:13,430
Reserve he was born October 31 1930 and

128
00:12:19,050 --> 00:12:16,160
Rome Italy here in a Bachelor of Science

129
00:12:21,160 --> 00:12:19,060
from US Military Academy

130
00:12:23,829 --> 00:12:21,170
besides Apollo 11

131
00:12:26,260 --> 00:12:23,839
he flew in the Gemini 10 earth orbital

132
00:12:29,500 --> 00:12:26,270
mission which was preparatory for Apollo

133
00:12:32,019 --> 00:12:29,510
missions Collins walked in space during

134
00:12:35,620 --> 00:12:32,029
the Gemini 10 mission for one hour and

135
00:12:37,780 --> 00:12:35,630
30 minutes astronaut John Young flew

136
00:12:44,110 --> 00:12:37,790
with him on that mission which lasted

137
00:12:46,030 --> 00:12:44,120
from July 18th to July 21st 1966 now

138
00:12:48,280 --> 00:12:46,040

let's go to my interview with Collins

139
00:12:50,650 --> 00:12:48,290
when I asked him what he was trying to

140
00:12:53,019 --> 00:12:50,660
accomplish with his latest book liftoff

141
00:12:54,730 --> 00:12:53,029
well I think people have very short

142
00:12:59,230 --> 00:12:54,740
memories and I thought it might be

143
00:13:01,060 --> 00:12:59,240
interesting to go back 20 years or so 19

144
00:13:03,940 --> 00:13:01,070
years it's been already since the first

145
00:13:06,880 --> 00:13:03,950
lunar landing but to go back to the time

146
00:13:11,190 --> 00:13:06,890
of John F Kennedy when he first started

147
00:13:14,019 --> 00:13:11,200
project column by by saying he wanted to

148
00:13:15,579 --> 00:13:14,029
send a man to the moon and returning him

149
00:13:19,780 --> 00:13:15,589
safely to earth by the end of the decade

150
00:13:21,190 --> 00:13:19,790
the decade being the 1960s and I thought

151
00:13:24,460 --> 00:13:21,200
you kind of nice to put down in

152
00:13:28,360 --> 00:13:24,470
sequential order some of the preparatory

153
00:13:31,990 --> 00:13:28,370
steps Project Mercury project Gemini

154
00:13:34,360 --> 00:13:32,000
project Apollo and to talk a little bit

155
00:13:36,100 --> 00:13:34,370
about those machines and how they worked

156
00:13:37,930 --> 00:13:36,110
but also to talk about the people who

157
00:13:39,970 --> 00:13:37,940
put them together the people who flew

158
00:13:43,269 --> 00:13:39,980
them and then just to keep that going

159
00:13:46,329 --> 00:13:43,279
right on up through Skylab the shuttle

160
00:13:48,340 --> 00:13:46,339
an examination of where NASA is today

161
00:13:50,110 --> 00:13:48,350
and then some possibilities for the

162
00:13:50,949 --> 00:13:50,120
future so that's fundamentally what the

163
00:13:52,879 --> 00:13:50,959

books about

164
00:13:54,229 --> 00:13:52,889
Mike looking back to the

165
00:13:57,499 --> 00:13:54,239
days of the Gemini in the Apollo

166
00:13:59,590 --> 00:13:57,509
programs to today's flight of the

167
00:14:02,119 --> 00:13:59,600
shuttle what do you see as some

168
00:14:05,030 --> 00:14:02,129
differences as related to astronaut

169
00:14:08,329 --> 00:14:05,040
training I think the the shuttle is more

170
00:14:11,599 --> 00:14:08,339
complicated by far than the early

171
00:14:15,169 --> 00:14:11,609
machines were the Apollo command module

172
00:14:18,199 --> 00:14:15,179
I thought was a was a real handful it

173
00:14:20,090 --> 00:14:18,209
was to me it was sort of like painting

174
00:14:21,470 --> 00:14:20,100
the Brooklyn Bridge by the time I got to

175
