



1
00:00:07,006 --> 00:00:07,640
>> GOOD MORNING.

2
00:00:07,640 --> 00:00:08,975
WELCOME TO ALL OF YOU HERE

3
00:00:08,975 --> 00:00:09,442
TODAY.

4
00:00:09,442 --> 00:00:11,711
IT'S AN HONOR TO BE HERE TO

5
00:00:11,711 --> 00:00:13,012
RECOGNIZE THE GREAT

6
00:00:13,012 --> 00:00:14,981
CONTRIBUTIONS OF EUGENE

7
00:00:14,981 --> 00:00:17,984
PARKER, WHO'S BRILLIANT WORK

8
00:00:17,984 --> 00:00:19,419
REVOLUTIONED OUR UNDERSTANDING

9
00:00:19,419 --> 00:00:20,854
OF THE HELIOSPHERE.

10
00:00:20,854 --> 00:00:22,689
MY NAME IS ROCKY KOLB, I'M

11
00:00:22,689 --> 00:00:24,557
DEAN WITH THE PHYSICAL

12
00:00:24,557 --> 00:00:25,458
SCIENCES AT THE UNIVERSITY OF

13
00:00:25,458 --> 00:00:27,861

CHICAGO AND A PROFESSOR IN THE

14

00:00:27,861 --> 00:00:29,329

DEPARTMENT OF ASTRONOMY AND

15

00:00:29,329 --> 00:00:30,663

STRIKE TWO PHYSICS.

16

00:00:30,663 --> 00:00:32,332

IT'S THE MY PRIVILEGE TO

17

00:00:32,332 --> 00:00:35,001

WELCOME OUR DISTINGUISHED

18

00:00:35,001 --> 00:00:36,569

SPEAKERS.

19

00:00:36,569 --> 00:00:38,671

DR. THOMAS ZURBUCHEN IS THE

20

00:00:38,671 --> 00:00:39,639

ASSOCIATE ADMINISTRATOR FOR

21

00:00:39,639 --> 00:00:41,775

THE SCIENCE MISSION

22

00:00:41,775 --> 00:00:43,176

DIRECTORATE OF NASA

23

00:00:43,176 --> 00:00:46,379

HEADQUARTERS IN WASHINGTON.

24

00:00:46,379 --> 00:00:47,080

DR. ZURBUCHEN PREVIOUSLY

25

00:00:47,080 --> 00:00:49,883

SERVED AS PROFESSOR OF SPACE

26

00:00:49,883 --> 00:00:51,951

SCIENCE IN AERO SPACE

27

00:00:51,951 --> 00:00:53,486

ENGINEERING AT THE UNIVERSITY

28

00:00:53,486 --> 00:00:54,754

OF MICHIGAN.

29

00:00:54,754 --> 00:00:57,123

HIS RESEARCH FOCUSED ON SOLAR

30

00:00:57,123 --> 00:00:59,492

AND HELIO SPEARIC PHYSICS.

31

00:00:59,492 --> 00:01:02,262

HE WAS ALSO THE UNIVERSITY'S

32

00:01:02,262 --> 00:01:03,263

FOUNDING DIRECTOR OF THE

33

00:01:03,263 --> 00:01:05,331

COLLEGE OF THE CENTER FOR

34

00:01:05,331 --> 00:01:06,366

ENTREPRENEURSHIP IN THE

35

00:01:06,366 --> 00:01:10,703

COLLEGE OF ENGINEERING.

36

00:01:10,703 --> 00:01:11,738

DR. ZURBUCHEN HAS BEEN

37

00:01:11,738 --> 00:01:13,106

INVOLVED WITH SEVERAL NASA

38

00:01:13,106 --> 00:01:14,007

SCIENCE MISSIONS.

39

00:01:14,007 --> 00:01:17,110

HE EARNED HIS PhD AND MASTER

40

00:01:17,110 --> 00:01:18,678

OF SCIENCE DEGREE BOTH IN

41

00:01:18,678 --> 00:01:21,514

FIDSICS FROM THE UNIVERSITY OF

42

00:01:21,514 --> 00:01:23,750

BETTER THAN IN SWITZERLAND.

43

00:01:23,750 --> 00:01:26,386

HE HAS RECEIVED MANY HONORS,

44

00:01:26,386 --> 00:01:29,088

INCLUDING THE NATIONAL SCIENCE

45

00:01:29,088 --> 00:01:31,357

AND TECHNOLOGY COUNCIL

46

00:01:31,357 --> 00:01:32,725

PRESIDENTIAL EARLY CAREER

47

00:01:32,725 --> 00:01:35,762

AWARD FOR SCIENTISTS AND

48

00:01:35,762 --> 00:01:37,130

ENGINEERS IN 2004.

49

00:01:37,130 --> 00:01:39,966

AND A NASA GROUP ACHIEVEMENT

50

00:01:39,966 --> 00:01:44,871

AWARD IN 2006.

51
00:01:44,871 --> 00:01:47,941
DR. NICOLA FOX IS THE PROJECT

52
00:01:47,941 --> 00:01:49,175
SCIENTIST OF THE SOLAR PROBE

53
00:01:49,175 --> 00:01:50,977
PLUS.

54
00:01:50,977 --> 00:01:54,247
SINCE 2015 SHE HAS SERVED AS

55
00:01:54,247 --> 00:01:56,516
CHIEF SCIENTIST OF

56
00:01:56,516 --> 00:01:57,884
HELIOPHYSICS IN THE SPACE

57
00:01:57,884 --> 00:01:59,986
RESEARCH BRANCH OF JOHNS

58
00:01:59,986 --> 00:02:01,154
HOPKINS UNIVERSITY APPLIED

59
00:02:01,154 --> 00:02:01,754
PHYSICS LABORATORY.

60
00:02:01,754 --> 00:02:03,790
SHE WAS THE DEPUTY PROJECT

61
00:02:03,790 --> 00:02:06,359
SCIENTIST FOR NASA'S VAN

62
00:02:06,359 --> 00:02:07,393
ALLEN PROBE MISSION, WHICH

63
00:02:07,393 --> 00:02:09,729

STUDY THE RADIATION BELTS THAT

64

00:02:09,729 --> 00:02:11,764
SURROUND EARTH.

65

00:02:11,764 --> 00:02:14,367
BEFORE JOINING APL, AS A

66

00:02:14,367 --> 00:02:16,669
RESEARCH SCIENTIST IN 1998,

67

00:02:16,669 --> 00:02:19,506
SHE WAS A NATIONAL RESEARCH

68

00:02:19,506 --> 00:02:23,009
COUNCIL FELLOW AT A NASA'S

69

00:02:23,009 --> 00:02:24,177
GODDARD SPACE SPACE CENTER.

70

00:02:24,177 --> 00:02:27,080
SHE EARNED A PhD IN PHYSICS

71

00:02:27,080 --> 00:02:29,782
FROM THE IMPERIAL COLLEGE,

72

00:02:29,782 --> 00:02:30,216
LONDON.

73

00:02:30,216 --> 00:02:32,986
OUR NEXT SPEAKER, ERIC ISAACS

74

00:02:32,986 --> 00:02:34,220
IS THE EXECUTIVE VICE

75

00:02:34,220 --> 00:02:35,989
PRESIDENT FOR RESEARCH,

76

00:02:35,989 --> 00:02:37,390
INNOVATION, AND NATIONAL

77

00:02:37,390 --> 00:02:38,124
LABORATORIES AT THE UNIVERSITY

78

00:02:38,124 --> 00:02:40,994
OF CHICAGO.

79

00:02:40,994 --> 00:02:43,596
IN THAT ROLE, HE PROVIDES

80

00:02:43,596 --> 00:02:46,733
DIRECT OVERSIGHT OF ARGONNE

81

00:02:46,733 --> 00:02:48,034
NATIONAL LABORATORY, FERMI

82

00:02:48,034 --> 00:02:53,673
LAB, THE MARINEOLOGICALLY

83

00:02:53,673 --> 00:02:54,173
LABORATORY AND THE

84

00:02:54,173 --> 00:02:56,809
RELATIONSHIP WITH THE GIANTS

85

00:02:56,809 --> 00:02:58,978
MAGELLAN TELESCOPE PROJECT.

86

00:02:58,978 --> 00:03:00,547
HIS RESPONSIBILITIES INCLUDE

87

00:03:00,547 --> 00:03:02,382
FURTHERING THE UNIVERSITY'S

88

00:03:02,382 --> 00:03:05,952

EFFORT IN COMPUTATION, DATE OF

89

00:03:05,952 --> 00:03:07,587

SCIENCE AND INNOVATION IN HYDE

90

00:03:07,587 --> 00:03:10,156

PARK, INCLUDING THE POLSKI

91

00:03:10,156 --> 00:03:11,691

CENTER FOR ENTREPRENEURSHIP

92

00:03:11,691 --> 00:03:12,525

AND INNOVATION.

93

00:03:12,525 --> 00:03:16,129

HE IS THE ROBERT A. MILLIKEN

94

00:03:16,129 --> 00:03:16,696

DISTINGUISHED SERVICE

95

00:03:16,696 --> 00:03:18,364

PROFESSOR OF PHYSICS.

96

00:03:18,364 --> 00:03:21,434

HE PREVIOUSLY SERVED AS THE

97

00:03:21,434 --> 00:03:23,636

UNIVERSITY PROVOST AND IS

98

00:03:23,636 --> 00:03:25,738

DIRECTOR OF ARGONNE NATIONAL

99

00:03:25,738 --> 00:03:26,706

LABORATORY.

100

00:03:26,706 --> 00:03:28,808

DR. ISAACS EARN ADD PhD IN

101

00:03:28,808 --> 00:03:30,743

PHYSICS FROM M.I.T.

102

00:03:30,743 --> 00:03:35,381

HE IS A PHYSICIST WHOSE WORK

103

00:03:35,381 --> 00:03:37,317

FOCUSES ON QUANTUM MATERIALS.

104

00:03:37,317 --> 00:03:38,718

PLEASE JOIN ME IN GIVING A

105

00:03:38,718 --> 00:03:41,487

WALK WELCOME TO DR. ACHE

106

00:03:44,190 --> 00:03:42,622

ISAACS.

107

00:03:44,190 --> 00:03:47,894

[APPLAUSE]

108

00:03:47,894 --> 00:03:49,362

>> THANK YOU, ROCKY, FOR THAT

109

00:03:49,362 --> 00:03:49,629

RK.

110

00:03:49,629 --> 00:03:50,663

GOOD MORNING TO EVERYBODY.

111

00:03:50,663 --> 00:03:53,433

I ALSO WANTS TO EXTEND MY

112

00:03:53,433 --> 00:03:54,968

WELCOME TO THOMAS AND OUR

113

00:03:54,968 --> 00:03:57,604

PARTNERS AT NASA.

114

00:03:57,604 --> 00:03:59,272

REALLY, AN EXTRAORDINARY DAY

115

00:03:59,272 --> 00:03:59,572

TODAY.

116

00:03:59,572 --> 00:04:02,275

WE ARE HERE TO HONOR PROFESSOR

117

00:04:02,275 --> 00:04:04,010

EUGENE PARKER, WHO IS THE

118

00:04:04,010 --> 00:04:06,179

UNIVERSITY OF CHICAGO EMER

119

00:04:06,179 --> 00:04:07,880

ADVERTISE PROFESSOR IN

120

00:04:07,880 --> 00:04:09,349

ASTRONOMY AND PHYSICS.

121

00:04:09,349 --> 00:04:12,986

GENE PARKER WAS A IN THE ROCKY

122

00:04:12,986 --> 00:04:14,821

FERMI INSTITUTE IN 1958, WHEN

123

00:04:14,821 --> 00:04:17,023

HE PREDICTED THE EXISTENCE OF

124

00:04:17,023 --> 00:04:17,890

THE SOLAR WIND.

125

00:04:17,890 --> 00:04:20,193

IT WAS A FUNDAMENTAL INSIGHT

126
00:04:20,193 --> 00:04:22,128
THAT FOREVER CHANGED WAY IN

127
00:04:22,128 --> 00:04:24,097
WHICH WE UNDERSTOOD THE SUN,

128
00:04:24,097 --> 00:04:30,036
THE HELIOSPHERE AND IN GENERAL

129
00:04:30,036 --> 00:04:31,170
INTER-KUAN TEARY SPACE.

130
00:04:31,170 --> 00:04:32,772
TO GIVE YOU WHAT AN IDEA THIS

131
00:04:32,772 --> 00:04:35,908
WAS, UNTIL THIS DISCOVERY, THE

132
00:04:35,908 --> 00:04:36,843
PREDICTION OF THE SOLAR WIND

133
00:04:36,843 --> 00:04:39,112
BY PROFESSOR PARKER,

134
00:04:39,112 --> 00:04:40,980
SCIENTISTS REGARDED SPACE

135
00:04:40,980 --> 00:04:42,849
BETWEEN PLAN ETC. OUTSIDE OF

136
00:04:42,849 --> 00:04:44,517
THE HELIO FAIR AS ESSENTIALLY

137
00:04:44,517 --> 00:04:44,951
A VACUUM.

138
00:04:44,951 --> 00:04:47,620

THIS WAS A TRANSFORMATIVE IDEA

139

00:04:47,620 --> 00:04:49,622

AT THE TIME AND THIS AND OTHER

140

00:04:49,622 --> 00:04:51,791

PROJECTS THAT PROFESSOR PARKER

141

00:04:51,791 --> 00:04:55,161

LED, LED TO DEFINE WHAT IS

142

00:04:55,161 --> 00:04:56,462

CALLED HELIOPHYSICS AND THE

143

00:04:56,462 --> 00:04:58,464

STUDY OF THE SUN WHEN THE IDEA

144

00:04:58,464 --> 00:04:59,599

FIRST CAME OUT THERE WAS A LOT

145

00:04:59,599 --> 00:05:01,734

OF OPPOSITION, WHAT I CALL

146

00:05:01,734 --> 00:05:02,268

REVOLUTIONARY IDEA.

147

00:05:02,268 --> 00:05:03,436

IT WAS QUITE STRONG.

148

00:05:03,436 --> 00:05:05,438

HIS FIRST PAPER, WHICH WAS

149

00:05:05,438 --> 00:05:06,906

SUBMITTED TO THE STRIKE TWO

150

00:05:06,906 --> 00:05:08,741

PHYSICAL JOURNAL WAS REJECTED

151

00:05:08,741 --> 00:05:10,643
BY ITS TWO REFEREES.

