1
00:00:05,810 --> 00:00:32,240
Farrell Mata Hari

2
00:00:37,020 --> 00:00:35,009
300 years before the birth of Christ

3
00:00:38,939 --> 00:00:37,030
the men of Alexandria were already

4
00:00:41,939 --> 00:00:38,949
making scientific measurements of the

5
00:00:44,189 --> 00:00:41,949
stars and planets and always since then

6
00:00:46,259 --> 00:00:44,199
there have been those whose imagination

7
00:00:47,869 --> 00:00:46,269
turned their eyes and thoughts to the

8
00:00:51,810 --> 00:00:47,879
far reaches of space

9
00:00:53,670 --> 00:00:51,820
and so today man is positively and truly

10
00:00:56,100 --> 00:00:53,680
extending the knowledge and the control

11
00:00:58,770 --> 00:00:56,110
of his environment and for the first

12
00:01:01,500 --> 00:00:58,780
time is reaching effectively beyond his

13
00:01:05,330 --> 00:01:01,510

own terrestrial boundaries for the first

14
00:01:07,880 --> 00:01:05,340
time he is studying the sky from the sky

15
00:01:17,730 --> 00:01:07,890
project Saturn is a major American

16
00:01:19,800 --> 00:01:17,740
contribution to this advancement Saturn

17
00:01:21,660 --> 00:01:19,810
is the largest launch vehicle at present

18
00:01:23,880 --> 00:01:21,670
under development in the free world

19
00:01:26,460 --> 00:01:23,890
this is a rocket with a million and a

20
00:01:29,069 --> 00:01:26,470
half pound thrust it will put a 10 ton

21
00:01:32,279 --> 00:01:29,079
payload into orbit around our earth to

22
00:01:34,529 --> 00:01:32,289
the moon and in a deep space a later

23
00:01:36,660 --> 00:01:34,539
more powerful version of Saturn will be

24
00:01:40,590 --> 00:01:36,670
capable of putting up a payload of two

25
00:01:42,840 --> 00:01:40,600
and a half times this amount 25 tons it

26
00:01:45,319 --> 00:01:42,850
will be our first major rocket for space

27
00:01:47,399 --> 00:01:45,329
exploration and is being developed

28
00:01:51,779 --> 00:01:47,409
specifically as part of an overall

29
00:01:54,660 --> 00:01:51,789
scientific engineering program Saturn

30
00:01:57,449 --> 00:01:54,670
uses the building block principle it is

31
00:02:00,179 --> 00:01:57,459
made up of various stages each of which

32
00:02:04,370 --> 00:02:00,189
will drop behind in space as its fuel

33
00:02:08,669 --> 00:02:04,380
becomes exhausted Saturn can be a two

34
00:02:11,070 --> 00:02:08,679
three or four stage rocket depending on

35
00:02:14,340 --> 00:02:11,080
the use to which it will be put and the

36
00:02:18,660 --> 00:02:14,350
payloads it has to carry a three stage

37
00:02:22,350 --> 00:02:18,670
Saturn will be 185 feet high as high as

38
00:02:25,000 --> 00:02:22,360

an 18-story building and 22 feet wide at

39
00:02:29,570 --> 00:02:27,830
here is a scale model alongside the

40
00:02:33,140 --> 00:02:29,580
first stage of the real thing

41
00:02:37,040 --> 00:02:33,150
although scaled down to 1/10 size it

42
00:02:38,990 --> 00:02:37,050
still Dwarfs a man by comparison the two

43
00:02:41,360 --> 00:02:39,000
stage Saturn is planned as a kind of

44
00:02:43,660 --> 00:02:41,370
utility space truck to put large

45
00:02:46,100 --> 00:02:43,670
payloads into orbit around the Earth

46
00:02:48,470 --> 00:02:46,110
with it larger space ships could be

47
00:02:53,330 --> 00:02:48,480
refueled before moving outward on longer

48
00:02:55,550 --> 00:02:53,340
journeys Saturn with additional stages

49
00:03:00,560 --> 00:02:55,560
will be used for probes to the moon and

50
00:03:02,449 --> 00:03:00,570
the farther planets a four stage Saturn

51
00:03:04,850 --> 00:03:02,459
will land precision instruments on the

52
00:03:06,800 --> 00:03:04,860
moon although other United States

53
00:03:09,550 --> 00:03:06,810
rockets may get to the moon before it

54
00:03:12,680 --> 00:03:09,560
Saturn will put up the greatest payloads

55
00:03:15,380 --> 00:03:12,690
it can obtain information from several