00:14:23,569 --> 00:14:21,480
the end of it there was something I'd

176
00:14:27,199 --> 00:14:23,579
forgotten at the beginning and for me it

177
00:14:29,629 --> 00:14:27,209
was a constant process of Education of

178
00:14:31,460 --> 00:14:29,639
learning and yet they tell me the

179
00:14:33,979 --> 00:14:31,470
shuttle is probably the equivalent of

180
00:14:37,939 --> 00:14:33,989
for command modules in complexity so

181
00:14:40,699 --> 00:14:37,949
that's the main difference what about

182
00:14:42,259 --> 00:14:40,709
you know public support comparing it you

183
00:14:44,419 --> 00:14:42,269
know in the past during Gemini Apollo

184
00:14:46,849 --> 00:14:44,429
and today it seems as though in the past

185
00:14:48,710 --> 00:14:46,859
there was a lot more public support for

186
00:14:50,689 --> 00:14:48,720
going to the moon then even there is

187
00:14:52,999 --> 00:14:50,699
today for say putting a space station in

188
00:14:55,939 --> 00:14:53,009

orbit well I think there are some

189
00:14:58,100 --> 00:14:55,949
fundamental differences one is that the

190
00:15:00,350 --> 00:14:58,110
President Kennedy got very personally

191
00:15:02,509 --> 00:15:00,360
involved Capitol Hill in those days was

192
00:15:04,879 --> 00:15:02,519
more apt to go along with White House

193
00:15:06,559 --> 00:15:04,889
programs than they are today so it got

194
00:15:08,869 --> 00:15:06,569
the enthusiastic support of the Congress

195
00:15:11,840 --> 00:15:08,879
and I and I think the people the

196
00:15:14,749 --> 00:15:11,850
difficulty with the space station I

197
00:15:17,479 --> 00:15:14,759
believe is that it's to be a research

198
00:15:21,429 --> 00:15:17,489
facility it's to find out answers to

199
00:15:24,379 --> 00:15:21,439
difficult questions and yet a lot of the

200
00:15:27,679 --> 00:15:24,389
politicians and budget tears and

201
00:15:30,109 --> 00:15:27,689
bureaucrats want NASA to list exactly

202
00:15:33,109 --> 00:15:30,119
what the answers to those questions are

203
00:15:35,659 --> 00:15:33,119
before they fly this research laboratory

204
00:15:38,509 --> 00:15:35,669
well that's simply not possible you

205
00:15:40,729 --> 00:15:38,519
can't that's the whole point in going is

206
00:15:43,429 --> 00:15:40,739
to is to have a research facility and

207
00:15:44,749 --> 00:15:43,439
and to learn as much as we possibly can

208
00:15:47,659 --> 00:15:44,759
I mean we never would have had the

209
00:15:50,779 --> 00:15:47,669
invention of penicillin for example if

210
00:15:54,619 --> 00:15:50,789
if the people doing the work had had to

211
00:15:56,569 --> 00:15:54,629
take that NASA like approach and say in

212
00:15:59,449 --> 00:15:56,579
20 pages why they were studying this

213
00:16:03,229 --> 00:15:59,459

particular mold or fungus and and what

214
00:16:05,239 --> 00:16:03,239
the spin-offs of it might possibly be so

215
00:16:06,319 --> 00:16:05,249
as a nation and we're really struggling

216
00:16:09,889 --> 00:16:06,329
to I get you

217
00:16:11,509 --> 00:16:09,899
and identify a space policy you know you

218
00:16:13,759 --> 00:16:11,519
look at the shuttle space policy and

219
00:16:16,189 --> 00:16:13,769
it's many people considered a real

220
00:16:20,869 --> 00:16:16,199
disaster what do you think we have to do

221
00:16:23,900 --> 00:16:20,879
to turn things around there is a fairly

222