152

00:05:10,643 --> 00:05:12,345
THE PAPER, INTERESTINGLY

153

00:05:12,345 --> 00:05:14,247
ENOUGH, WAS SAVED BY ANOTHER

154

00:05:14,247 --> 00:05:18,584
COLLEAGUE OF OURS, PROFESSOR

155

00:05:18,584 --> 00:05:19,585
CHANDRASEKHAR WHO SPENT

156

00:05:19,585 --> 00:05:20,353
SIGNATURE YEARS AT THE

157

00:05:20,353 --> 00:05:23,423
UNIVERSITY AS A FACULTY MEMBER

158

00:05:23,423 --> 00:05:25,825
AND RECEIVED THE 1983 NOBEL

159

00:05:25,825 --> 00:05:28,995
PRIZE IN PHYSICS.

160

00:05:28,995 --> 00:05:30,029
CHANDRA UNDERSTOOD THAT

161

00:05:30,029 --> 00:05:30,863
IMPORTANT INSIGHTS INTO THE

162

00:05:30,863 --> 00:05:31,698
NATURE OF THE UNIVERSITY AND

163

00:05:31,698 --> 00:05:33,599

TO SCIENCE IN GENERAL WERE NOT

164

00:05:33,599 --> 00:05:35,268

ALWAYS WARMLY WELCOMED AT

165

00:05:35,268 --> 00:05:35,601

FIRST.

166

00:05:35,601 --> 00:05:39,038

IN FACT, CHANDRA HIMSELF HAD

167

00:05:39,038 --> 00:05:40,406

BEEN RIDICULED WHEN HE, A

168

00:05:40,406 --> 00:05:42,842

GENERATION EARLIER, HAD

169

00:05:42,842 --> 00:05:44,577

PREDICTED THAT NASA STARS,

170

00:05:44,577 --> 00:05:47,847

MUCH MORE MASSIVE THAN OUR SUN

171

00:05:47,847 --> 00:05:50,183

COULD COLLAPSE INTO WHAT WE

172

00:05:50,183 --> 00:05:52,485

CALLED BLACK HOLES.

173

00:05:52,485 --> 00:05:56,589

THE PAPER WAS PUBLISHED AND

174

00:05:56,589 --> 00:05:59,559

PROFESSOR PARKER'S THEORY WAS

175

00:05:59,559 --> 00:06:00,927

CONFIRMED BY DIRECT

176
00:06:00,927 --> 00:06:02,028
OBSERVATION OF THE SOLAR WINDS

177
00:06:02,028 --> 00:06:03,629
AND THE REST IS HISTORY.

178
00:06:03,629 --> 00:06:06,232
PROFESSOR PARKER GAME THE

179
00:06:06,232 --> 00:06:06,899
CHANDRASEKHAR DISTINGUISHED

180
00:06:06,899 --> 00:06:09,502
SERVICE PROFESSOR AND NA 1999

181
00:06:09,502 --> 00:06:11,437
THEY NAMED THEIR FLAGSHIP

182
00:06:11,437 --> 00:06:15,007
MISSION IN HONOR OF

183
00:06:15,007 --> 00:06:18,010
CHANDRASEKHAR WHOSE MADE SURE

184
00:06:18,010 --> 00:06:19,245
IS RECEIVED THE PUBLIC

185
00:06:19,245 --> 00:06:20,480
PLATFORM IT CONCERNED.

186
00:06:20,480 --> 00:06:21,948
THE CONNECTED RELATIONSHIPS

187
00:06:21,948 --> 00:06:25,485
BETWEEN NASA AND LEGD DRI

188
00:06:25,485 --> 00:06:27,920

STRIKE TWO FISSIVITIES ARE

189

00:06:27,920 --> 00:06:29,155

NEITHER UNIQUE NOR

190

00:06:29,155 --> 00:06:30,490

COINCIDENTAL.

191

00:06:30,490 --> 00:06:33,092

THIS HAS BEEN AT THE FOREFRONT

192

00:06:33,092 --> 00:06:39,398

EVER SINCE THE VERY FIRST

193

00:06:39,398 --> 00:06:43,903

OBSERVATORY IN 1897.

194

00:06:43,903 --> 00:06:48,241

IT'S BEEN A WHILE.

195

00:06:48,241 --> 00:06:50,409

WITH THE REFRACTURIVE

196

00:06:50,409 --> 00:06:51,377

TELESCOPE IT RETAINED THE

197

00:06:51,377 --> 00:06:54,113

TITLE OF THE WORLD'S LARGEST

198

00:06:54,113 --> 00:06:54,547

TELESCOPE.

199

00:06:54,547 --> 00:06:57,216

IT'S STILL THE LARGEST

200

00:06:57,216 --> 00:06:58,918

REFRACTING TELESCOPE.

201
00:06:58,918 --> 00:07:02,021
BUT IT BECAME THE HOME OF THE

202
00:07:02,021 --> 00:07:02,789
UNIVERSITY DEPARTMENT OF

203
00:07:02,789 --> 00:07:05,158
ASTRONOMY AND STRIKE TWO

204
00:07:05,158 --> 00:07:05,758
PHYSICS.

205
00:07:05,758 --> 00:07:06,793
THAT'S WHERE HUBBLE WAS

206
00:07:06,793 --> 00:07:08,394
WORKING WHEN HE COMPLETED HIS

207
00:07:08,394 --> 00:07:10,563
SUBSTITUTES IN 1919 AND HIS

208
00:07:10,563 --> 00:07:13,599
NAME LIVES ON WITH THE HUBBLE

209
00:07:13,599 --> 00:07:15,601
SPACE TELESCOPE, THE FIRST

210
00:07:15,601 --> 00:07:17,136
OPTICAL TELESCOPE PLACED IN

211
00:07:17,136 --> 00:07:17,637
SPACE.

212
00:07:17,637 --> 00:07:19,438
HUBBLE IS ONE OF THE LIST OF

213
00:07:19,438 --> 00:07:21,474

EXTRAORDINARY UNIVERSITY OF

214

00:07:21,474 --> 00:07:23,309

CHICAGO STRIKE TWO PHYSICISTS

215

00:07:23,309 --> 00:07:24,610

IN THIS SHORT TIME.

216

00:07:24,610 --> 00:07:25,945

IT IS IMPOSSIBLE TO GO

217

00:07:25,945 --> 00:07:26,879

THROUGH THE ENTIRE LIST OF

218

00:07:26,879 --> 00:07:27,747

WHAT WE HAVE DONE.

219

00:07:27,747 --> 00:07:29,081

I'D LIKE TO MENTION A FEW.

220

00:07:29,081 --> 00:07:30,616

TODAY THE UNIVERSITY OF

221

00:07:30,616 --> 00:07:31,851

CHICAGO REMAINS AT THE CUTTING

222

00:07:31,851 --> 00:07:34,387

EDGE OF DISCOVERY IN ASTRONOMY

223

00:07:34,387 --> 00:07:35,121

AND STRIKE TWO PHYSICS.

224

00:07:35,121 --> 00:07:37,757

WE ARE THE LEADING U.S.

225

00:07:37,757 --> 00:07:39,392

COLLABORATOR TO PLAY A COULD

226
00:07:39,392 --> 00:07:41,360
SEE MICK RAY TELESCOPE ON THE

227
00:07:41,360 --> 00:07:42,028
INTERNATIONAL SPACE STATION

228
00:07:42,028 --> 00:07:44,230
LATER THIS DECADE, THE EXTREME

229
00:07:44,230 --> 00:07:45,364
UNIVERSE SPACE OBSERVATORY,

230
00:07:45,364 --> 00:07:46,966
WHICH IS FUNNELED BY A GRANTS

231
00:07:46,966 --> 00:07:47,667
FROM NASA.

232
00:07:47,667 --> 00:07:49,802
BY THE UNIVERSITY IS ALSO A

233
00:07:49,802 --> 00:07:51,337
CORE PARTICIPANT IN THE SOUTH

234
00:07:51,337 --> 00:07:54,774
POLE TELESCOPE A POWERFUL TOOL

235
00:07:54,774 --> 00:07:55,842
ALREADY IN OPERATION, LOOKING

236
00:07:55,842 --> 00:07:58,377
AT THE STRUCTURES OF THE

237
00:07:58,377 --> 00:07:59,312
COSMIC MICROWAVE BACK GROUND

238
00:07:59,312 --> 00:08:01,414

AND SEARCHING FOR DARK ENERGY,

239

00:08:01,414 --> 00:08:01,848

FOR EXAMPLE.

240

00:08:01,848 --> 00:08:03,549

WE ARE THE FOUNDING PARTNER IN

241

00:08:03,549 --> 00:08:05,451

THE GIANT MAGELLAN TELESCOPE

242

00:08:05,451 --> 00:08:09,155

IN CHILE, THE LARGEST OPTICAL

243

00:08:09,155 --> 00:08:10,990

TELL COPE WHEN IT BEGINS

244

00:08:10,990 --> 00:08:13,292

OPERATIONS IN 2061 AND WHICH

245

00:08:13,292 --> 00:08:15,695

WILL PRODUCE IMAGES 10 TIMES

246

00:08:15,695 --> 00:08:17,663

SHARPER THAN WE CAN DO TODAY

247

00:08:17,663 --> 00:08:19,098

ON EARTH OR BY THE HUBBLE

248

00:08:19,098 --> 00:08:20,399

SPACE TELESCOPE IN THE SKY.

249

00:08:20,399 --> 00:08:23,302

WE ARE AN ORGANIZER OF THE

250

00:08:23,302 --> 00:08:26,138

P.R.J. OBSERVERY, A COSMIC RAY

251
00:08:26,138 --> 00:08:28,541
DETECTOR ROUGHLY THE SIZE OF

252
00:08:28,541 --> 00:08:30,977
THE STATE OF RHODE ISLAND.

253
00:08:30,977 --> 00:08:32,979
THESE EXCEPTIONAL TOOLS OF

254
00:08:32,979 --> 00:08:35,414
DISCOVERY ARE MATCHED BY OUR

255
00:08:35,414 --> 00:08:36,682
OUTSTANDING FACULTY AND

256
00:08:36,682 --> 00:08:37,149
RESEARCHERS.

257
00:08:37,149 --> 00:08:39,485
OUR DEPARTMENT IS HOME TO AN

258
00:08:39,485 --> 00:08:40,419
COMPENSATIONLY TALENTED

259
00:08:40,419 --> 00:08:41,621
FACULTY, WHO ARE OPENING THE

260
00:08:41,621 --> 00:08:42,788
DOOR TO THE COSMOS FOR THE

261
00:08:42,788 --> 00:08:45,224
NEXT GENERATION OF

262
00:08:45,224 --> 00:08:46,092
ASTRONOMERS, STRIKE TWO

263
00:08:46,092 --> 00:08:47,560

PHYSICISTS AND EVERYONE ELSE

264

00:08:47,560 --> 00:08:50,162

WHO IS PASSIONATE ABOUT

265

00:08:50,162 --> 00:08:52,231

SCIENCE AND DISCOVERY.

266

00:08:52,231 --> 00:08:54,500

SUFFICE TO SAY WE ARE PROUD TO

267

00:08:54,500 --> 00:08:56,702

JOIN PROFESSOR PARKER FOR HIS

268

00:08:56,702 --> 00:08:57,737

REVOLUTIONARY VISION OF THE

269

00:08:57,737 --> 00:09:01,307

COSMOS, THE SUN, THE

270

00:09:01,307 --> 00:09:03,709

HELIOSPHERE AND TO THE

271

00:09:03,709 --> 00:09:06,212

CONTRIBUTION FOR PLASMA STRIKE

272

00:09:06,212 --> 00:09:06,812

TWO PHYSICS.

273

00:09:06,812 --> 00:09:08,347

WE CONTINUE OUR PARTNERSHIP

274

00:09:08,347 --> 00:09:11,217

WITH NASA AND SCIENTISTS

275

00:09:11,217 --> 00:09:13,853

AROUND THE COUNTRY AND AROUND

276

00:09:13,853 --> 00:09:14,253

THE WORLD.

277

00:09:14,253 --> 00:09:20,559

THANK YOU.

278

00:09:20,559 --> 00:09:23,229

>> THANK YOU, ERIC.

279

00:09:23,229 --> 00:09:25,197

TODAY'S EVENT WAS ALMOST 60

280

00:09:25,197 --> 00:09:27,500

YEARS IN THE MAKING.

281

00:09:27,500 --> 00:09:31,504

IN OCTOBER OF 1958, UNIVERSITY

282

00:09:31,504 --> 00:09:34,106

OF CHICAGO PROFESSOR JOHN

283

00:09:34,106 --> 00:09:38,177

SIMPSON CONVENED A PHYSICS

284

00:09:38,177 --> 00:09:41,013

PARTICLES IN SPACE COMMITTEE

285

00:09:41,013 --> 00:09:42,648

AT THE SPACE SCIENCE BOARD.

286

00:09:42,648 --> 00:09:44,583

RIGHT HERE ON CAMPUS IN 1958,

287

00:09:44,583 --> 00:09:46,485

THE SPACE SCIENCE BOARD

288

00:09:46,485 --> 00:09:49,088

ULTIMATELY ADVISED NASA, THE

289

00:09:49,088 --> 00:09:50,690

DEPARTMENT OF DEFENSE, AND THE

290

00:09:50,690 --> 00:09:53,225

NATIONAL SCIENCE FOUNDATION ON

291

00:09:53,225 --> 00:09:55,494

ASPECTS OF INTERPLANETARY

292

00:09:55,494 --> 00:09:56,028

PROBES AND.

293

00:09:56,028 --> 00:09:58,230

SPACE STATIONS.

294

00:09:58,230 --> 00:10:00,666

POTENTIAL PROBLEMS OF MANNED

295

00:10:00,666 --> 00:10:02,068

SPACE FLIGHT, THE EXPLORATION

296

00:10:02,068 --> 00:10:05,438

OF VENUS AND MARS, AND OTHER

297

00:10:05,438 --> 00:10:07,540

SPACE-RELATED MATTERS.

298

00:10:07,540 --> 00:10:11,644

THEY ALSO ADDED A LIST OF

299

00:10:11,644 --> 00:10:13,346

LONG-RANGE PLANS FOR

300

00:10:13,346 --> 00:10:14,981

PARTICULARLY INTERESTING

301
00:10:14,981 --> 00:10:15,414
RESEARCH.

302
00:10:15,414 --> 00:10:17,917
THAT LIST INCLUDED A SOLAR

303
00:10:17,917 --> 00:10:19,552
PROBE TO STUDY PARTICLES AND

304
00:10:19,552 --> 00:10:22,488
FIELD IN THE VICINITY OF THE

305
00:10:22,488 --> 00:10:23,022
SUN.

306
00:10:23,022 --> 00:10:24,790
SINCE THAT FIRST MEETING OF

307
00:10:24,790 --> 00:10:26,792
THE SIMPSON COMMITTEE, THE

308
00:10:26,792 --> 00:10:28,494
SOLAR PROBE HAS REMAINED AT

309
00:10:28,494 --> 00:10:31,464
THE TOP OF VARIOUS NATIONAL

310
00:10:31,464 --> 00:10:33,666
ACADEMY AND NASA SCIENCE

311
00:10:33,666 --> 00:10:35,134
POLICY LISTS.

