1
00:00:06,389 --> 00:00:04,070
what's up for july

2
00:00:09,110 --> 00:00:06,399
dark nebulae near the center of our

3
00:00:10,870 --> 00:00:09,120
milky way galaxy hello and welcome i'm

4
00:00:12,950 --> 00:00:10,880
jane houston jones at nasa's jet

5
00:00:14,310 --> 00:00:12,960
propulsion laboratory in pasadena

6
00:00:16,790 --> 00:00:14,320
california

7
00:00:19,429 --> 00:00:16,800
the milky way looks like a river of tiny

8
00:00:21,349 --> 00:00:19,439
diamond clusters surrounding mysterious

9
00:00:23,750 --> 00:00:21,359
dark islands

10
00:00:26,390 --> 00:00:23,760
notice how the milky way divides into

11
00:00:28,710 --> 00:00:26,400
two streams overhead

12
00:00:32,870 --> 00:00:28,720
between these two streams lies a dark

13
00:00:34,549 --> 00:00:32,880

band of starlight obscuring dust

14
00:00:36,950 --> 00:00:34,559
summer is the best time of year to

15
00:00:39,270 --> 00:00:36,960
observe these dusty areas

16
00:00:41,670 --> 00:00:39,280
the milky way thickens and brightens as

17
00:00:44,310 --> 00:00:41,680
it flows southward towards the horizon

18
00:00:46,229 --> 00:00:44,320
near the constellation sagittarius

19
00:00:48,150 --> 00:00:46,239
sagittarius is easy to see in the

20
00:00:50,709 --> 00:00:48,160
southern sky this month the brightest

21
00:00:52,869 --> 00:00:50,719
stars look just like a teapot and the

22
00:00:56,869 --> 00:00:52,879
center of our galaxy looks like hot

23
00:00:59,910 --> 00:00:56,879
steam spewing from the teapot spout

24
00:01:02,389 --> 00:00:59,920
dr e e bernard made the first wide-angle

25
00:01:05,429 --> 00:01:02,399
photographs of our milky way at lick

26
00:01:07,910 --> 00:01:05,439
observatory in 1889

27
00:01:10,550 --> 00:01:07,920
he saw dark regions visible among the

28
00:01:12,469 --> 00:01:10,560
mass of stars

29
00:01:14,230 --> 00:01:12,479
earlier astronomers thought these dark

30
00:01:16,230 --> 00:01:14,240
regions were simply areas where there

31
00:01:18,310 --> 00:01:16,240
weren't any stars

32
00:01:20,070 --> 00:01:18,320
bernard thought just the opposite he

33
00:01:22,070 --> 00:01:20,080
thought that these empty areas were

34
00:01:23,910 --> 00:01:22,080
actually concentrations of matter

35
00:01:25,429 --> 00:01:23,920
blocking our view

36
00:01:28,630 --> 00:01:25,439
he was correct

37
00:01:31,350 --> 00:01:28,640
a dark nebula called barnard 86 is one

38
00:01:34,390 --> 00:01:31,360

of his discoveries a dark nebula is a

39
00:01:36,789 --> 00:01:34,400
kind of interstellar cloud so dense that

40
00:01:39,350 --> 00:01:36,799
the light from background stars or from

41
00:01:41,190 --> 00:01:39,360
a mission and reflection nebulae is

42
00:01:43,429 --> 00:01:41,200
blocked

43
00:01:45,830 --> 00:01:43,439
like fog around a street lamp a

44
00:01:47,749 --> 00:01:45,840
reflection nebula shines only because

45
00:01:50,230 --> 00:01:47,759
the light from an embedded source

46
00:01:52,630 --> 00:01:50,240
illuminates its dust

47
00:01:55,670 --> 00:01:52,640
the nebula does not emit any visible

48
00:01:58,149 --> 00:01:55,680
light of its own

49
00:02:00,469 --> 00:01:58,159
emission nebulae are glowing clouds of

50
00:02:02,789 --> 00:02:00,479
interstellar gas which have been excited

51
00:02:05,030 --> 00:02:02,799
by some nearby energy source

52
00:02:06,789 --> 00:02:05,040
usually a very hot star causing them to

53
00:02:09,510 --> 00:02:06,799
emit light

54
00:02:11,910 --> 00:02:09,520
it takes radio or infrared astronomy to

55
00:02:13,190 --> 00:02:11,920
pierce these dark clouds and see beyond

56
00:02:15,190 --> 00:02:13,200
them

57
00:02:17,430 --> 00:02:15,200
the three dark lanes of dust in the

58
00:02:20,550 --> 00:02:17,440
trifid nebula can be seen in visible

59
00:02:22,790 --> 00:02:20,560
wavelength images

60
00:02:25,030 --> 00:02:22,800
infrared images from the spitzer space

61
00:02:27,910 --> 00:02:25,040
telescope reveal bright regions of

62
00:02:30,229 --> 00:02:27,920
star-forming activity

63
00:02:31,910 --> 00:02:30,239

there are many dark nebulae visible to

64
00:02:34,790 --> 00:02:31,920
the unaided eye

65
00:02:36,949 --> 00:02:34,800
look for the pipe nebula

66
00:02:39,910 --> 00:02:36,959
the lagoon nebula

67
00:02:42,390 --> 00:02:39,920
and the great dark rift above the teapot

68
00:02:44,309 --> 00:02:42,400
of sagittarius

69
00:02:46,949 --> 00:02:44,319
then when you look at the dust lanes

70
00:02:48,710 --> 00:02:46,959
within spiral galaxies you'll be able to

71
00:02:51,910 --> 00:02:48,720
compare them to the

72
00:02:53,670 --> 00:02:51,920
overhead in our summer milky way

73
00:02:56,229 --> 00:02:53,680
towards the end of the month don't miss

74
00:02:57,830 --> 00:02:56,239
the parade of planets low in the western

75
00:02:59,910 --> 00:02:57,840
sky

76
00:03:01,990 --> 00:02:59,920
mars and saturn march towards one

77
00:03:04,309 --> 00:03:02,000
another readying for their august first

78
00:03:06,149 --> 00:03:04,319
conjunction

79
00:03:09,670 --> 00:03:06,159
you can learn more about nasa missions