00:16:26,030 --> 00:16:23,910
recent space policy issued by the Reagan

223
00:16:29,019 --> 00:16:26,040
White House which makes a good deal of

224
00:16:33,379 --> 00:16:29,029
sense and it includes sending people out

225
00:16:37,189 --> 00:16:33,389
into the universe but that policy has to

226
00:16:39,889 --> 00:16:37,199
be backed up with a high priority by the

227
00:16:42,379 --> 00:16:39,899
President himself by his staff by the

228
00:16:45,350 --> 00:16:42,389
leaders in Congress and I don't think

229
00:16:49,489 --> 00:16:45,360
that's happened because NASA is still

230
00:16:53,269 --> 00:16:49,499
appropriated less than 1% of the federal

231
00:16:55,699 --> 00:16:53,279
budget and and I think they need a

232
00:16:58,729 --> 00:16:55,709
little bit more to get an aggressive

233
00:17:01,669 --> 00:16:58,739
good long-range program going Mike

234
00:17:05,210 --> 00:17:01,679
thinking back over the past 30 years

235
00:17:07,699 --> 00:17:05,220
that nASA has been around what do you

236
00:17:11,000 --> 00:17:07,709
think have been NASA's five greatest

237
00:17:13,730 --> 00:17:11,010
accomplishments or achievements I've

238
00:17:16,789 --> 00:17:13,740

always thought that the first lunar

239
00:17:22,399 --> 00:17:16,799
landing by the end of the decade was

240
00:17:28,750 --> 00:17:22,409
probably what NASA did best I think in a

241
00:17:31,789 --> 00:17:28,760
way though I think Apollo 8 was a more

242
00:17:34,250 --> 00:17:31,799
fundamentally important for flight than

243
00:17:36,950 --> 00:17:34,260
Apollo 11 Apollo 8 you recall was the

244
00:17:41,659 --> 00:17:36,960
one that first saw men breaking away

245
00:17:45,009 --> 00:17:41,669
breaking bonds of gravity and reaching

246
00:17:47,659 --> 00:17:45,019
escape velocity another achievement that

247
00:17:52,399 --> 00:17:47,669
people forget but is a little thing

248
00:17:57,889 --> 00:17:52,409
called pioneer 10 pioneer 10 is the

249
00:18:01,250 --> 00:17:57,899
first manufactured first object made by

250
00:18:04,039 --> 00:18:01,260
humans to leave our solar system it's

251
00:18:06,950 --> 00:18:04,049
gone out past the orbit of Pluto has

252
00:18:08,419 --> 00:18:06,960
headed out for all times for infinity

253
00:18:13,549 --> 00:18:08,429
out into the universe

254
00:18:16,790 --> 00:18:13,559
I think the unmanned landing on Mars by

255
00:18:19,850 --> 00:18:16,800
the two Viking landers where

256
00:18:25,250 --> 00:18:19,860
I think that was a very important

257
00:18:27,470 --> 00:18:25,260
achievement so I guess I might say this

258
00:18:30,800 --> 00:18:27,480
is a short and quick list but Apollo is

259
00:18:32,240 --> 00:18:30,810
8 and 11 pioneer 10 and Viking and then

260
00:18:34,840 --> 00:18:32,250
the fifth one I'm going to put in the

261
00:18:38,660 --> 00:18:34,850
future and I'm going to say that's the

262
00:18:42,220 --> 00:18:38,670
Hubble Space Telescope Mike now that

263
00:18:45,140 --> 00:18:42,230

you've thought about NASA's 5 major

264
00:18:47,750 --> 00:18:45,150
accomplishments do you think that Mars

265
00:18:52,090 --> 00:18:47,760
should be NASA's next major initiative

266
00:18:56,870 --> 00:18:52,100
or endeavor yes I really do I think I

267
00:18:59,750 --> 00:18:56,880
think Mars would be so important and so

268
00:19:02,890 --> 00:18:59,760
long range of goal that it would pull in

269