312
00:10:35,134 --> 00:10:37,236
SO IT'S VERY APPROPRIATE THAT

313
00:10:37,236 --> 00:10:40,039

WE ARE HERE IN CHICAGO TODAY

314

00:10:40,039 --> 00:10:44,777

TO HONOR GENE PARKER, WHOSE

315

00:10:44,777 --> 00:10:46,078

GROUND-BREAKING WORK RESHAPED

316

00:10:46,078 --> 00:10:47,279

OUR VISION OF THE SOLAR SYSTEM

317

00:10:47,279 --> 00:10:49,482

AND SET THIS ENTIRE ENDEAVOR

318

00:10:49,482 --> 00:10:51,384

IN MOTION.

319

00:10:51,384 --> 00:10:54,186

IN THE SIXTH DECADE SINCE

320

00:10:54,186 --> 00:10:55,488

EUGENE PARKER'S DISCOVERY OF

321

00:10:55,488 --> 00:10:57,323

THE SOLAR WIND, WE HAVE MADE

322

00:10:57,323 --> 00:10:58,491

TREMENDOUS GAINS IN OUR

323

00:10:58,491 --> 00:11:00,993

KNOWLEDGE OF SOLAR AND SPACE

324

00:11:00,993 --> 00:11:01,560

PHYSICS.

325

00:11:01,560 --> 00:11:03,729

THROUGH NASA'S MISSIONS TO

326

00:11:03,729 --> 00:11:06,065

SPACE, WE HAVE INVESTIGATED

327

00:11:06,065 --> 00:11:08,067

THE COMPOSITION, PROPERTIES,

328

00:11:08,067 --> 00:11:10,736

AND STRUCTURE OF THE SOLAR

329

00:11:10,736 --> 00:11:11,504

WIND.

330

00:11:11,504 --> 00:11:13,806

WE HAVE CAPTURED INCREDIBLY

331

00:11:13,806 --> 00:11:16,609

DETAILED IMAGES OF THE SUN'S

332

00:11:16,609 --> 00:11:17,176

CORONA.

333

00:11:17,176 --> 00:11:19,145

WE HAVE ADVANCED OUR KNOWLEDGE

334

00:11:19,145 --> 00:11:21,080

IN WAYS THAT THE COMMITTEE

335

00:11:21,080 --> 00:11:24,350

MIGHT NOT HAVE DREAMED OF.

336

00:11:24,350 --> 00:11:25,985

AND YET SO MANY FUNDAMENTAL

337

00:11:25,985 --> 00:11:28,287

QUESTIONS ABOUT THE SOLAR WIND

338

00:11:28,287 --> 00:11:31,590

REMAIN UNANSWERED.

339

00:11:31,590 --> 00:11:34,060

SIX DECADES AGO, EUGENE PARKER

340

00:11:34,060 --> 00:11:35,127

ASKED A FUNDAMENTAL QUESTION

341

00:11:35,127 --> 00:11:36,662

ABOUT THE STRUCTURE OF THE

342

00:11:36,662 --> 00:11:39,265

SUN'S CORONA.

343

00:11:39,265 --> 00:11:40,866

THAT QUESTION LED HIM TO

344

00:11:40,866 --> 00:11:43,069

PREDICT THE EXISTENCE OF THE

345

00:11:43,069 --> 00:11:45,438

SOLAR WIND, AND PERMANENTLY

346

00:11:45,438 --> 00:11:48,307

TRANSFORM THE WAY WE THINK OF

347

00:11:48,307 --> 00:11:49,141

SPACE.

348

00:11:49,141 --> 00:11:50,843

TODAY WE CELEBRATE THE

349

00:11:50,843 --> 00:11:52,511

PROFOUND QUESTION THAT HE

350

00:11:52,511 --> 00:11:55,448

ASKED AND THE BRILLIANT AND

351

00:11:55,448 --> 00:11:56,882

CREATIVITY WITH WHICH HE

352

00:11:56,882 --> 00:11:59,285

ANSWERED IT.

353

00:11:59,285 --> 00:12:01,353

BUT EVEN MORE IMPORTANTLY, WE

354

00:12:01,353 --> 00:12:03,656

CELEBRATE THE QUESTIONS THAT

355

00:12:03,656 --> 00:12:05,658

FLOWED FROM THAT FIRST ANSWER.

356

00:12:05,658 --> 00:12:08,227

QUESTIONS THAT HAVE LED US

357

00:12:08,227 --> 00:12:10,162

THROUGH SIX DECADES TO THIS

358

00:12:10,162 --> 00:12:13,165

HISTORIC MISSION.

359

00:12:13,165 --> 00:12:14,633

WE LOOK FORWARD TO FINDING

360

00:12:14,633 --> 00:12:16,535

ANSWERS TO THOSE QUESTIONS

361

00:12:16,535 --> 00:12:18,637

THROUGH THE DATA THAT THE

362

00:12:18,637 --> 00:12:20,706

SOLAR PROBE WILL SEND TO US.

363

00:12:20,706 --> 00:12:22,975

BUT EVEN MORE, WE LOOK FORWARD

364

00:12:22,975 --> 00:12:24,743

TO NEW QUESTIONS THAT WILL

365

00:12:24,743 --> 00:12:27,313

ARISE FROM THOSE ANSWERS,

366

00:12:27,313 --> 00:12:28,981

WHICH WILL POINT US TO YET

367

00:12:28,981 --> 00:12:30,950

MORE EXCITING DISCOVERIES.

368

00:12:30,950 --> 00:12:37,189

THANK YOU.

369

00:12:37,189 --> 00:12:39,391

[APPLAUSE]

370

00:12:39,391 --> 00:12:40,426

>> WE WOULD NOW LIKE TO SHARE

371

00:12:40,426 --> 00:12:43,028

WITH YOU A VIDEO ABOUT GENE

372

00:12:43,028 --> 00:12:44,763

PARKER AND THE IMPRESSIVE WORK

373

00:12:44,763 --> 00:12:47,766

THAT HAS BROUGHT US HERE

374

00:12:47,766 --> 00:12:51,737

TODAY.

375

00:12:51,737 --> 00:12:55,341

[■■■■]

376

00:12:55,341 --> 00:12:58,277

>> THE PRIMARY PUZZLE IN THE

377

00:12:58,277 --> 00:12:59,879

UNIVERSE BECAUSE IT'S THE ONE

378

00:12:59,879 --> 00:13:02,882

STAR WE CAN OBSERVE IN DETAIL

379

00:13:02,882 --> 00:13:05,017

AND STARS ARE COMPLICATED

380

00:13:05,017 --> 00:13:05,551

THINGS.

381

00:13:05,551 --> 00:13:07,520

WE CAN'T IMAGINE ALL THE

382

00:13:07,520 --> 00:13:08,888

STRANGE THINGS THAT HAVE BEEN

383

00:13:08,888 --> 00:13:10,823

DISCOVERED IN THE SUN.

384

00:13:10,823 --> 00:13:15,728

AS A CHILD, I ENJOYED VERY

385

00:13:15,728 --> 00:13:17,229

MUCH HOW THINGS WORKED.

386

00:13:17,229 --> 00:13:18,764

WHEN I WAS IN HIGH SCHOOL, I

387

00:13:18,764 --> 00:13:20,466

TOOK PHYSICS COURSE MY LAST

388

00:13:20,466 --> 00:13:24,737

YEAR AND REALIZED HOW

389

00:13:24,737 --> 00:13:25,371

FASCINATED I WAS.

390

00:13:25,371 --> 00:13:27,039

WHEN I FIRST STUMBLED ACROSS

391

00:13:27,039 --> 00:13:28,941

THE MATHEMATICS THAT ESTABLISHED

392

00:13:28,941 --> 00:13:32,978

THE SOLAR WIND, IT WAS 1957.

393

00:13:32,978 --> 00:13:41,220

I WAS 30 YEARS OLD.

394

00:13:41,220 --> 00:13:44,190

FOUR LINES OF ALGEBRA IN MY

395

00:13:44,190 --> 00:13:46,425

FIRST TWO OR THREE PAPERS ON

396

00:13:46,425 --> 00:13:48,661

THE SOLAR WIND, THE SOLAR WIND

397

00:13:48,661 --> 00:13:49,728

DOES NOT APPEAR.

398

00:13:49,728 --> 00:13:52,598

I TALKED ABOUT SOLAR CORE FUSION

399

00:13:52,598 --> 00:13:56,869

SOLAR RADIATION AND THEN I

400

00:13:56,869 --> 00:13:59,672

REALIZED IT'S A SLOW GAS AND

401
00:13:59,672 --> 00:14:01,574
THEN IT HIT ME, SOLAR WIND.

402
00:14:01,574 --> 00:14:03,442
WHEN I WROTE THE FIRST PAPER,

403
00:14:03,442 --> 00:14:04,677
AS FAR AS I WAS CONCERNED, IT

404
00:14:04,677 --> 00:14:05,744
WAS OPEN AND SHUT.

405
00:14:05,744 --> 00:14:08,480
I CAN REMEMBER HOW UPSET THE

406
00:14:08,480 --> 00:14:11,417
REFEREE WAS THAT

407
00:14:11,417 --> 00:14:12,751
CHANDRASEKHAR, THE EDITOR SENT

408
00:14:12,751 --> 00:14:13,719
MY FIRST PAPER TO.

409
00:14:13,719 --> 00:14:17,256
HE SAID "THIS IS RIDICULOUS.

410
00:14:17,256 --> 00:14:18,924
BEFORE YOU WRITE A SCIENTIFIC

411
00:14:18,924 --> 00:14:19,959
PAPER, YOU SHOULD AT LEAST

412
00:14:19,959 --> 00:14:21,060
TAKE THE TROUBLE OF GOING TO

413
00:14:21,060 --> 00:14:22,461

THE LIBRARY AND READING UP ON

414

00:14:22,461 --> 00:14:24,196

THE SUBJECT."

415

00:14:24,196 --> 00:14:26,999

NO FURTHER CRITICISM.

416

00:14:26,999 --> 00:14:28,067

NO FURTHER COMMENT.

417

00:14:28,067 --> 00:14:29,168

MY RESPONSE TO CHANDRASEKHAR

418

00:14:29,168 --> 00:14:31,637

WAS, WELL, HE COULDN'T FIND

419

00:14:31,637 --> 00:14:33,405

ANYTHING WRONG WITH IT, SO IT

420

00:14:33,405 --> 00:14:34,840

MUST BE PRETTY GOOD.

421

00:14:34,840 --> 00:14:37,142

I ALWAYS LOOKED UPON MYSELF AS

422

00:14:37,142 --> 00:14:38,877

A PHYSICIST, LEARNING NEW

423

00:14:38,877 --> 00:14:41,847

TRICKS BY LOOKING AT NATURE.

424

00:14:41,847 --> 00:14:44,617

THE SPACE, THE WHOLE GALAXY,

425

00:14:44,617 --> 00:14:45,884

THE WHOLE UNIVERSE.

426
00:14:45,884 --> 00:14:48,120
I KNOW NO BETTER PLACE TO FIND

427
00:14:48,120 --> 00:15:07,373
NEW PHYSICS.

428
00:15:12,378 --> 00:15:14,079
>> I'M REALLY EXCITED TO BE

429
00:15:14,079 --> 00:15:14,780
HERE TODAY.

430
00:15:14,780 --> 00:15:15,648
FOR TWO REASONS.

431
00:15:15,648 --> 00:15:17,650
FIRST OF ALL, THIS IS ONE OF

432
00:15:17,650 --> 00:15:18,717
MY FAVORITE CITIES.

433
00:15:18,717 --> 00:15:20,252
MY WIFE GREW UP HERE.

434
00:15:20,252 --> 00:15:24,456
I SPENT A LOT OF TIME HERE AT

435
00:15:24,456 --> 00:15:30,095
THE CHRISTMASES, HOLIDAYS AND

436
00:15:30,095 --> 00:15:31,597
RESTAURANTS AROUND TOWN.

437
00:15:31,597 --> 00:15:32,898
I'M GLAD TO BE BACK.

438
00:15:32,898 --> 00:15:34,266

MORE IMPORTANTLY I'M EXCITED

439

00:15:34,266 --> 00:15:36,335

TO BE HERE BECAUSE OF YOU,

440

00:15:36,335 --> 00:15:38,270

GENE AND EVERYTHING YOU HAVE

441

00:15:38,270 --> 00:15:41,907

DONE FOR THIS AMAZING FIELD OF

442

00:15:41,907 --> 00:15:45,311

SCIENCE THAT I'M PART OF AT

443

00:15:45,311 --> 00:15:46,011

NASA.

444

00:15:46,011 --> 00:15:50,249

WHAT I'D LIKE TO DO IS REALLY

445

00:15:50,249 --> 00:15:52,251

POINT TO THE FACT, OF COURSE,

446

00:15:52,251 --> 00:15:55,721

THAT THE WAY WE LOOK AT THE

447

00:15:55,721 --> 00:15:57,323

SCIENCE TODAY THROUGH THE MANY

448

00:15:57,323 --> 00:15:58,324

TELESCOPES OUT THERE AS A

449

00:15:58,324 --> 00:16:00,292

RESULT OF THE WORK THAT YOU

450

00:16:00,292 --> 00:16:03,929

HAVE DONE, GENE, NATURE HAS

451
00:16:03,929 --> 00:16:05,197
BECOME MORE BEAUTIFUL.

452
00:16:05,197 --> 00:16:06,532
MORE COMPLEX, JUST LIKE YOU

453
00:16:06,532 --> 00:16:07,232
SAID.

454
00:16:07,232 --> 00:16:08,033
BUT MORE BEAUTIFUL.

455
00:16:08,033 --> 00:16:09,702
I LOOK AT THIS AMAZING IMAGE

456
00:16:09,702 --> 00:16:13,939
BY ONE OF THE RECENT NASA

457
00:16:13,939 --> 00:16:14,707
MISSIONS.

458
00:16:14,707 --> 00:16:16,275
YOU ALSO POINTED OUT, OF

459
00:16:16,275 --> 00:16:30,956
COURSE, THE WAY THE STAR

460
00:16:30,956 --> 00:16:32,558
INTERACTING WITH THE CORONA

461
00:16:32,558 --> 00:16:34,727
MASS EJECTION AS MEASURED BY

462
00:16:34,727 --> 00:16:36,295
STEREO.

463
00:16:36,295 --> 00:16:38,597

BUT THAT THESE TAILS INDICATE

464

00:16:38,597 --> 00:16:41,266

THERE ARE FAST WINDS.

465

00:16:41,266 --> 00:16:43,435

THESE FAST WINDS, OF COURSE,

466

00:16:43,435 --> 00:16:44,069

PEOPLE COULDN'T IMAGINE.

