1
00:00:06,470 --> 00:00:04,150
what's up for july

2
00:00:09,270 --> 00:00:06,480
dark nebulae near the center of our

3
00:00:11,030 --> 00:00:09,280
milky way galaxy hello and welcome i'm

4
00:00:13,030 --> 00:00:11,040
jane houston jones at nasa's jet

5
00:00:14,470 --> 00:00:13,040
propulsion laboratory in pasadena

6
00:00:16,950 --> 00:00:14,480
california

7
00:00:19,590 --> 00:00:16,960
the milky way looks like a river of tiny

8
00:00:21,429 --> 00:00:19,600
diamond clusters surrounding mysterious

9
00:00:23,830 --> 00:00:21,439
dark islands

10
00:00:26,470 --> 00:00:23,840
notice how the milky way divides into

11
00:00:28,790 --> 00:00:26,480
two streams overhead

12
00:00:32,950 --> 00:00:28,800
between these two streams lies a dark

13
00:00:34,709 --> 00:00:32,960

band of starlight obscuring dust

14
00:00:37,030 --> 00:00:34,719
summer is the best time of year to

15
00:00:39,350 --> 00:00:37,040
observe these dusty areas

16
00:00:41,750 --> 00:00:39,360
the milky way thickens and brightens as

17
00:00:44,389 --> 00:00:41,760
it flows southward towards the horizon

18
00:00:46,389 --> 00:00:44,399
near the constellation sagittarius

19
00:00:48,229 --> 00:00:46,399
sagittarius is easy to see in the

20
00:00:50,790 --> 00:00:48,239
southern sky this month the brightest

21
00:00:53,029 --> 00:00:50,800
stars look just like a teapot and the

22
00:00:56,950 --> 00:00:53,039
center of our galaxy looks like hot

23
00:00:59,990 --> 00:00:56,960
steam spewing from the teapot spout

24
00:01:02,549 --> 00:01:00,000
dr e e barnard made the first wide-angle

25
00:01:05,590 --> 00:01:02,559
photographs of our milky way at lick

26
00:01:07,990 --> 00:01:05,600
observatory in 1889

27
00:01:10,630 --> 00:01:08,000
he saw dark regions visible among the

28
00:01:12,550 --> 00:01:10,640
mass of stars

29
00:01:14,310 --> 00:01:12,560
earlier astronomers thought these dark

30
00:01:16,310 --> 00:01:14,320
regions were simply areas where there

31
00:01:18,390 --> 00:01:16,320
weren't any stars

32
00:01:20,230 --> 00:01:18,400
barnard thought just the opposite he

33
00:01:22,230 --> 00:01:20,240
thought that these empty areas were

34
00:01:23,990 --> 00:01:22,240
actually concentrations of matter

35
00:01:25,510 --> 00:01:24,000
blocking our view

36
00:01:28,710 --> 00:01:25,520
he was correct

37
00:01:31,429 --> 00:01:28,720
a dark nebula called barnard 86 is one

38
00:01:34,469 --> 00:01:31,439

of his discoveries a dark nebula is a

39
00:01:36,870 --> 00:01:34,479
kind of interstellar cloud so dense that

40
00:01:39,510 --> 00:01:36,880
the light from background stars or from

41
00:01:41,350 --> 00:01:39,520
a mission and reflection nebulae is

42
00:01:43,590 --> 00:01:41,360
blocked

43
00:01:45,990 --> 00:01:43,600
like fog around a street lamp a

44
00:01:47,830 --> 00:01:46,000
reflection nebula shines only because

45
00:01:50,310 --> 00:01:47,840
the light from an embedded source

46
00:01:52,710 --> 00:01:50,320
illuminates its dust

47
00:01:55,749 --> 00:01:52,720
the nebula does not emit any visible

48
00:01:58,310 --> 00:01:55,759
light of its own

49
00:02:00,630 --> 00:01:58,320
emission nebulae are glowing clouds of

50
00:02:02,870 --> 00:02:00,640
interstellar gas which have been excited

51
00:02:05,109 --> 00:02:02,880
by some nearby energy source

52
00:02:06,870 --> 00:02:05,119
usually a very hot star causing them to

53
00:02:09,589 --> 00:02:06,880
emit light

54
00:02:11,990 --> 00:02:09,599
it takes radio or infrared astronomy to

55
00:02:13,270 --> 00:02:12,000
pierce these dark clouds and see beyond

56
00:02:15,270 --> 00:02:13,280
them

57
00:02:17,510 --> 00:02:15,280
the three dark lanes of dust in the

58
00:02:20,630 --> 00:02:17,520
trifid nebula can be seen in visible

59
00:02:22,869 --> 00:02:20,640
wavelength images

60
00:02:25,110 --> 00:02:22,879
infrared images from the spitzer space

61
00:02:27,990 --> 00:02:25,120
telescope reveal bright regions of

62
00:02:30,309 --> 00:02:28,000
star-forming activity

63
00:02:31,990 --> 00:02:30,319

there are many dark nebulae visible to

64
00:02:34,869 --> 00:02:32,000
the unaided eye

65
00:02:37,110 --> 00:02:34,879
look for the pipe nebula

66
00:02:39,990 --> 00:02:37,120
the lagoon nebula

67
00:02:42,550 --> 00:02:40,000
and the great dark rift above the teapot

68
00:02:44,390 --> 00:02:42,560
of sagittarius

69
00:02:47,110 --> 00:02:44,400
then when you look at the dust lanes

70
00:02:48,790 --> 00:02:47,120
within spiral galaxies you'll be able to

71
00:02:51,990 --> 00:02:48,800
compare them to the

72
00:02:53,750 --> 00:02:52,000
overhead in our summer milky way

73
00:02:56,309 --> 00:02:53,760
towards the end of the month don't miss

74
00:02:57,910 --> 00:02:56,319
the parade of planets low in the western

75
00:02:59,990 --> 00:02:57,920
sky

76
00:03:02,070 --> 00:03:00,000
mars and saturn march towards one

77
00:03:04,390 --> 00:03:02,080
another readying for their august first

78
00:03:06,309 --> 00:03:04,400
conjunction

79
00:03:09,830 --> 00:03:06,319
you can learn more about nasa missions