00:19:05,810 --> 00:19:02,900
its wake a lot of things that NASA is

270
00:19:09,800 --> 00:19:05,820
trying to do today but not having much

271
00:19:14,570 --> 00:19:09,810
success with for example if you want to

272
00:19:16,880 --> 00:19:14,580
return to the moon I think probably a

273
00:19:20,240 --> 00:19:16,890
better justification for it is that it

274
00:19:23,470 --> 00:19:20,250
be a way station on the way to Mars I'm

275
00:19:25,610 --> 00:19:23,480
not saying that you have to have a

276
00:19:27,080 --> 00:19:25,620
colony on the moon or that you must

277
00:19:29,450 --> 00:19:27,090
return to the moon in order to reach

278
00:19:31,550 --> 00:19:29,460
Mars you don't but if Mars were your

279
00:19:33,530 --> 00:19:31,560
goal you might very well discover that

280
00:19:36,190 --> 00:19:33,540
the most practical way to get there

281
00:19:38,510 --> 00:19:36,200
would be to build a lunar colony first

282
00:19:42,560 --> 00:19:38,520
clearly if Mars were your goal you need

283
00:19:44,540 --> 00:19:42,570
a space station and the purposes to

284
00:19:47,480 --> 00:19:44,550
which that space station would be put

285
00:19:49,450 --> 00:19:47,490
would be much more clearly defined and I

286
00:19:52,040 --> 00:19:49,460
think NASA would have an easier time

287
00:19:55,850 --> 00:19:52,050
justifying and obtaining the funds for a

288
00:19:59,110 --> 00:19:55,860

space station as a precursor to Mars

289
00:20:01,610 --> 00:19:59,120
especially from the human factors

290
00:20:03,920 --> 00:20:01,620
physiological point of view I think a

291
00:20:08,960 --> 00:20:03,930
lot of things would pull in in the wake

292
00:20:10,970 --> 00:20:08,970
of a Mars initiative you know Mike do

293
00:20:12,950 --> 00:20:10,980
you think that the enthusiasm and the

294
00:20:15,490 --> 00:20:12,960
incitement on planet Earth will be as

295
00:20:17,990 --> 00:20:15,500
great for a mission to Mars as it was

296
00:20:20,090 --> 00:20:18,000
for the Apollo missions to the moon I

297
00:20:22,420 --> 00:20:20,100
think so I think Mars is a lot more

298
00:20:25,070 --> 00:20:22,430
interesting place than the moon although

299
00:20:28,610 --> 00:20:25,080
it is certainly true that the Viking

300
00:20:30,419 --> 00:20:28,620
results were disappointing in that they

301
00:20:32,789 --> 00:20:30,429
didn't find any life on Mars and

302
00:20:35,039 --> 00:20:32,799
little green men but the possibility

303
00:20:38,279 --> 00:20:35,049
exists that there used to be life on

304
00:20:41,940 --> 00:20:38,289
Mars and I think it would be fascinating

305
00:20:44,999 --> 00:20:41,950
to go digging the surface looking for

306
00:20:47,220 --> 00:20:45,009
fossils and studying the planet from the

307
00:20:50,340 --> 00:20:47,230
surface to try to determine why you have

308
00:20:52,950 --> 00:20:50,350
these two almost twin planets Earth and

309
00:20:55,769 --> 00:20:52,960
Mars and why they turned out so

310
00:20:58,230 --> 00:20:55,779
differently why the water there one time

311
00:21:01,470 --> 00:20:58,240
dug deep channels in the surface of Mars

312
00:21:03,960 --> 00:21:01,480
why did that dry up and blow away why

313
00:21:06,509 --> 00:21:03,970

did the Martian atmosphere become so

314
00:21:08,669 --> 00:21:06,519
thin how did it dissipate what can we

315
00:21:11,340 --> 00:21:08,679
learn about our own planet from studying

316