467

00:16:44,069 --> 00:16:45,771

WHAT THEY THOUGHT ABOUT WAS

468

00:16:45,771 --> 00:16:49,308

THAT THE SUN WAS SLOWLY A

469

00:16:49,308 --> 00:16:50,576

REALLY SMALL KIND OF FREEZE

470

00:16:50,576 --> 00:16:51,310

WOULD HAPPEN.

471

00:16:51,310 --> 00:16:52,778

OH, NO.

472

00:16:52,778 --> 00:16:54,012

THAT SPACE BETWEEN THE PLANETS

473

00:16:54,012 --> 00:16:55,681

IS A LOT MORE EXCITING WITH A

474

00:16:55,681 --> 00:16:57,916

LOT MORE SCIENCE GOING ON THAN

475

00:16:57,916 --> 00:17:01,320

ANYBODY PREDICTED.

476
00:17:01,320 --> 00:17:05,591
OF COURSE, JUST A FEW YEARS

477
00:17:05,591 --> 00:17:08,026
LATER, YOUR PREDICTION WAS

478
00:17:08,026 --> 00:17:10,629
CONFIRMED, WITH MARINER II.

479
00:17:10,629 --> 00:17:13,565
IT WAS OUTSIDE OF THE EARTH

480
00:17:13,565 --> 00:17:15,667
AND HOW THE SUPERSONIC SOLAR

481
00:17:15,667 --> 00:17:18,203
WINDS, JUST LIKE YOU SAID, OF

482
00:17:18,203 --> 00:17:19,638
APPROXIMATELY THE TEMPERATURE

483
00:17:19,638 --> 00:17:22,474
THAT YOU HAVE SAID, A LITTLE

484
00:17:22,474 --> 00:17:23,776
BIT LESS, PERHAPS THAN YOU

485
00:17:23,776 --> 00:17:25,744
SAID IN YOUR INITIAL PAPER.

486
00:17:25,744 --> 00:17:29,948
IF I HAD TO WRITE A PAPER THAT

487
00:17:29,948 --> 00:17:32,818
THAT'S ACCURATE, I'D BE REALLY

488
00:17:32,818 --> 00:17:33,552

GLAD.

489

00:17:33,552 --> 00:17:35,821

THE SPACECRAFT AND SUBSEQUENT

490

00:17:35,821 --> 00:17:38,657

SPACECRAFT, THEY ALSO OBSERVED

491

00:17:38,657 --> 00:17:40,559

THE MAGNETIC FIELD SHAPE THAT

492

00:17:40,559 --> 00:17:42,694

WAS LATER IN THE SHAME PAPER

493

00:17:42,694 --> 00:17:44,797

THAT YOU PREDICTED, THE

494

00:17:44,797 --> 00:17:47,099

MAGNETIC FIELD WE REFER TO AS

495

00:17:47,099 --> 00:17:50,035

THE PARKER MAGNETIC FIELD.

496

00:17:50,035 --> 00:17:52,371

IT'S THAT OBSERVATION THAT

497

00:17:52,371 --> 00:17:53,505

WAS ALSO MADE.

498

00:17:53,505 --> 00:17:55,841

SO REALLY CREATING -- MAKING

499

00:17:55,841 --> 00:17:57,342

THIS IS HUGE HOMELAND.

500

00:17:57,342 --> 00:18:00,045

ONE OF THE BIGGEST

501
00:18:00,045 --> 00:18:02,114
DISCOVERIES, I BELIEVE, IN

502
00:18:02,114 --> 00:18:04,650
SOLAR AND SPACE AND

503
00:18:04,650 --> 00:18:05,851
HELIOPHYSICS, AS YOU POINTED

504
00:18:05,851 --> 00:18:06,385
OUT.

505
00:18:06,385 --> 00:18:08,454
ONCE YOU HAVE THIS SOLAR WIND,

506
00:18:08,454 --> 00:18:12,424
AND YOU KNOW YOU HAVE A GUESS

507
00:18:12,424 --> 00:18:15,394
ABOUT THE MAGNETIC FIELD AND

508
00:18:15,394 --> 00:18:18,530
THE STRUCTURE OF THE GALAXY,

509
00:18:18,530 --> 00:18:19,231
WHICH IS ANOTHER SUBJECT AREA

510
00:18:19,231 --> 00:18:20,666
YOU FOCUSED ON.

511
00:18:20,666 --> 00:18:23,168
THE RECOGNITION THAT THERE IS

512
00:18:23,168 --> 00:18:24,236
MAGNETIC FIELDS OUT THERE AND

513
00:18:24,236 --> 00:18:27,973

THIS UNIVERSE IS NOT JUST

514

00:18:27,973 --> 00:18:29,107

GRAVITATIONAL, IT'S MAGNETIC.

515

00:18:29,107 --> 00:18:31,577

ONCE YOU KNOW THAT SOLAR WIND,

516

00:18:31,577 --> 00:18:33,946

YOU CAN GUESS HOW BIG THAT

517

00:18:33,946 --> 00:18:36,248

BUBBLE IS, THAT SPACE THAT

518

00:18:36,248 --> 00:18:37,549

IT'S FILLED BY THE SUN.

519

00:18:37,549 --> 00:18:40,118

WE REFER TO IT AS THE

520

00:18:40,118 --> 00:18:40,686

HELIOSPHERE.

521

00:18:40,686 --> 00:18:43,789

ONLY ABOUT FIVE YEARS AGO, IF

522

00:18:43,789 --> 00:18:45,824

YOU CROSS THROUGH THAT

523

00:18:45,824 --> 00:18:51,964

BOUNDARY INTO OUR GALACTIC

524

00:18:51,964 --> 00:18:53,365

AREA, HIS COLLEAGUES HAVE DONE

525

00:18:53,365 --> 00:18:56,535

AMAZING WORK WITH HIM AND

526
00:18:56,535 --> 00:18:57,603
BASICALLY RIGHT NOW ON THE

527
00:18:57,603 --> 00:18:59,037
OUTSIDE OF ONE OF THESE

528
00:18:59,037 --> 00:19:01,006
MISSIONS, WE BELIEVE, LOOKING

529
00:19:01,006 --> 00:19:04,009
AT FOR THE FIRST TIME THAT

530
00:19:04,009 --> 00:19:05,277
GALACTIC ENVIRONMENT.

531
00:19:05,277 --> 00:19:08,180
AGAIN, A MAGNETIC GALACTIC

532
00:19:08,180 --> 00:19:13,485
ENVIRONMENT OF TYPE YOU

533
00:19:13,485 --> 00:19:15,053
PREDICTED, AND THAT IS FROM

534
00:19:15,053 --> 00:19:19,591
THE INSIDE.

535
00:19:19,591 --> 00:19:23,395
GOING BACK TO OUR NEAREST

536
00:19:23,395 --> 00:19:24,096
ENVIRONMENT, OF COURSE, WHAT

537
00:19:24,096 --> 00:19:26,031
WE HAVE RIGHT NOW, THESE

538
00:19:26,031 --> 00:19:28,767

MISSIONS OUT THERE, WE CALL

539

00:19:28,767 --> 00:19:32,004

THEM MAGNETOSPHERE AND THEY

540

00:19:32,004 --> 00:19:33,805

SERVE IMPORTANT PROCESS THAT

541

00:19:33,805 --> 00:19:35,741

YOU TALKED ABOUT REALLY EARLY

542

00:19:35,741 --> 00:19:36,308

ON.

543

00:19:36,308 --> 00:19:37,743

THE SWEEP, YOU TALKED ABOUT

544

00:19:37,743 --> 00:19:40,812

THE MERGING OF MAGNETIC FIELDS

545

00:19:40,812 --> 00:19:43,081

AND THE IMPORTANCE IF THESE

546

00:19:43,081 --> 00:19:45,617

MAGNETIC FIELDS IN FACT

547

00:19:45,617 --> 00:19:47,586

COALESCED AND WE CONNECTED.

548

00:19:47,586 --> 00:19:48,854

WE TALKED ABOUT THAT

549

00:19:48,854 --> 00:19:49,288

RECONNECTION.

550

00:19:49,288 --> 00:19:50,489

ONLY JUST A COUPLE OF YEARS

551
00:19:50,489 --> 00:19:52,491
AGO, OR EVEN THIS YEAR, THE

552
00:19:52,491 --> 00:19:54,326
NEW SCIENCE PAPERS OUT THERE

553
00:19:54,326 --> 00:19:57,362
THAT TALK ABOUT THE FIRST

554
00:19:57,362 --> 00:20:00,732
REALLY, MULTIPLYING THE

555
00:20:00,732 --> 00:20:02,601
PROCESSES, PROCESSES THAT ARE

556
00:20:02,601 --> 00:20:04,236
IMPORTANT.

557
00:20:04,236 --> 00:20:06,705
NOT ONLY WHERE WE OBSERVE

558
00:20:06,705 --> 00:20:09,708
THEM, BUT UNIVERSAL BECAUSE WE

559
00:20:09,708 --> 00:20:13,378
OBSERVE THESE PROCESSES AROUND

560
00:20:13,378 --> 00:20:15,814
ASTRO PHYSICAL OBJECTS AND

561
00:20:15,814 --> 00:20:17,849
MANY PLANETS AND PLACES IN THE

562
00:20:17,849 --> 00:20:18,517
UNIVERSE.

563
00:20:18,517 --> 00:20:19,685

THAT'S ANOTHER WORLD CUP OF

564

00:20:19,685 --> 00:20:21,153

THE SEMINAL PAPERS.

565

00:20:21,153 --> 00:20:22,421

GOING BACK TO THE SUN.

566

00:20:22,421 --> 00:20:25,290

WHO WOULD HAVE GUESSED HOW

567

00:20:25,290 --> 00:20:26,191

AMAZING THE SUN LOOKS.

568

00:20:26,191 --> 00:20:27,626

LOOKING THROUGH THE EYES OF

569

00:20:27,626 --> 00:20:29,127

SOMEBODY WHO UNDERSTANDS THERE

570

00:20:29,127 --> 00:20:31,797

IS MAGNETIC FIELDS THERE.

571

00:20:31,797 --> 00:20:33,398

THE CORONA, THE ATMOSPHERE OF

572

00:20:33,398 --> 00:20:35,968

THE SUN, OF COURSE, IS HEATED

573

00:20:35,968 --> 00:20:37,469

TO A TEMPERATURE MUCH HIGHER

574

00:20:37,469 --> 00:20:40,305

THAN THE SURFACE OF THE SUN.

575

00:20:40,305 --> 00:20:43,308

PROCESSES WERE STILL TRYING TO

576
00:20:43,308 --> 00:20:43,842
LEARN ABOUT IT.

577
00:20:43,842 --> 00:20:45,978
YOU WROTE A PAPER THAT

578
00:20:45,978 --> 00:20:47,980
BASICALLY TALKED ABOUT

579
00:20:47,980 --> 00:20:49,247
MICROSCOPIC NANO TYPE OF

580
00:20:49,247 --> 00:20:50,415
HEATING EVENTS THAT WOULD BE

581
00:20:50,415 --> 00:20:54,019
AT THE HEART OF THAT HEATING.

582
00:20:54,019 --> 00:20:54,920
AMAZING STRUCTURES WE SEE

583
00:20:54,920 --> 00:20:55,220
THERE.

584
00:20:55,220 --> 00:20:57,422
THERE IS A LOT OF EVIDENCE IN

585
00:20:57,422 --> 00:20:59,291
PAPERS AND LITERATURE EVEN

586
00:20:59,291 --> 00:21:00,926
TODAY THAT POINTED THAT THIS

587
00:21:00,926 --> 00:21:04,229
IS MUCH MORE LIKELY THAN WE

588
00:21:04,229 --> 00:21:08,200

EVER WOULD HAVE THOUGHT.

589

00:21:08,200 --> 00:21:12,137

THAT IS REALLY WHERE THE

590

00:21:12,137 --> 00:21:13,071

CULMINATION, I BELIEVE, OF THE

591

00:21:13,071 --> 00:21:14,373

RESEARCH WE HAVE BEEN DOING IN

592

00:21:14,373 --> 00:21:15,974

THIS FIELD.

593

00:21:15,974 --> 00:21:20,112

SOLAR AND HELIOSPHERIC AND IN

594

00:21:20,112 --> 00:21:20,445

GENERAL.

595

00:21:20,445 --> 00:21:22,814

THAT IS ABOUT THE SOLAR PROBE

596

00:21:22,814 --> 00:21:23,148

MISSION.

597

00:21:23,148 --> 00:21:25,017

WE WANT TO GO DOWN THERE, TAKE

598

00:21:25,017 --> 00:21:28,053

THE CHALLENGE OF GOING AND SEE

599

00:21:28,053 --> 00:21:29,488

WHERE THE THERMAL ENVIRONMENT

600

00:21:29,488 --> 00:21:30,889

IN THE SOLAR SYSTEM.

601
00:21:30,889 --> 00:21:34,793
BECAUSE WE BUILT THE MACHINES.

602
00:21:34,793 --> 00:21:36,728
MEASURE THE ENVIRONMENT THERE

603
00:21:36,728 --> 00:21:40,899
AND REALLY PROVE AND FIND WHAT

604
00:21:40,899 --> 00:21:42,334
THE HEAT PROCESSES ARE THAT

605
00:21:42,334 --> 00:21:46,338
REALLY MAKE THE CORONA UP AND

606
00:21:46,338 --> 00:21:49,975
ACCELERATE THE SOLAR WIND.

607
00:21:49,975 --> 00:21:53,078
NOW, AS NAMED ABOUT 20

608
00:21:53,078 --> 00:21:57,115
SPACECRAFT ABOUT DISTINGUISHED

609
00:21:57,115 --> 00:21:59,685
RESEARCHERS LIKE -- ALL OF

610
00:21:59,685 --> 00:22:02,287
THEM WITH CHICAGO AND MANY

611
00:22:02,287 --> 00:22:04,322
OTHERS, 20, NOT MANY.

612
00:22:04,322 --> 00:22:05,857
THERE ARE MORE PRIZE WINNERS

613
00:22:05,857 --> 00:22:08,226

THAN PEOPLE WHO HAVE

614

00:22:08,226 --> 00:22:12,464

SPACECRAFT NAMED AFTER THEM.

615

00:22:12,464 --> 00:22:13,999

THERE ARE ABOUT 20.

616

00:22:13,999 --> 00:22:17,202

NASA HAS NEVER NAMED A

617

00:22:17,202 --> 00:22:19,237

SPACECRAFT AFTER RESEARCHER

618

00:22:19,237 --> 00:22:22,507

DURING THEIR LIFETIME.

619

00:22:22,507 --> 00:22:23,175

WELL, LADIES AND GENTLEMEN.