56
00:03:17,300 --> 00:03:15,390
areas on a single moon trip and later

57
00:03:23,030 --> 00:03:17,310
return actual samples from the moon

58
00:03:25,370 --> 00:03:23,040
surface most importantly Saturn will

59
00:03:28,820 --> 00:03:25,380
send a three-man spacecraft the Apollo

60
00:03:31,280 --> 00:03:28,830
around the moon and back to earth with

61
00:03:40,280 --> 00:03:31,290
refueling in space it could at last

62
00:03:45,150 --> 00:03:42,900
and so in the various industries and

63
00:03:46,470 --> 00:03:45,160

universities under the guidance of the

64
00:03:49,310 --> 00:03:46,480
National Aeronautics and Space

65
00:03:52,080 --> 00:03:49,320
Administration research is planned

66
00:03:59,340 --> 00:03:52,090
techniques develop materials checked out

67
00:04:04,690 --> 00:04:02,260
and although the Space Age has but begun

68
00:04:06,250 --> 00:04:04,700
already we have accumulated a great

69
00:04:09,700 --> 00:04:06,260
wealth of technical and scientific

70
00:04:12,280 --> 00:04:09,710
experience basically Saturn is the

71
00:04:15,880 --> 00:04:12,290
outgrowth of mechanisms that have been

72
00:04:18,250 --> 00:04:15,890
tested and proven the first guidance

73
00:04:20,470 --> 00:04:18,260
system to be used in Saturn for example

74
00:04:21,400 --> 00:04:20,480
is an improvement on that used in the

75
00:04:23,500 --> 00:04:21,410
Jupiter rocket

76
00:04:25,840 --> 00:04:23,510
however the guidance system for the

77
00:04:27,960 --> 00:04:25,850
Centaur developed in the Atlas centaur

78
00:04:30,400 --> 00:04:27,970
program of the space administration

79
00:04:32,800 --> 00:04:30,410
appropriately modified may prove much

80
00:04:34,750 --> 00:04:32,810
more versatile it is hoped that it will

81
00:04:40,080 --> 00:04:34,760
be capable of guiding Saturn on more

82
00:04:45,130 --> 00:04:42,790
the Saturn booster has a cluster of

83
00:04:48,010 --> 00:04:45,140
rocket engines so that like a

84
00:04:50,260 --> 00:04:48,020
multi-engine plane one engine may cut

85
00:04:53,260 --> 00:04:50,270
out without impairing the effectiveness

86
00:04:55,810 --> 00:04:53,270
of the launch vehicle and the propellant

87
00:04:58,090 --> 00:04:55,820
from the inoperative rocket engine will

88
00:05:06,850 --> 00:04:58,100

in some stages automatically be put to

89
00:05:12,770 --> 00:05:09,650
there are eight booster engines in the

90
00:05:21,120 --> 00:05:12,780
first stage of Saturn six in the second

91
00:05:26,080 --> 00:05:23,890
in trial small test models are

92
00:05:28,960 --> 00:05:26,090
constructed to scale and test made to

93
00:05:32,320 --> 00:05:28,970
verify in fact what has been predicted

94
00:05:34,440 --> 00:05:32,330
in live the captive conditions measuring

95
00:05:38,770 --> 00:05:34,450
instruments register the various thrust

96
00:05:40,750 --> 00:05:38,780
stresses and responses meanwhile

97
00:05:43,630 --> 00:05:40,760
full-scale production is going steadily

98
00:05:45,850 --> 00:05:43,640
forward project Saturn's technical

99
00:05:48,460 --> 00:05:45,860
demands are widespread and its needs

100
00:05:50,650 --> 00:05:48,470
critical and so at various industrial

101
00:05:54,460 --> 00:05:50,660
plants across the nation the hardware

102
00:05:56,560 --> 00:05:54,470
the airframes the guidance systems the

103
00:05:58,300 --> 00:05:56,570
instrumentation and the Rockets

104
00:06:01,650 --> 00:05:58,310
themselves precisely take their

105
00:06:04,330 --> 00:06:01,660
blueprinted shape ready for assembly

106
00:06:07,600 --> 00:06:04,340
newly devised parts call for unusual

107
00:06:12,659 --> 00:06:07,610
production methods undreamed of sizes

108
00:06:17,589 --> 00:06:15,429
for example this furnace needed to treat

109
00:06:21,260 --> 00:06:17,599
an upper stage engine is the largest of

110
00:06:25,939 --> 00:06:23,600
following manufacture and check out by

111