00:21:13,710 --> 00:21:11,350
this one that's had such a different

317
00:21:15,230 --> 00:21:13,720
history do you think that the mission to

318
00:21:19,560 --> 00:21:15,240
Mars should be international in scope

319
00:21:22,799 --> 00:21:19,570
that would certainly be nice complicates

320
00:21:24,440 --> 00:21:22,809
an already complicated task but I think

321
00:21:28,289 --> 00:21:24,450
it's worth a try and I think we ought to

322
00:21:31,859 --> 00:21:28,299
ought to try to put together not just a

323
00:21:34,560 --> 00:21:31,869
u.s. Soviet joint venture but rather one

324
00:21:38,039 --> 00:21:34,570
that includes a lot of other countries

325
00:21:40,739 --> 00:21:38,049
as well the Japanese the Europeans let

326
00:21:45,180 --> 00:21:40,749
anyone who can contribute technology and

327
00:21:48,539 --> 00:21:45,190
money throw it into the pot and do it do

328
00:21:51,359 --> 00:21:48,549
it in terms of humankind leaving this

329
00:21:53,450 --> 00:21:51,369
planet and establishing a settlement on

330
00:21:55,830 --> 00:21:53,460
Mars rather than any one nation doing it

331
00:21:57,359 --> 00:21:55,840
you know thinking back at the time of

332
00:21:59,810 --> 00:21:57,369
the Apollo missions there were very few

333
00:22:02,119 --> 00:21:59,820
nations involved in space exploration

334
00:22:04,379 --> 00:22:02,129
and currently they're over a hundred

335
00:22:07,739 --> 00:22:04,389
what would be the differences or the

336
00:22:09,960 --> 00:22:07,749
implications or influences versus many

337
00:22:13,049 --> 00:22:09,970
more people on a global scale involved

338
00:22:16,560 --> 00:22:13,059

in space exploration you know versus

339
00:22:19,739 --> 00:22:16,570
just a couple well of course so the more

340
00:22:23,549 --> 00:22:19,749
countries that are involved I suppose

341
00:22:28,249 --> 00:22:23,559
the more popular greater support section

342
00:22:32,369 --> 00:22:28,259
on our voyage would enjoy it does the

343
00:22:34,710 --> 00:22:32,379
negative side of it is it makes it makes

344
00:22:37,700 --> 00:22:34,720
it very difficult it's difficult enough

345
00:22:40,470 --> 00:22:37,710
I remember from project Apollo to get

346
00:22:43,529 --> 00:22:40,480
two or three American companies all

347
00:22:43,890 --> 00:22:43,539
working together harmoniously never mind

348
00:22:46,070 --> 00:22:43,900
people

349
00:22:49,040 --> 00:22:46,080
who are divided by an ocean and

350
00:22:51,870 --> 00:22:49,050
different languages different mores and

351
00:22:54,270 --> 00:22:51,880
cultures even a different system for

352
00:22:56,100 --> 00:22:54,280
weights and measures one of my favorite

353
00:22:59,640 --> 00:22:56,110
quotes in your book is these are not

354
00:23:02,040 --> 00:22:59,650
ejection seats but Thrones facing out on

355
00:23:06,480 --> 00:23:02,050
the universe and we are wealthier than

356
00:23:09,390 --> 00:23:06,490
kings by going into orbit boards say a

357
00:23:11,120 --> 00:23:09,400
Gemini spacecraft or around the moon or

358
00:23:13,980 --> 00:23:11,130
to the moon in the Apollo spacecraft

359
00:23:16,560 --> 00:23:13,990
does it really change one's perspective

360
00:23:19,110 --> 00:23:16,570
of themselves and of the planet Earth

361
00:23:22,100 --> 00:23:19,120
I think certainly to go as far away as

362
00:23:26,090 --> 00:23:22,110
the moon and look back on the earth