620

00:22:23,175 --> 00:22:26,311

WE ARE ABOUT TO MAKE HISTORY.

621

00:22:26,311 --> 00:22:30,015

IT IS MY GREAT HONOR A FEW

622

00:22:30,015 --> 00:22:32,884

DAYS BEFORE YOUR 90th

623

00:22:32,884 --> 00:22:35,187

BIRTHDAY, GENE, TO ANNOUNCE

624

00:22:35,187 --> 00:22:38,290

THAT WE ARE RENAMING THE SOLAR

625

00:22:38,290 --> 00:22:39,591

PROBE PLUS SPACECRAFT TO BE

626
00:22:39,591 --> 00:22:42,661
KNOWN FROM NOW ON AS THE

627
00:22:42,661 --> 00:22:45,230
PARKER SOLAR PROBE.

628
00:22:45,230 --> 00:22:47,666
CONGRATULATIONS.

629
00:22:47,666 --> 00:22:58,977
[APPLAUSE]

630
00:22:58,977 --> 00:23:00,078
>> THANK YOU.

631
00:23:00,078 --> 00:23:03,882
REALLY APPRECIATE IT.

632
00:23:03,882 --> 00:23:21,299
[APPLAUSE]

633
00:23:29,741 --> 00:23:35,247
>> I WROTE MY SPEECH DOWN

634
00:23:35,247 --> 00:23:35,881
HERE.

635
00:23:35,881 --> 00:23:37,949
I DON'T INTEND TO REITERATE

636
00:23:37,949 --> 00:23:39,718
WHAT YOU HAVE ALREADY HEARD

637
00:23:39,718 --> 00:23:40,652
PLENTY OF.

638
00:23:40,652 --> 00:23:42,320

BUT I'M CERTAINLY GREATLY

639

00:23:42,320 --> 00:23:44,156

HONORED TO BE ASSOCIATED WITH

640

00:23:44,156 --> 00:23:46,424

SUCH A HEROIC, SCIENTIFIC

641

00:23:46,424 --> 00:23:48,927

SPACE MISSION.

642

00:23:48,927 --> 00:23:51,096

BY HEROIC, OF COURSE, I'M

643

00:23:51,096 --> 00:23:52,731

REFERRING TO THE TEMPERATURE.

644

00:23:52,731 --> 00:23:54,666

THERMAL RADIATION FROM THE SUN

645

00:23:54,666 --> 00:23:56,468

AND THE EXTREME MEASURES

646

00:23:56,468 --> 00:23:58,036

DEVELOPED TO SURVIVE THAT

647

00:23:58,036 --> 00:24:00,405

RADIATION AND COLLECT

648

00:24:00,405 --> 00:24:01,406

SCIENTIFIC DATA SHOULD BE

649

00:24:01,406 --> 00:24:03,008

FULLY APPRECIATED.

650

00:24:03,008 --> 00:24:07,512

YOU HAVE HEARD THE NAME OF THE

651
00:24:07,512 --> 00:24:09,281
SPACECRAFT IN EARLIER LECTURE,

652
00:24:09,281 --> 00:24:11,082
SO I'M SURE IT WAS NOT EASY

653
00:24:11,082 --> 00:24:12,417
AND I THOUGHT I WOULD RUN

654
00:24:12,417 --> 00:24:14,986
THROUGH THE TWO MAIN EFFECTS.

655
00:24:14,986 --> 00:24:16,988
FOR INSTANCE, THE INITIAL

656
00:24:16,988 --> 00:24:19,291
DEVELOPMENT OF SOLAR PROBE

657
00:24:19,291 --> 00:24:22,460
CONCEPT OF J.P.L. SHOWED THE

658
00:24:22,460 --> 00:24:23,295
EXTREME TECHNICAL POSSIBILITY

659
00:24:23,295 --> 00:24:27,499
OF A SPACECRAFT SURVIVING AN

660
00:24:27,499 --> 00:24:31,303
ORBITAL PLUNGE INTO SOLAR

661
00:24:31,303 --> 00:24:32,437
RADIATION.

662
00:24:32,437 --> 00:24:34,739
J.P.L. WENT FOR BROKE AND THEY

663
00:24:34,739 --> 00:24:38,510

DESIGNED A FABULOUS SPACECRAFT

664

00:24:38,510 --> 00:24:40,879

THIS IS WHAT GRABS ME.

665

00:24:40,879 --> 00:24:44,783

THE SUNLIGHT IS 3,000 TIMES

666

00:24:44,783 --> 00:24:49,754

MORE INTENSE AT 4 SOLAR RADAI

667

00:24:49,754 --> 00:24:52,791

AS IT IS AT EARTH.

668

00:24:52,791 --> 00:24:55,961

IT'S SOMETHING AMAZING.

669

00:24:55,961 --> 00:24:58,396

ONLY RESTRICTED INSTRUMENTS

670

00:24:58,396 --> 00:25:00,265

WILL SURVIVE BECAUSE THE

671

00:25:00,265 --> 00:25:02,100

SPACECRAFT SERVES AS A HEAT

672

00:25:02,100 --> 00:25:03,702

SHIELD AND DO YOU NOT DARE

673

00:25:03,702 --> 00:25:05,937

POKE ANYTHING OUT FROM BEHIND

674

00:25:05,937 --> 00:25:08,406

THAT HEAT SHIELD TO MAKE A

675

00:25:08,406 --> 00:25:08,907

MEASUREMENT.

676
00:25:08,907 --> 00:25:10,775
THERE ARE SOME EXCEPTIONS TO

677
00:25:10,775 --> 00:25:15,580
THAT, WHICH ARE VERY LIMITED.

678
00:25:15,580 --> 00:25:18,216
THE NEXT PROBLEM WAS SOLAR

679
00:25:18,216 --> 00:25:22,821
PROBE PLUS, AS YOU ALL KNOW,

680
00:25:22,821 --> 00:25:24,956
THE APPLIED PHYSICS LABORATORY

681
00:25:24,956 --> 00:25:26,992
DESIGNED FOR A SLOW APPROACH,

682
00:25:26,992 --> 00:25:30,762
INWARD TO 9 SOLAR RADII, WHERE

683
00:25:30,762 --> 00:25:33,098
THE SUN IS ONLY 570 TIMES MORE

684
00:25:33,098 --> 00:25:35,867
INTENSE THAN IT IS HERE.

685
00:25:35,867 --> 00:25:39,437
AND IT IS POSSIBLE TO RATE A

686
00:25:39,437 --> 00:25:41,773
COMPLIMENT OF INSTRUMENTS

687
00:25:41,773 --> 00:25:43,408
PEEKING OUT FROM BEHIND THE

688
00:25:43,408 --> 00:25:44,876

HEAT SHIELD FOR AN EXTENDED

689

00:25:44,876 --> 00:25:46,278

PERIOD OF TIME.

690

00:25:46,278 --> 00:25:48,079

ONE OF THE DRAW BACKS OF THE

691

00:25:48,079 --> 00:25:49,681

ORIGINAL SOLAR PROBE WAS THAT

692

00:25:49,681 --> 00:25:53,718

IT'S ALL OVER IN A FEW HOURS

693

00:25:53,718 --> 00:25:55,854

AT 4 SOLAR RADII.

694

00:25:55,854 --> 00:25:59,791

AS A THEORETICIAN, I ADMIRE

695

00:25:59,791 --> 00:26:01,092

THE SCIENTISTS WHOSE PATIENT

696

00:26:01,092 --> 00:26:03,128

EFFORTS CONVERTED THE SOLAR

697

00:26:03,128 --> 00:26:04,429

PROBE CONCEPT INTO A

698

00:26:04,429 --> 00:26:06,464

FUNCTIONING REALITY READY TO

699

00:26:06,464 --> 00:26:08,533

DO BATTLE WITH THE SOLAR

700

00:26:08,533 --> 00:26:10,435

ELEMENTS AS IT DIVULGES THE

701
00:26:10,435 --> 00:26:13,571
SECRETS OF THE EXPANDING

702
00:26:13,571 --> 00:26:14,739
CORONA.

703
00:26:14,739 --> 00:26:20,278
HOORAY FOR SOLAR PROBES.

704
00:26:20,278 --> 00:26:28,954
[APPLAUSE]

705
00:26:28,954 --> 00:26:30,755
>> WOW.

706
00:26:30,755 --> 00:26:32,290
JUST WOW.

707
00:26:32,290 --> 00:26:35,093
I AM NIKI FOX AND I AM SO

708
00:26:35,093 --> 00:26:37,062
HONORED TO STAND HERE TODAY

709
00:26:37,062 --> 00:26:38,997
REPRESENTING THE SOLAR PROBE

710
00:26:38,997 --> 00:26:39,464
TEAM.

711
00:26:39,464 --> 00:26:41,599
THIS ISN'T JUST THE TEAM, BUT

712
00:26:41,599 --> 00:26:43,034
BUILDING THIS PARTICULAR

713
00:26:43,034 --> 00:26:44,269

MISSION, BUT I REALLY FEEL

714

00:26:44,269 --> 00:26:45,770

IT'S THE THOUSANDS AND

715

00:26:45,770 --> 00:26:47,806

THOUSANDS OF RESEARCHERS WHO

716

00:26:47,806 --> 00:26:49,774

POURED THEIR HEART AND SOUL

717

00:26:49,774 --> 00:26:51,643

INTO INTO MAKING THIS REALITY

718

00:26:51,643 --> 00:26:57,615

OVER THE LAST 60 YEARS.

719

00:26:57,615 --> 00:26:59,417

THIS WILL BE THE HOTTEST,

720

00:26:59,417 --> 00:27:00,018

FASTEST MISSION.

721

00:27:00,018 --> 00:27:02,988

I LIKE TO CALL IT THE COOLEST

722

00:27:02,988 --> 00:27:03,588

MISSION UNDER THE SUN.

723

00:27:03,588 --> 00:27:06,291

WE ARE GOING TO BE MOVING IN

724

00:27:06,291 --> 00:27:06,992

EXTREME TEMPERATURES.

725

00:27:06,992 --> 00:27:08,960

WE WILL GO RIGHT UP INTO THE

726

00:27:08,960 --> 00:27:09,294

CORONA.

727

00:27:09,294 --> 00:27:13,064

AS YOU HAVE HEARD, OF THE

728

00:27:13,064 --> 00:27:15,967

REVOLUTIONLY WORK OF PARKER

729

00:27:15,967 --> 00:27:18,403

FROM AS FAR BACK AS 19 TBLAI,

730

00:27:18,403 --> 00:27:21,072

STILL WE HAVE NOT BEEN ABLE TO

731

00:27:21,072 --> 00:27:21,806

ANSWER KEY QUESTIONS.

732

00:27:21,806 --> 00:27:23,908

THERE HAVE BEEN SO MANY

733

00:27:23,908 --> 00:27:26,177

MATHEMATICIANS WHO HAVE MADE

734

00:27:26,177 --> 00:27:27,412

TREMENDOUS ADVANCES, WE HAVE

735

00:27:27,412 --> 00:27:29,280

BEEN INSIDE THE ORBIT OF

736

00:27:29,280 --> 00:27:29,614

MERCURY.

737

00:27:29,614 --> 00:27:32,717

WE HAVE DONE AMAZING THINGS.

738

00:27:32,717 --> 00:27:34,285

UNTIL YOU GO THERE AND TOUCH

739

00:27:34,285 --> 00:27:35,820

THE SUN, YOU REALLY CAN'T

740

00:27:35,820 --> 00:27:37,022

ANSWER THESE QUESTIONS.

741

00:27:37,022 --> 00:27:38,790

THESE QUESTIONS ARE SO SIMPLE.

742

00:27:38,790 --> 00:27:40,759

WHY IS THE CORONA HOTTER THAN

743

00:27:40,759 --> 00:27:43,094

THE SURFACE OF THE SUN?

744

00:27:43,094 --> 00:27:45,430

THAT DEFIES THE LAWS OF

745

00:27:45,430 --> 00:27:46,564

NATURE.

746

00:27:46,564 --> 00:27:48,299

IT'S GOING GOING UP HILL, IT

747

00:27:48,299 --> 00:27:49,901

SHOULDN'T HAPPEN.

748

00:27:49,901 --> 00:27:53,872

WHY IN THIS REGION DOES THE

749

00:27:53,872 --> 00:27:55,373

SOLAR ATMOSPHERE ENERGIZE

750

00:27:55,373 --> 00:27:57,208

WHETHER IT ESCAPES THE SUN.

751
00:27:57,208 --> 00:27:59,044
WE HAVE NOT BEEN ABLE TO

752
00:27:59,044 --> 00:28:01,346
ANSWER THESE QUESTIONS WITHOUT

753
00:28:01,346 --> 00:28:02,480
TAKING A PROBE INTO THE SUNNEN

754
00:28:02,480 --> 00:28:04,883
WE'LL BE MOVING AT BLISTERING

755
00:28:04,883 --> 00:28:05,350
SPEEDS.

756
00:28:05,350 --> 00:28:08,920
WE WILL BE MOVING AT

757
00:28:08,920 --> 00:28:10,522
430,000 MILES AN HOUR.

758
00:28:10,522 --> 00:28:13,224
THAT'S ABOUT 118 MILES A

759
00:28:13,224 --> 00:28:13,792
SECOND.

760
00:28:13,792 --> 00:28:15,693
WOULDN'T YOU ENJOY YOUR

761
00:28:15,693 --> 00:28:18,163
MORNING COMMUTE AT THAT SPEED?

762
00:28:18,163 --> 00:28:19,697
WE'LL BE SEVEN TIMES CLOSER

763
00:28:19,697 --> 00:28:21,699

THAN ANY OTHER MISSION HAS

764

00:28:21,699 --> 00:28:22,534
EVER BEEN.

765

00:28:22,534 --> 00:28:24,702
WE WILL REPEATEDLY SWEEP

766

00:28:24,702 --> 00:28:27,472
THROWP THE CORONA MAKING THESE

767

00:28:27,472 --> 00:28:28,540
MEASUREMENTS.

768

00:28:28,540 --> 00:28:30,408
WHY HAS IT TAKEN US 60 YEARS

769

00:28:30,408 --> 00:28:32,143
TO BE ABLE TO DO IT?

770

00:28:32,143 --> 00:28:34,379
HONESTLY THE MATERIALS DIDN'T

771

00:28:34,379 --> 00:28:35,046
EXIST TO DO IT.

772

00:28:35,046 --> 00:28:37,048
THE VERY FIRST THING WE HAD TO

773

00:28:37,048 --> 00:28:39,050
DO IS MAKE A HEAT SHIELD.

774

00:28:39,050 --> 00:28:41,219
WE LOVE OUR HEAT SHIELD.