00:06:28,219 --> 00:06:25,949
the contractor each engine for the first

112
00:06:35,360 --> 00:06:28,229
stage of Saturn is shipped to Marshall

113
00:06:40,830 --> 00:06:38,490

each engine separately undergoes final

114
00:06:57,780 --> 00:06:40,840
exhaustive captive test before it is

115
00:07:02,980 --> 00:07:00,490
these gleaming metal tanks plus liquid

116
00:07:05,590 --> 00:07:02,990
fuel will send man and his instruments

117
00:07:07,260 --> 00:07:05,600
through space at an incredible 25,000

118
00:07:10,150 --> 00:07:07,270
miles per hour

119
00:07:12,159 --> 00:07:10,160
finally the uppermost stage with its two

120
00:07:16,780 --> 00:07:12,169
engines will propel the payload through

121
00:07:19,150 --> 00:07:16,790
space this space giant so Swift and

122
00:07:21,370 --> 00:07:19,160
responsive on high is too ponderous and

123
00:07:24,310 --> 00:07:21,380
bulky one earth bound to be transported

124
00:07:26,590 --> 00:07:24,320
in one piece even the separate stages of

125
00:07:31,350 --> 00:07:26,600
Saturn require special vehicles to carry

126
00:07:36,970 --> 00:07:34,090
oversized trucks and barges come into

127
00:07:39,250 --> 00:07:36,980
being already experienced in space

128
00:07:42,070 --> 00:07:39,260
technology has the hard-headed engineers

129
00:07:45,100 --> 00:07:42,080
talking about cost per pound of payload

130
00:07:48,390 --> 00:07:45,110
in orbit as if it were commonplace an

131
00:07:51,430 --> 00:07:48,400
example four years ago it cost between

132
00:07:54,760 --> 00:07:51,440
300,000 and 1 million dollars to put one

133
00:07:57,060 --> 00:07:54,770
pound of payload into orbit but past

134
00:07:59,260 --> 00:07:57,070
investment is paying off now as

135
00:08:03,010 --> 00:07:59,270
investment today will pay off in the

136
00:08:05,710 --> 00:08:03,020
future today with advanced knowledge an

137
00:08:09,580 --> 00:08:05,720
increased production cost has been cut

138
00:08:11,890 --> 00:08:09,590

to about $5,000 per pound by truck and

139
00:08:19,719 --> 00:08:11,900
barge now the stages will finally arrive

140
00:08:27,499 --> 00:08:22,219
here is the water route saturn will

141
00:08:30,499 --> 00:08:27,509
follow cape canaveral only a village in

142
00:08:32,709 --> 00:08:30,509
a resort a few years back today it means

143
00:08:36,050 --> 00:08:32,719
just one thing to every schoolboy

144
00:08:37,610 --> 00:08:36,060
rockets the launch facilities at Cape

145
00:08:39,829 --> 00:08:37,620
Canaveral have been constructed to

146
00:08:45,019 --> 00:08:39,839
handle both present and future versions

147
00:08:47,269 --> 00:08:45,029
of Saturn the erecting gantry over 300

148
00:08:49,730 --> 00:08:47,279
feet high is the tallest movable

149
00:08:51,650 --> 00:08:49,740
structure in the world it has direct

150
00:08:54,129 --> 00:08:51,660
connection with the block houses from

151
00:08:57,079 --> 00:08:54,139
which into which all signals come

152
00:08:59,090 --> 00:08:57,089
signals from the electronic tools which

153
00:09:01,569 --> 00:08:59,100
tell how the rocket is performing and

154
00:09:04,189 --> 00:09:01,579
without which there could be no launch

155
00:09:06,319 --> 00:09:04,199
for the nine hundred separate channels

156
00:09:08,420 --> 00:09:06,329
of information are relayed from the

157
00:09:11,960 --> 00:09:08,430
rocket through the recording and control

158
00:09:14,059 --> 00:09:11,970
equipment in the blockhouse we have come

159
00:09:15,829 --> 00:09:14,069
far since the men of alexandria made

160
00:09:19,360 --> 00:09:15,839
their primitive observations of the

161
00:09:21,829 --> 00:09:19,370
heavens our space age is just beginning

162
00:09:24,949 --> 00:09:21,839
we do not yet know where it will

163
00:09:27,710 --> 00:09:24,959

ultimately lead us but we do know that

164
00:09:30,350 --> 00:09:27,720
project Saturn will vastly increase our