363
00:23:30,420 --> 00:23:26,100

certainly does affect your perspective

364
00:23:34,500 --> 00:23:30,430
the Apollo command module had had five

365
00:23:36,120 --> 00:23:34,510
windows in it and when your quarter of a

366
00:23:38,180 --> 00:23:36,130
million miles away from Earth and you

367
00:23:41,580 --> 00:23:38,190
look out the window to find it very

368
00:23:44,250 --> 00:23:41,590
common to be no earth in any one of the

369
00:23:47,100 --> 00:23:44,260
five the earth is down under you over

370
00:23:49,710 --> 00:23:47,110
your shoulder somewhere else so that's a

371
00:23:52,320 --> 00:23:49,720
strange sensation to have to maneuver

372
00:23:54,720 --> 00:23:52,330
around even to find your your home and

373
00:23:57,720 --> 00:23:54,730
then when you see it tiny is your

374
00:24:00,510 --> 00:23:57,730
thumbnail held out in front of you at

375
00:24:02,610 --> 00:24:00,520
arm's length that sort of gets your

376
00:24:05,970 --> 00:24:02,620
attention a beautiful sight tiny

377
00:24:08,700 --> 00:24:05,980
pristine blue and white very fragile

378
00:24:11,340 --> 00:24:08,710
looking object shining like a beautiful

379
00:24:13,860 --> 00:24:11,350
little headlight out there in the black

380
00:24:16,680 --> 00:24:13,870
velvet of space it does change your

381
00:24:18,690 --> 00:24:16,690
perspective it makes you think that we

382
00:24:21,620 --> 00:24:18,700
have to take better care of this little

383
00:24:25,380 --> 00:24:21,630
fragile entity because it is fragile and

384
00:24:27,800 --> 00:24:25,390
it also leads one in the direction of

385
00:24:29,970 --> 00:24:27,810
thinking about problems globally

386
00:24:33,330 --> 00:24:29,980
thinking back on your own career as a

387
00:24:35,240 --> 00:24:33,340
Gemini and Apollo astronaut I think you

388
00:24:39,210 --> 00:24:35,250

had a chance to take a couple of EB A's

389
00:24:42,300 --> 00:24:39,220
when base walks yes all right could you

390
00:24:43,860 --> 00:24:42,310
describe that and was it perhaps in

391
00:24:46,800 --> 00:24:43,870
terms the air sighs one of the scariest

392
00:24:49,890 --> 00:24:46,810
things that they have to do it wasn't it

393
00:24:52,250 --> 00:24:49,900
wasn't one of the most fun things that

394
00:24:56,450 --> 00:24:52,260
an astronaut gets to do it wasn't really

395
00:25:00,000 --> 00:24:56,460
wasn't really scary but it was

396
00:25:02,850 --> 00:25:00,010
it's like being cooped up inside a

397
00:25:05,430 --> 00:25:02,860
bathhouse let's say and then suddenly

398
00:25:07,799 --> 00:25:05,440
being freed and allowed to go up and do

399
00:25:11,010 --> 00:25:07,809
a double back somersault off the high

400
00:25:13,140 --> 00:25:11,020
board it was sort of that that feeling

401
00:25:15,000 --> 00:25:13,150
of release of freedom of getting out of

402
00:25:17,730 --> 00:25:15,010
a confined space of having the whole

403
00:25:20,060 --> 00:25:17,740
whole world at your feet to being able

404
00:25:22,970 --> 00:25:20,070
to see in all directions without

405
00:25:26,460 --> 00:25:22,980
confining spacecraft windows it was a

406
00:25:29,340 --> 00:25:26,470
wonderful sense of liberation of freedom

407
00:25:33,779 --> 00:25:29,350
of floating of being one with the whole

408
00:25:35,580 --> 00:25:33,789
universe and today using the MMU versus

409
00:25:38,430 --> 00:25:35,590