775

00:28:41,219 --> 00:28:43,655
OUR HEAT SHIELD WAS DEVELOPED

776
00:28:43,655 --> 00:28:46,024
USING NASA RESEARCH MONEY, LED

777
00:28:46,024 --> 00:28:48,059
BY J.P.L. WITH THE SCHOOL AT

778
00:28:48,059 --> 00:28:52,730
JOHNS HOPKINS AND MANY OTHER

779
00:28:52,730 --> 00:28:56,434
CONTRIBUTORS WHO DESIGNED A

780
00:28:56,434 --> 00:28:59,637
CARBON-COMPOSITE SHIELD TO NOT

781
00:28:59,637 --> 00:29:01,673
ONLY WITHSTAND THE HEAT, WE GO

782
00:29:01,673 --> 00:29:03,708
HOT AND THEN COLD, HOT THEN

783
00:29:03,708 --> 00:29:05,376
COLD, GETTING SOMETHING TO

784
00:29:05,376 --> 00:29:08,213
WITHSTAND THAT IS

785
00:29:08,213 --> 00:29:08,680
REVOLUTIONARY.

786
00:29:08,680 --> 00:29:10,381
WE DESIGNED A NEW SOLAR PANEL

787
00:29:10,381 --> 00:29:13,118
TO KEEP THEM COOL.

788
00:29:13,118 --> 00:29:14,552

THAT ACTS AS A SHOULDER JOINT

789

00:29:14,552 --> 00:29:17,188

AS WE MOVE IN AND OUT AS WE GO

790

00:29:17,188 --> 00:29:18,590

CLOSE AND FURTHER AWAY FROM

791

00:29:18,590 --> 00:29:19,557

THE SUN.

792

00:29:19,557 --> 00:29:20,859

JUST A LITTLE FINGER TIP POKED

793

00:29:20,859 --> 00:29:25,096

OUT FROM THE SOLAR PANELS

794

00:29:25,096 --> 00:29:26,131

GENERATES ENOUGH SOLAR ENERGY

795

00:29:26,131 --> 00:29:27,599

TO OPERATE THE MISSION.

796

00:29:27,599 --> 00:29:30,168

RIGHT NOW, THE SPACECRAFT IS

797

00:29:30,168 --> 00:29:31,936

BEING BUILT AND TESTED AND PUT

798

00:29:31,936 --> 00:29:33,671

THROUGH A LOT OF RIGOROUS

799

00:29:33,671 --> 00:29:35,673

TESTING TO BE SURE WE CAN

800

00:29:35,673 --> 00:29:36,407

WITHSTAND THAT ENVIRONMENT.

801
00:29:36,407 --> 00:29:37,842
WE'LL BE GOING INTO THE

802
00:29:37,842 --> 00:29:38,176
CORONA.

803
00:29:38,176 --> 00:29:39,244
AS YOU HEARD THE TEMPERATURES

804
00:29:39,244 --> 00:29:41,412
CAN GET UP TO A COUPLE OF

805
00:29:41,412 --> 00:29:42,313
MILLION DEGREES.

806
00:29:42,313 --> 00:29:44,349
WE ARE NOT GOING QUITE THAT

807
00:29:44,349 --> 00:29:48,119
CLOSE BUT WE'LL BE AT

808
00:29:48,119 --> 00:29:48,853
2500-DEGREES FAHRENHEIT.

809
00:29:48,853 --> 00:29:50,121
THE INSTRUMENT IN THE SHADOW

810
00:29:50,121 --> 00:29:53,224
BEHIND THE HEAT SHIELD WILL BE

811
00:29:53,224 --> 00:29:54,192
OPERATING AT ABOUT THE

812
00:29:54,192 --> 00:29:55,960
TEMPERATURE OF THIS ROOM, ROOM

813
00:29:55,960 --> 00:29:56,361

TEMPERATURE.

814

00:29:56,361 --> 00:29:57,729

WE ARE BUILDING IT, WE ARE

815

00:29:57,729 --> 00:29:58,196

TESTING IT.

816

00:29:58,196 --> 00:30:00,465

WE HAVE A COUPLE OF THE

817

00:30:00,465 --> 00:30:01,166

INSTRUMENTS ALREADY INTO

818

00:30:01,166 --> 00:30:01,466

PLACE.

819

00:30:01,466 --> 00:30:02,567

BY THE SUMMER MOST OF THEM

820

00:30:02,567 --> 00:30:04,169

WILL BE ON.

821

00:30:04,169 --> 00:30:05,970

IT IS MY PLEASURE TO BE ABLE

822

00:30:05,970 --> 00:30:07,272

TO INTRODUCE YOU TO

823

00:30:07,272 --> 00:30:10,642

REPRESENTATIVES OF OUR SCIENCE

824

00:30:10,642 --> 00:30:12,010

TEAM, INVESTIGATING THE

825

00:30:12,010 --> 00:30:12,443

PAYLOADS.

826
00:30:12,443 --> 00:30:14,712
IN THE ORDER YOU ARE SITTING

827
00:30:14,712 --> 00:30:18,917
I'LL YOU ON INTRODUCE CUSS

828
00:30:18,917 --> 00:30:20,285
CONTINUE CASPAR FROM THE

829
00:30:20,285 --> 00:30:21,219
UNIVERSITY OF MICHIGAN.

830
00:30:21,219 --> 00:30:23,521
HE IS ALSO A CHICAGO ALUM, BY

831
00:30:23,521 --> 00:30:28,593
THE WAY.

832
00:30:28,593 --> 00:30:30,862
STEWART BELL FROM THE

833
00:30:30,862 --> 00:30:32,630
UNIVERSITY OF CHICAGO --

834
00:30:32,630 --> 00:30:34,132
UNIVERSITY OF CALIFORNIA.

835
00:30:34,132 --> 00:30:34,866
SORRY.

836
00:30:34,866 --> 00:30:38,336
UNIVERSITY OF

837
00:30:38,336 --> 00:30:41,973
CALIFORNIA-BERKELEY.

838
00:30:41,973 --> 00:30:46,911

AND FROM PRINCETON UNIVERSITY.

839

00:30:46,911 --> 00:30:52,183

AND FROM THE UNIVERSITY OF

840

00:30:52,183 --> 00:30:52,984

CALIFORNIA-LOS ANGELES.

841

00:30:52,984 --> 00:30:55,353

LAST BUT CERTAINLY NOT LEAST,

842

00:30:55,353 --> 00:30:57,989

PROFESSOR HOWARD FROM THE

843

00:30:57,989 --> 00:30:59,824

RESEARCH LAB.

844

00:30:59,824 --> 00:31:02,827

SO TOGETHER, USING A VARIETY

845

00:31:02,827 --> 00:31:04,162

AND WE WILL FINALLY ANSWER

846

00:31:04,162 --> 00:31:05,196

THESE QUESTIONS.

847

00:31:05,196 --> 00:31:06,998

I ALSO WANT TO INTRODUCE ONE

848

00:31:06,998 --> 00:31:09,200

MORE PERSONNEN I CALL HIM THE

849

00:31:09,200 --> 00:31:12,070

MAN BEHIND THE CURTAIN.

850

00:31:12,070 --> 00:31:15,039

HE KEEPS US GOING ON SCHEDULE

851
00:31:15,039 --> 00:31:17,041
AND ON BUDGET AND NEVER LETS

852
00:31:17,041 --> 00:31:20,778
THEM TAKE A VACATION.

853
00:31:20,778 --> 00:31:21,479
[APPLAUSE]

854
00:31:21,479 --> 00:31:23,147
SO WHAT IS NEXT?

855
00:31:23,147 --> 00:31:26,918
WE ARE BUILDING, TESTING AND

856
00:31:26,918 --> 00:31:28,953
DEVELOPING INSTRUMENTS.

857
00:31:28,953 --> 00:31:30,888
IN THE END OF THE YEAR WE WILL

858
00:31:30,888 --> 00:31:35,226
MOVE WHERE WE WILL DO FINAL

859
00:31:35,226 --> 00:31:36,794
TESTING, NA NERVE-RACKING

860
00:31:36,794 --> 00:31:38,196
ENVIRONMENT WHERE WE MAKE SURE

861
00:31:38,196 --> 00:31:39,297
EVERYTHING WILL WORK IN THAT

862
00:31:39,297 --> 00:31:40,064
ENVIRONMENTS.

863
00:31:40,064 --> 00:31:43,234

FROM THERE WE GO ON TO

864

00:31:43,234 --> 00:31:43,968

FLORIDA.

865

00:31:43,968 --> 00:31:45,703

WE LAUNCH AND WE HAVE A THIRD

866

00:31:45,703 --> 00:31:46,070

STAGE.

867

00:31:46,070 --> 00:31:47,739

THAT'S BECAUSE WE NEED TO BE

868

00:31:47,739 --> 00:31:54,279

MOVING SO FAST SO THAT WE CAN

869

00:31:54,279 --> 00:32:03,187

BURST [NO AUDIO]

870

00:32:03,187 --> 00:32:05,690

>> MANY OF YOU ARE USED TO

871

00:32:05,690 --> 00:32:06,824

HEARING ABOUT GRAVITY.

872

00:32:06,824 --> 00:32:08,159

WE ACCELERATE THE PROBE.

873

00:32:08,159 --> 00:32:09,460

WE ARE VERY GENEROUS.

874

00:32:09,460 --> 00:32:11,362

WE ARE GIVING ENERGY TO VENUS.

875

00:32:11,362 --> 00:32:14,232

WE ARE USING THE VENUS FLYBY

876
00:32:14,232 --> 00:32:16,434
TO TRIM AND REALLY PRECISION

877
00:32:16,434 --> 00:32:18,336
OF WHERE WE NEED TO BE TO MAKE

878
00:32:18,336 --> 00:32:22,940
US YOU ACTUALLY HIT OUR SOLAR

879
00:32:22,940 --> 00:32:23,775
ORBITAL TARGET.

880
00:32:23,775 --> 00:32:25,910
EIGHT WEEKS AFTER THAT WE WILL

881
00:32:25,910 --> 00:32:27,178
ENCOUNTER THE SUN FOR THE

882
00:32:27,178 --> 00:32:27,612
FIRST TIME.

883
00:32:27,612 --> 00:32:29,347
WE WILL DO OUR FIRST APPROACH.

884
00:32:29,347 --> 00:32:31,549
FOLLOWING THAT WE WILL DO

885
00:32:31,549 --> 00:32:34,052
ANOTHER SIX VENUS FLYBYS IN

886
00:32:34,052 --> 00:32:35,453
JUST UNDER SEVEN YEARS.

887
00:32:35,453 --> 00:32:38,623
WE GRADUALLY GET CLOSER AND

888
00:32:38,623 --> 00:32:40,058

CLOSER AND IN TOWARD THE SUN

889

00:32:40,058 --> 00:32:43,461
UNTIL WE ARE JUST UNDER

890

00:32:43,461 --> 00:32:46,130
4 MILLION MILES OF 10 SOLAR

891

00:32:46,130 --> 00:32:46,931
RADII.

892

00:32:46,931 --> 00:32:48,499
THAT MAY NOT SOUND THAT CLOSE

893

00:32:48,499 --> 00:32:48,833
TO YOU.

894

00:32:48,833 --> 00:32:50,935
IF THE EARTH AND THE SUN WERE

895

00:32:50,935 --> 00:32:55,106
SEPARATED BY 1 METER, IT IS

896

00:32:55,106 --> 00:32:56,140
ACTUALLY VERY, VERY CLOSE.

897

00:32:56,140 --> 00:32:57,842
IN FACT, SO CLOSE THAT WE'LL

898

00:32:57,842 --> 00:32:59,811
BE IN A REGION THAT YOU,

899

00:32:59,811 --> 00:33:01,846
YOURSELF, MAY BE ABLE TO SEE

900

00:33:01,846 --> 00:33:03,381
THIS SUMMER.

901
00:33:03,381 --> 00:33:06,084
DURING A TOTAL SOLAR ECLIPSE,

902
00:33:06,084 --> 00:33:08,252
YOU ARE ABLE TO SEE THE HAZY

903
00:33:08,252 --> 00:33:10,521
CORONA AROUND THE SUN.

904
00:33:10,521 --> 00:33:11,956
AUGUST 21st, THE FIRST TIME

905
00:33:11,956 --> 00:33:13,925
IN 100 YEARS, THERE WILL BE A

906
00:33:13,925 --> 00:33:16,594
TOTAL SOLAR ECLIPSE VISIBLE

907
00:33:16,594 --> 00:33:18,529
FROM THE U.S.A.

908
00:33:18,529 --> 00:33:22,633
WHEN YOU LOOK UP AND SEE THE

909
00:33:22,633 --> 00:33:23,701
ECLIPSE, THE PROBE WILL BE

910
00:33:23,701 --> 00:33:24,502
RIGHT IN THERE.

911
00:33:24,502 --> 00:33:26,604
NOT ONLY ARE WE DOING BASIC

912
00:33:26,604 --> 00:33:28,506
SCIENCE, BUT WE'LL BE APPLYING

913
00:33:28,506 --> 00:33:30,308

CRITICAL INFORMATION TO ALLOW

914

00:33:30,308 --> 00:33:33,778

US TO BETTER KNOW HOW YOUR

915

00:33:33,778 --> 00:33:35,046

EARTH RESPONDS TO THE SUNNEN

916

00:33:35,046 --> 00:33:37,749

WE'LL BE DOING CRITICAL

917

00:33:37,749 --> 00:33:40,051

ADVANCES TO ENABLE US TO

918

00:33:40,051 --> 00:33:40,852

EXPLORE BASE WEATHER.

919

00:33:40,852 --> 00:33:43,888

FOR THAT REASON WE'LL SEND

920

00:33:43,888 --> 00:33:45,857

SOLAR PROBE INTO THE CORONA

921

00:33:45,857 --> 00:33:49,694

AND FINALLY TOUCH THE SUN.

922

00:33:49,694 --> 00:33:51,996

[APPLAUSE]

923

00:33:51,996 --> 00:33:53,297

NASA's PARKER SOLAR PROBE

924

00:33:53,297 --> 00:33:55,600

MISSION IS ABOUT TO EM EMBARK

925

00:33:55,600 --> 00:33:57,268

ON AN HISTORIC JOURNEY TO OUR

926
00:33:57,268 --> 00:33:58,069
VERY OWN STAR.

927
00:33:58,069 --> 00:34:00,037
THE SUN.

928
00:34:00,037 --> 00:34:03,541
NAMED FOR DR. EUGENE M. PARKER

929
00:34:03,541 --> 00:34:05,977
WHOSE CONTRIBUTIONS HAVE

930
00:34:05,977 --> 00:34:06,811
REVOLUTIONIZED OUR

931
00:34:06,811 --> 00:34:07,478
UNDERSTANDING OF THE SUN.

932
00:34:07,478 --> 00:34:09,113
THE PARKER SOLAR PROBE WILL

933
00:34:09,113 --> 00:34:11,682
USHER IN A NEW ERA OF

934
00:34:11,682 --> 00:34:12,116
EXPLORATION.