an umbilical cord I know it gives much

410
00:25:41,750 --> 00:25:38,440
more freedom it takes a different kind

411
00:25:44,039 --> 00:25:41,760
of training does it not yes the

412
00:25:47,340 --> 00:25:44,049
astronaut maneuvering unit is a

413
00:25:49,740 --> 00:25:47,350

miniature spacecraft in itself and it's

414
00:25:53,640 --> 00:25:49,750
a wonderful gadget it's flown like a

415
00:25:56,880 --> 00:25:53,650
spacecraft you have each hand with its

416
00:25:58,890 --> 00:25:56,890
assigned tasks to either turn you this

417
00:26:02,310 --> 00:25:58,900
way or that way up or down or to move

418
00:26:04,770 --> 00:26:02,320
you backwards and forwards and so the

419
00:26:07,950 --> 00:26:04,780
people who have I've never never flown

420
00:26:09,870 --> 00:26:07,960
with it but the people who have clearly

421
00:26:12,180 --> 00:26:09,880
really are enjoying themselves and have

422
00:26:14,310 --> 00:26:12,190
a lot more control over where they go

423
00:26:17,880 --> 00:26:14,320
and what they do you do dangling out of

424
00:26:20,310 --> 00:26:17,890
the end of an umbilical cord one last

425
00:26:22,350 --> 00:26:20,320
question if you had to give some words

426
00:26:24,630 --> 00:26:22,360
of wisdom to young people about the

427
00:26:26,850 --> 00:26:24,640
future and their partner Space

428
00:26:31,230 --> 00:26:26,860
Exploration what might you encourage

429
00:26:35,520 --> 00:26:31,240
them or how well I think whatever their

430
00:26:39,090 --> 00:26:35,530
field whether it be space or some other

431
00:26:41,669 --> 00:26:39,100
field I think to try to be the best in

432
00:26:44,880 --> 00:26:41,679
that field to really strive for

433
00:26:49,980 --> 00:26:44,890
excellence to I think that gives people

434
00:26:52,560 --> 00:26:49,990
of a feeling of confidence and a feeling

435
00:26:54,240 --> 00:26:52,570
of well-being to know that they've put

436
00:26:55,909 --> 00:26:54,250
their everything into something and

437
00:26:58,140 --> 00:26:55,919
they're the best they can be at it

438
00:27:01,950 --> 00:26:58,150

certainly was true I think as a space

439
00:27:05,190 --> 00:27:01,960
program man and I think space program

440
00:27:08,190 --> 00:27:05,200
will always be an area right on the edge

441
00:27:09,210 --> 00:27:08,200
of of our knowledge on the edge of our

442
00:27:12,330 --> 00:27:09,220
technology

443
00:27:15,060 --> 00:27:12,340
frontier of physically and mentally of

444
00:27:16,890 --> 00:27:15,070
the things we do and to me it would be a

445
00:27:20,190 --> 00:27:16,900
fascinating area for young people to

446
00:27:21,990 --> 00:27:20,200
become involved with certainly is we get

447
00:27:25,050 --> 00:27:22,000
into the 21st century we're going to see

448
00:27:27,870 --> 00:27:25,060
some remarkable advances in our space

449
00:27:30,690 --> 00:27:27,880
technology and would be a good career to

450
00:27:32,520 --> 00:27:30,700
be part of that the interview you just

451
00:27:34,980 --> 00:27:32,530
saw with former astronaut Michael

452
00:27:38,040 --> 00:27:34,990
Collins was recorded earlier when he was

453
00:27:40,100 --> 00:27:38,050
in Cleveland in future programs we will

454
00:27:43,500 --> 00:27:40,110
see and visit with other astronauts

455
00:27:45,270 --> 00:27:43,510
until then this is Lynn Bondurant saying

456
00:27:57,919 --> 00:27:45,280
goodbye from the NASA Lewis Research