935
00:34:12,116 --> 00:34:14,552
IT'S A MISSION OF EXTREMES.

936
00:34:14,552 --> 00:34:16,487
THE SPACECRAFT WILL PLUNGE

937
00:34:16,487 --> 00:34:17,655
THROUGH THE SUN'S ATMOSPHERE,

938
00:34:17,655 --> 00:34:19,357

CALLED THE CORONA, AND FLYE

939

00:34:19,357 --> 00:34:21,492

CLOSER TO THE SUN'S SURFACE

940

00:34:21,492 --> 00:34:22,760

THAN ANY SPACECRAFT IN

941

00:34:22,760 --> 00:34:23,828

HISTORY.

942

00:34:23,828 --> 00:34:25,530

MORE THAN SEVEN TIMES CLOSER.

943

00:34:25,530 --> 00:34:27,632

THE SUN'S SURFACE IS HOT.

944

00:34:27,632 --> 00:34:29,967

AT TEMPERATURES EXCEEDING

945

00:34:29,967 --> 00:34:31,803

10,000-DEGREES FAHRENHEIT.

946

00:34:31,803 --> 00:34:33,404

BUT THE REAL SURPRISE IS ITS

947

00:34:33,404 --> 00:34:37,608

ATMOSPHERE IS EVEN HOTTER.

948

00:34:37,608 --> 00:34:40,044

FACING THE CORONA'S BRUTAL

949

00:34:40,044 --> 00:34:41,746

HEAT AND RADIATION CONDITIONS,

950

00:34:41,746 --> 00:34:43,514

PARKER SOLAR PROBE WILL

951
00:34:43,514 --> 00:34:44,215
FINALLY PROVIDE ANSWERS TO

952
00:34:44,215 --> 00:34:46,451
SOME OF THE MOST IMPORTANT

953
00:34:46,451 --> 00:34:48,386
QUESTIONS ABOUT HOW OUR SUN

954
00:34:48,386 --> 00:34:48,853
WORKS.

955
00:34:48,853 --> 00:34:51,055
AS PARKER SOLAR PROBE SPEEDS

956
00:34:51,055 --> 00:34:52,857
AROUND THE SUN MAKING THESE

957
00:34:52,857 --> 00:34:55,960
MEASUREMENTS, IT IS MOVING AT

958
00:34:55,960 --> 00:34:57,361
OVER 430,000 MILES PER HOUR.

959
00:34:57,361 --> 00:34:58,629
THAT'S LIKE TRAVELING FROM NEW

960
00:34:58,629 --> 00:35:01,532
YORK TO TOKYO IN LESS THAN A

961
00:35:01,532 --> 00:35:02,300
MINUTE.

962
00:35:02,300 --> 00:35:03,801
THIS MISSION IS THE

963
00:35:03,801 --> 00:35:05,770

CULMINATION OF 60 YEARS' WORK

964

00:35:05,770 --> 00:35:07,405

BY THE BEST AND BRIGHTEST

965

00:35:07,405 --> 00:35:09,540

SCIENTIFIC AND ENGINEERING

966

00:35:09,540 --> 00:35:10,274

MINDS.

967

00:35:10,274 --> 00:35:11,676

TODAY, OUR TECHNOLOGY WILL LET

968

00:35:11,676 --> 00:35:14,946

US ACHIEVE OUR DREAMS TO

969

00:35:14,946 --> 00:35:17,381

REVEAL THIS SECRET AND OUR SUN

970

00:35:17,381 --> 00:35:20,518

AND TO ONE DAY BETTER PROTECT

971

00:35:20,518 --> 00:35:24,522

TECHNOLOGY FROM THE THREAT OF

972

00:35:24,522 --> 00:35:25,523

SPACE FLARES.

973

00:35:25,523 --> 00:35:28,025

WE WILL LAUNCH THE SOLAR

974

00:35:28,025 --> 00:35:30,595

PROBE, HUMANITY'S FIRST

975

00:35:30,595 --> 00:35:48,579

MISSION TO TOUCH THE SUN.

976

00:35:54,285 --> 00:36:04,929

[APPLAUSE]

977

00:36:04,929 --> 00:36:05,897

>> OKAY, TO ANYONE ASSOCIATED

978

00:36:05,897 --> 00:36:09,433

WITH THAT MISSION.

979

00:36:09,433 --> 00:36:14,438

FOR ME TO SAY THAT WE WILL BE

980

00:36:14,438 --> 00:36:17,475

FLYING AND WE'LL TAKE THE

981

00:36:17,475 --> 00:36:20,011

FRONT OF OF YOU AND YOUR

982

00:36:20,011 --> 00:36:21,779

SEMINAL PAPER.

983

00:36:21,779 --> 00:36:23,180

WE'LL HAVE IT OWE A MOUNTING

984

00:36:23,180 --> 00:36:25,716

PLATE AND WE WOULD LIKE YOU TO

985

00:36:25,716 --> 00:36:27,018

WRITE WHATEVER INSCRIPTION TO

986

00:36:27,018 --> 00:36:28,219

PUT ON THAT PLATE AND SEBD TO

987

00:36:28,219 --> 00:36:29,353

THE SUN.

988

00:36:29,353 --> 00:36:33,124

THE FINAL THING IS GREAT HONOR

989

00:36:33,124 --> 00:36:38,629

AS SA PART OF THE TEAM TO GIVE

990

00:36:38,629 --> 00:36:41,465

YOU THE FIRST MODEL OF THE

991

00:36:41,465 --> 00:36:44,569

PARKER SOLAR PROBE.

992

00:36:44,569 --> 00:37:01,986

[APPLAUSE]

993

00:37:12,997 --> 00:37:14,966

>> WELL, AS I SAY, I'M GREATLY

994

00:37:14,966 --> 00:37:17,435

HONORED TO BE ASSOCIATED WITH

995

00:37:17,435 --> 00:37:19,470

THIS HEROIC, SCIENTIFIC

996

00:37:19,470 --> 00:37:19,904

MISSION.

997

00:37:19,904 --> 00:37:22,807

I WOULD JUST EXAMINING IT.

998

00:37:22,807 --> 00:37:24,308

I GUESS I NEED SOME

999

00:37:24,308 --> 00:37:28,546

INSTRUCTION AS TO WHAT ALL THE

1000

00:37:28,546 --> 00:37:29,080

THINGS ARE.

1001
00:37:29,080 --> 00:37:33,384
THANK YOU VERY MUCH.

1002
00:37:33,384 --> 00:37:50,635
[APPLAUSE]

1003
00:37:50,635 --> 00:37:51,202
>> NOW WE'LL TAKE A FEW

1004
00:37:51,502 --> 00:37:53,604
QUESTIONS FROM THE AUDIENCE

1005
00:37:53,604 --> 00:37:55,039
AND FROM SOCIAL MEDIA.

1006
00:37:55,039 --> 00:37:57,575
PLEASE RAISE YOUR HANDS AND

1007
00:37:57,575 --> 00:37:58,643
OUR STAFF WILL COME TO YOU

1008
00:37:58,643 --> 00:38:02,613
WITH THE MICROPHONE.

1009
00:38:02,613 --> 00:38:04,148
ONCE YOU HAVE THE MICROPHONE,

1010
00:38:04,148 --> 00:38:05,416
PLEASE IDENTIFY YOURSELF AND

1011
00:38:05,416 --> 00:38:06,751
YOUR AFFILIATION AND THEN ASK

1012
00:38:06,751 --> 00:38:13,057
YOUR QUESTION.

1013
00:38:13,057 --> 00:38:15,526

YES A QUESTION FROM THIS

1014

00:38:15,526 --> 00:38:22,333

GENTLEMAN IN THE FRONT.

1015

00:38:22,333 --> 00:38:23,134

IDENTIFY YOURSELF.

1016

00:38:23,134 --> 00:38:25,703

>> MY NAME IS ERIC ISAACS.

1017

00:38:25,703 --> 00:38:27,138

CAN YOU TALK ABOUT THE KINDS

1018

00:38:27,138 --> 00:38:28,305

EVER INSTRUMENTS AND MAYBE

1019

00:38:28,305 --> 00:38:30,274

THIS ADDRESSES GENE'S QUESTION

1020

00:38:30,274 --> 00:38:31,142

ABOUT WHAT IS ON THE MOLDS.

1021

00:38:31,142 --> 00:38:32,576

WHAT ARE THE INSTRUMENTS YOU

1022

00:38:32,576 --> 00:38:35,346

HAVE AND WHAT ARE YOUR WILDEST

1023

00:38:35,346 --> 00:38:37,114

DREAMS OF WHAT YOU HOPE TO

1024

00:38:37,114 --> 00:38:38,716

FIND.

1025

00:38:38,716 --> 00:38:39,150

>> NICOA.

1026
00:38:39,150 --> 00:38:40,418
>> WE HAVE A FULL COMPLEMENT

1027
00:38:40,418 --> 00:38:41,686
OF INSTRUMENTS.

1028
00:38:41,686 --> 00:38:42,887
YOU MET THE P.I.

1029
00:38:42,887 --> 00:38:45,389
WE HAVE THE BELT PLASMA, THE

1030
00:38:45,389 --> 00:38:46,957
BREAD AND BUTTER OF THE SOLAR

1031
00:38:46,957 --> 00:38:47,725
WIND, IF YOU WILL.

1032
00:38:47,725 --> 00:38:48,859
WE HAVE A COUPLE OF

1033
00:38:48,859 --> 00:38:51,996
INSTRUMENTS MEASURING WHAT IS

1034
00:38:51,996 --> 00:38:57,968
COMING OUT WE HAVE INSTRUMENTS

1035
00:38:57,968 --> 00:38:59,603
POSITIONED IN DIFFERENT

1036
00:38:59,603 --> 00:39:00,404
LOCATIONS.

1037
00:39:00,404 --> 00:39:03,207
WHATEVER ANGLE, WE'VE GOT IT.

1038
00:39:03,207 --> 00:39:05,743

WE HAVE A FULL FLEET OF

1039

00:39:05,743 --> 00:39:06,944

MAGNETIC INSTRUMENTS ON THE

1040

00:39:06,944 --> 00:39:07,945

BACK HERE, THE ELECTRIC

1041

00:39:07,945 --> 00:39:09,613

SHIELD.

1042

00:39:09,613 --> 00:39:12,817

ON THE FRONT, WE CAN MAKE A

1043

00:39:12,817 --> 00:39:13,250

PLASMA WAVE.

1044

00:39:13,250 --> 00:39:15,052

WE HAVE THE PARTICLE SUITE TO

1045

00:39:15,052 --> 00:39:17,021

GET THE STUFF THAT COMES WITH

1046

00:39:17,021 --> 00:39:17,855

THE FLARES.

1047

00:39:17,855 --> 00:39:19,890

LAST BUT NOT LEAST WE HAVE A

1048

00:39:19,890 --> 00:39:21,225

WHITE LIGHT IMAGER THAT IS

1049

00:39:21,225 --> 00:39:23,160

GOING TO BE TAKING PICTURES OF

1050

00:39:23,160 --> 00:39:24,495

THE STRUCTURES THAT WE ARE

1051
00:39:24,495 --> 00:39:26,130
ABOUT TO SLIDE THROUGH THAT

1052
00:39:26,130 --> 00:39:28,699
WILL HELP US TO PUT IN CONTEXT

1053
00:39:28,699 --> 00:39:36,140
WHAT WE ARE SEEING.

1054
00:39:36,140 --> 00:39:38,509
>> WE HAVE ANOTHER QUESTION

1055
00:39:38,509 --> 00:39:40,778
RIGHT THERE.

1056
00:39:40,778 --> 00:39:43,013
>> CHARLE BORGES FROM NBC 5 IN

1057
00:39:43,013 --> 00:39:43,347
CHICAGO.

1058
00:39:43,347 --> 00:39:44,949
WHY IS IT IMPORTANT TO SEND

1059
00:39:44,949 --> 00:39:46,183
THIS INTO THE SUN?

1060
00:39:46,183 --> 00:39:47,718
WHY IS IT IMPORTANT TO TOUCH

1061
00:39:47,718 --> 00:39:50,621
THE BASE OF THE SUN AND GO

1062
00:39:50,621 --> 00:39:53,457
CLOSELY BY IT AND PRESERVE THE

1063
00:39:53,457 --> 00:39:54,024

SATELLITE.

1064

00:39:54,024 --> 00:39:55,159

>> WE WILL BRUSH BY IT.

1065

00:39:55,159 --> 00:39:56,894

WE ARE NOT GOING RIGHT UP AND

1066

00:39:56,894 --> 00:39:57,528

TOUCH IT.

1067

00:39:57,528 --> 00:39:59,330

IF YOU IMAGINE, CAN YOU LEARN

1068

00:39:59,330 --> 00:40:00,698

SO MUCH FROM LOOKING OUT THE

1069

00:40:00,698 --> 00:40:01,132

WINDOW.

1070

00:40:01,132 --> 00:40:03,000

YOU CAN SEE THE SUN IS

1071

00:40:03,000 --> 00:40:04,902

SHINING, CAN YOU SEE THE BIRDS

1072

00:40:04,902 --> 00:40:06,604

ARE SINGING BUT UNTIL YOU GET

1073

00:40:06,604 --> 00:40:09,106

OUT YOU DON'T KNOW HOW HOT IT

1074

00:40:09,106 --> 00:40:10,641

IS OR HOW WINDY IT IS OR THE

1075

00:40:10,641 --> 00:40:11,041

CONDITIONS.

1076
00:40:11,041 --> 00:40:13,144
I THINK WE HAVE COME AS FAR AS

1077
00:40:13,144 --> 00:40:14,278
WE CAN WITH LOOKING AT

1078
00:40:14,278 --> 00:40:15,946
THINGSSEN IT'S NOW TIME TO PAY

1079
00:40:15,946 --> 00:40:17,848
IT A VISIT.

1080
00:40:17,848 --> 00:40:19,750
>> NOW WE'LL TAKE A QUESTION

1081
00:40:19,750 --> 00:40:30,494
FROM SOCIAL MEDIA.

1082
00:40:30,494 --> 00:40:32,763
WE HAVE A TWEET.

1083
00:40:32,763 --> 00:40:34,131
>> WE DO HAVE A TWEET.

1084
00:40:34,131 --> 00:40:37,601
WE HAVE A QUESTION FROM GEORGE

1085
00:40:37,601 --> 00:40:40,304
WHO WOULD LIKE TO KNOW WHY ARE

1086
00:40:40,304 --> 00:40:42,206
WE ONLY GOING 4 MILLION MILES.

1087
00:40:42,206 --> 00:40:43,774
IS THERE A LIMIT OF THE HEAT,

1088
00:40:43,774 --> 00:40:45,743

WHAT ARE THE PARAMETERS?

1089

00:40:45,743 --> 00:40:46,911

>> THERE ARE A COUPLE OF

1090

00:40:46,911 --> 00:40:48,779

THINGS WITH THE HEAT SHIELDS

1091

00:40:48,779 --> 00:40:50,748

AND VARIOUS THINGS DESIGNED TO

1092

00:40:50,748 --> 00:40:51,482

GO 4 MILL MILES.

1093

00:40:51,482 --> 00:40:54,418

THE REASON WE CAN'T GO CLOSER,

1094

00:40:54,418 --> 00:40:57,922

AFTER THE SEVETH VENUS

1095

00:40:57,922 --> 00:41:01,158

FLYBY, IT WILL BE INSIDE THE

1096

00:41:01,158 --> 00:41:01,659

CONVENEUS ORBIT.

1097

00:41:01,659 --> 00:41:03,394

WE CAN NO LONGER USE IT TO

1098

00:41:03,394 --> 00:41:10,801

TRIM THE ORBIT.

1099

00:41:10,801 --> 00:41:11,468

>> OKAY, THANK YOU ALL.

1100

00:41:11,468 --> 00:41:14,972

NOW BEFORE WE CLOSE, I BELIEVE

1101
00:41:14,972 --> 00:41:16,640
THAT NASA -- THEY HAVEN'T DONE

1102
00:41:16,640 --> 00:41:17,441
VERY MUCH.

1103
00:41:17,441 --> 00:41:21,545
THEY HAVE A FINAL SPECIAL

1104
00:41:21,545 --> 00:41:23,547
RECOGNITION TO PRESENT TO

1105
00:41:23,547 --> 00:41:25,349
EUGENE.

1106
00:41:25,349 --> 00:41:29,386
WELCOME BACK THOMAS ZURBUCHEN.

1107
00:41:29,386 --> 00:41:32,356
[APPLAUSE]

1108
00:41:32,356 --> 00:41:35,125
>> CLEAN EX-UP HERE.

1109
00:41:35,125 --> 00:41:36,694
BEFORE I DO THAT, I WANT TO

1110
00:41:36,694 --> 00:41:38,996
QUICKLY TELL YOU TWO OF MY

1111
00:41:38,996 --> 00:41:40,197
PARKER STORIES, SO YOU KNOW

1112
00:41:40,197 --> 00:41:42,333
HOW I GOT TO KNOW HIM.

1113
00:41:42,333 --> 00:41:43,934

FIRST CONFERENCE I EVER WENT

1114

00:41:43,934 --> 00:41:45,236

TO WAS IN SWITZERLAND.

1115

00:41:45,236 --> 00:41:48,005

LIKE PEOPLE THERE, MEN THERE,

1116

00:41:48,005 --> 00:41:52,610

I WAS IN THE MILITARY.

1117

00:41:52,610 --> 00:41:54,211

I GOT A TIME OUT FROM THE

1118

00:41:54,211 --> 00:41:55,312

MILITARY TO COME TO THE FIRST

1119

00:41:55,312 --> 00:41:55,713

CONFERENCE.

1120

00:41:55,713 --> 00:41:57,882

SO I WALKED IN, I WAS ON THE

1121

00:41:57,882 --> 00:42:01,418

TRAIN THE WHOLE NIGHT TO

1122

00:42:01,418 --> 00:42:01,852

GERMANY.

1123

00:42:01,852 --> 00:42:04,355

I WALKED IN THE DOOR AND SAT

1124

00:42:04,355 --> 00:42:04,655

DOWN.

1125

00:42:04,655 --> 00:42:05,890

SO I DIDN'T KNOW WHO WAS

1126
00:42:05,890 --> 00:42:06,490
THERE.

1127
00:42:06,490 --> 00:42:08,058
I HAD READ ALL THE PAPERS,

1128
00:42:08,058 --> 00:42:08,359
RIGHT?

1129
00:42:08,359 --> 00:42:11,128
SO I SAT THERE IN THE

1130
00:42:11,128 --> 00:42:11,862
CONFERENCE.

1131
00:42:11,862 --> 00:42:14,665
SOME GUY GAVE A TALK.

1132
00:42:14,665 --> 00:42:17,301
YOU JUMPED TO YOUR FEET AND

1133
00:42:17,301 --> 00:42:18,903
ASKED THE QUESTION, EVERYTHING

1134
00:42:18,903 --> 00:42:21,872
WAS QUIET.

1135
00:42:21,872 --> 00:42:23,240
LIKE MOMENTARILY, BECAUSE YOU

1136
00:42:23,240 --> 00:42:25,276
GOT UP THERE.

1137
00:42:25,276 --> 00:42:27,845
YOU ASKED A REALLY GOOD

1138
00:42:27,845 --> 00:42:28,379

QUESTION.

1139

00:42:28,379 --> 00:42:32,917

YOU WERE REALLY NICE, THE

1140

00:42:32,917 --> 00:42:34,084

PREEMINENT PERSON IN THAT

1141

00:42:34,084 --> 00:42:35,653

FIELD, YOU DON'T WANT TO GET

1142

00:42:35,653 --> 00:42:36,553

QUESTIONS FROM GENE, IF YOU

1143

00:42:36,553 --> 00:42:37,354

CAN HELP IT.

1144

00:42:37,354 --> 00:42:38,589

HE DID A GOOD JOB.

1145

00:42:38,589 --> 00:42:40,224

YOU WERE REALLY NICE TO HIM.

1146

00:42:40,224 --> 00:42:42,426

I THOUGHT, WHO IS THIS GUY?

1147

00:42:42,426 --> 00:42:44,962

WHY IS EVERYBODY STOPPING AT

1148

00:42:44,962 --> 00:42:46,530

GENE PARKER?

1149

00:42:46,530 --> 00:42:48,299

THAT'S HOW I MET YOU.

1150

00:42:48,299 --> 00:42:50,301

YOU WINTER KNOW, YOU SAW MY

1151
00:42:50,301 --> 00:42:51,402
BACK FROM WHERE YOU WERE

1152
00:42:51,402 --> 00:42:52,369
SITTING.

1153
00:42:52,369 --> 00:42:53,237
ANOTHER STORY.

1154
00:42:53,237 --> 00:42:55,172
THAT IS WHEN I INVITED YOU TO

1155
00:42:55,172 --> 00:42:57,241
A SEMINARY AT THE UNIVERSITY

1156
00:42:57,241 --> 00:42:59,910
OF MICHIGAN I THOUGHT WAS

1157
00:42:59,910 --> 00:43:01,512
IMPORTANT THAT STUDENTS SAW

1158
00:43:01,512 --> 00:43:03,147
THE KIND OF LEADERS THAT YOU

1159
00:43:03,147 --> 00:43:03,914
ARE.

1160
00:43:03,914 --> 00:43:05,382
BASICALLY I ASKED YOU IF YOU

1161
00:43:05,382 --> 00:43:06,750
WOULD HANG OUT WITH THE

1162
00:43:06,750 --> 00:43:07,117
STUDENTS.

1163
00:43:07,117 --> 00:43:09,954

YOU WERE GENEROUS WITH YOUR

1164

00:43:09,954 --> 00:43:11,455

TIME, JUST LIKE THE FIRST

1165

00:43:11,455 --> 00:43:12,389

CONFERENCE WHEN WE MET.

1166

00:43:12,389 --> 00:43:14,358

THE TIME YOU SPENT THERE, I

1167

00:43:14,358 --> 00:43:15,759

BASICALLY ASKED YOU HOW DO I

1168

00:43:15,759 --> 00:43:18,262

INTRODUCE YOU, GENE?

1169

00:43:18,262 --> 00:43:20,631

I COULD TALK WHAT THINGS WE

1170

00:43:20,631 --> 00:43:21,498

TALK ABOUT HERE.

1171

00:43:21,498 --> 00:43:23,133

HOW DO I INTRODUCE YOU?

1172

00:43:23,133 --> 00:43:24,702

YOU SAID, I HOPE YOU INTRODUCE

1173

00:43:24,702 --> 00:43:25,336

ME LIKE THIS.

1174

00:43:25,336 --> 00:43:26,870

I DID MY GRAD SCHOOL, COULDN'T

1175

00:43:26,870 --> 00:43:27,905

FIND A JOB.

1176
00:43:27,905 --> 00:43:29,773
WENT TO FAW BECAUSE THAT'S THE

1177
00:43:29,773 --> 00:43:31,141
ONLY PEOPLE WHO ACTUALLY

1178
00:43:31,141 --> 00:43:32,977
OFFERED ME ONE.

1179
00:43:32,977 --> 00:43:35,913
DUE TO A FRIEND, GOT BACK TO

1180
00:43:35,913 --> 00:43:36,847
CHICAGO, WROTE PAPERS I

1181
00:43:36,847 --> 00:43:37,781
COULDN'T GET PUBLISHED.

1182
00:43:37,781 --> 00:43:39,984
DUE TO ANOTHER FRIEND, I

1183
00:43:39,984 --> 00:43:41,151
FINALLY GOT THEM PUBLISHED.

1184
00:43:41,151 --> 00:43:45,889
THEN THE REST WAS PRETTY GOOD.

1185
00:43:45,889 --> 00:43:47,324
SEE WHAT I LIKED ABOUT THIS.

1186
00:43:47,324 --> 00:43:49,326
I SAID WHY WOULD YOU WANT ME

1187
00:43:49,326 --> 00:43:51,095
TO INTRODUCE YOU THAT WAY?

1188
00:43:51,095 --> 00:43:52,296

THESE STUDENTS NEED TO KNOW

1189

00:43:52,296 --> 00:43:53,697

EVEN IF YOU ARE SUCCESSFUL,

1190

00:43:53,697 --> 00:43:54,932

IT'S GOING TO BE HARD FROM

1191

00:43:54,932 --> 00:43:55,933

TIME TO TIME.

1192

00:43:55,933 --> 00:43:57,968

MANY OF THE MOST IMPORTANT

1193

00:43:57,968 --> 00:43:58,869

SCIENCE DISCOVERIES THAT WE

1194

00:43:58,869 --> 00:44:00,871

HAVE ARE A LITTLE BIT

1195

00:44:00,871 --> 00:44:02,306

CONTROVERSIAL AT THE

1196

00:44:02,306 --> 00:44:02,740

BEGINNING.

1197

00:44:02,740 --> 00:44:06,643

OR VERY, VERY, VERY

1198

00:44:06,643 --> 00:44:07,478

CONTROVERSIAL.

1199

00:44:07,478 --> 00:44:09,380

THOSE ARE TWO OF MY ANECDOTES

1200

00:44:09,380 --> 00:44:10,881

I WANT TO TALK ABOUT.

1201
00:44:10,881 --> 00:44:13,450
THE NEXT THING I WILL ASK YOU,

1202
00:44:13,450 --> 00:44:15,686
STEVE CLARK, THE DIVISION

1203
00:44:15,686 --> 00:44:17,221
DIRECTOR OF HELIO SYSTEMS

1204
00:44:17,221 --> 00:44:18,288
DECIDES TO COME UP.

1205
00:44:18,288 --> 00:44:20,257
WHAT I WANT TO DO IS TALK TO

1206
00:44:20,257 --> 00:44:22,326
YOU ABOUT THE DISTINGUISHED

1207
00:44:22,326 --> 00:44:25,929
PUBLIC SERVICE MEDAL FROM

1208
00:44:25,929 --> 00:44:26,296
NASA.

1209
00:44:26,296 --> 00:44:28,732
IT'S THE HIGHEST FORM OF

1210
00:44:28,732 --> 00:44:30,901
RECOGNITION AWARDED BY NASA TO

1211
00:44:30,901 --> 00:44:32,836
AN INDIVIDUAL WHO IS NOT A

1212
00:44:32,836 --> 00:44:33,570
GOVERNMENT EMPLOYEE.

1213
00:44:33,570 --> 00:44:35,706

IT'S AWARDED BASED ON THE

1214

00:44:35,706 --> 00:44:40,277

MERIT OF THAT PERSON, ON THE

1215

00:44:40,277 --> 00:44:43,013

EXCELLENCE TOWARDS NASA AND

1216

00:44:43,013 --> 00:44:44,715

IT'S THAT MEDAL THAT WE WOULD

1217

00:44:44,715 --> 00:44:55,359

LIKE TO GIVE TO YOU NOW.

1218

00:44:55,359 --> 00:44:58,595

WHAT I AM GOING TO DO IS READ

1219

00:44:58,595 --> 00:45:00,064

THE DEDICATION THAT IS SIGNED

1220

00:45:00,064 --> 00:45:01,098

BY THE ADMINISTRATOR.

1221

00:45:01,098 --> 00:45:02,332

THIS IS ONLY THE ADMINISTRATOR

1222

00:45:02,332 --> 00:45:04,301

CAN GIVE THAT MEDAL.

1223

00:45:04,301 --> 00:45:07,471

IT IS FOR A LIFETIME OF

1224

00:45:07,471 --> 00:45:08,639

SCIENTIFIC ACHIEVEMENT,

1225

00:45:08,639 --> 00:45:11,608

OUTSTANDING LEADERSHIP IN

1226
00:45:11,608 --> 00:45:13,310
SPACE SCIENCE AND NASA SPACE

1227
00:45:13,310 --> 00:45:13,777
PROGRAM.

1228
00:45:13,777 --> 00:45:16,747
GENE, IT'S AN HONOR TO GIVE

1229
00:45:16,747 --> 00:45:18,015
YOU THAT MEDAL.

1230
00:45:18,015 --> 00:45:35,432
[APPLAUSE]

1231
00:46:02,326 --> 00:46:04,161
>> WHAT A WONDERFUL MORNING.

1232
00:46:04,161 --> 00:46:05,963
THANK YOU, EVERYONE WATCHING

1233
00:46:05,963 --> 00:46:07,664
ACROSS THE COUNTRY.

1234
00:46:07,664 --> 00:46:08,999
IT'S AFL YOU WHO HAVE JOINED

1235
00:46:08,999 --> 00:46:11,735
US HERE AT THE UNIVERSITY OF

1236
00:46:11,735 --> 00:46:12,236
CHICAGO.

1237
00:46:12,236 --> 00:46:13,770
THERE WILL BE A SHORT MEDIA

1238
00:46:13,770 --> 00:46:15,906

QUESTION AND ANSWER, SO MEDIA,

1239

00:46:15,906 --> 00:46:17,508

YOU ARE NOT ALLOWED TO LEAVE

1240

00:46:17,508 --> 00:46:18,342

THE ROOM.

1241

00:46:18,342 --> 00:46:19,943

PLEASE REMAIN.

1242

00:46:19,943 --> 00:46:21,912

EVERYONE ELSE, PLEASE JOIN US

1243

00:46:21,912 --> 00:46:24,381

IN THE ATRIUM FOR A RECEPTION