



1
00:00:06,230 --> 00:00:03,909
what's up for july

2
00:00:09,030 --> 00:00:06,240
dark nebulae near the center of our

3
00:00:10,790 --> 00:00:09,040
milky way galaxy hello and welcome i'm

4
00:00:12,870 --> 00:00:10,800
jane houston jones at nasa's jet

5
00:00:14,230 --> 00:00:12,880
propulsion laboratory in pasadena

6
00:00:16,710 --> 00:00:14,240
california

7
00:00:19,349 --> 00:00:16,720
the milky way looks like a river of tiny

8
00:00:21,189 --> 00:00:19,359
diamond clusters surrounding mysterious

9
00:00:23,670 --> 00:00:21,199
dark islands

10
00:00:26,230 --> 00:00:23,680
notice how the milky way divides into

11
00:00:28,630 --> 00:00:26,240
two streams overhead

12
00:00:32,790 --> 00:00:28,640
between these two streams lies a dark

13
00:00:34,470 --> 00:00:32,800

band of starlight obscuring dust

14

00:00:36,870 --> 00:00:34,480

summer is the best time of year to

15

00:00:39,190 --> 00:00:36,880

observe these dusty areas

16

00:00:41,590 --> 00:00:39,200

the milky way thickens and brightens as

17

00:00:44,229 --> 00:00:41,600

it flows southward towards the horizon

18

00:00:46,229 --> 00:00:44,239

near the constellation sagittarius

19

00:00:48,069 --> 00:00:46,239

sagittarius is easy to see in the

20

00:00:50,630 --> 00:00:48,079

southern sky this month the brightest

21

00:00:52,869 --> 00:00:50,640

stars look just like a teapot and the

22

00:00:56,790 --> 00:00:52,879

center of our galaxy looks like hot

23

00:00:59,830 --> 00:00:56,800

steam spewing from the teapot spout

24

00:01:02,389 --> 00:00:59,840

dr e e barnard made the first wide-angle

25

00:01:05,429 --> 00:01:02,399

photographs of our milky way at lick

26

00:01:07,830 --> 00:01:05,439

observatory in 1889

27

00:01:10,469 --> 00:01:07,840

he saw dark regions visible among the

28

00:01:12,390 --> 00:01:10,479

mass of stars

29

00:01:14,230 --> 00:01:12,400

earlier astronomers thought these dark

30

00:01:16,149 --> 00:01:14,240

regions were simply areas where there

31

00:01:18,230 --> 00:01:16,159

weren't any stars

32

00:01:20,070 --> 00:01:18,240

barnard thought just the opposite he

33

00:01:22,070 --> 00:01:20,080

thought that these empty areas were

34

00:01:23,830 --> 00:01:22,080

actually concentrations of matter

35

00:01:25,350 --> 00:01:23,840

blocking our view

36

00:01:28,630 --> 00:01:25,360

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

00:01:47,670 --> 00:01:45,840

reflection nebula shines only because

45

00:01:50,149 --> 00:01:47,680

the light from an embedded source

46

00:01:52,550 --> 00:01:50,159

illuminates its dust

47

00:01:55,670 --> 00:01:52,560

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

00:02:34,869 --> 00:02:31,920

the unaided eye

65

00:02:37,030 --> 00:02:34,879

look for the pipe nebula

66

00:02:39,990 --> 00:02:37,040

the lagoon nebula

67

00:02:42,470 --> 00:02:40,000

and the great dark rift above the teapot

68

00:02:44,390 --> 00:02:42,480

of sagittarius

69

00:02:47,030 --> 00:02:44,400

then when you look at the dust lanes

70

00:02:49,350 --> 00:02:47,040

within spiral galaxies you'll be able to

71

00:02:51,990 --> 00:02:49,360

compare them to the great rift overhead

72

00:02:53,750 --> 00:02:52,000

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

00:03:01,990 --> 00:03:00,000

mars and saturn march towards one

77

00:03:04,390 --> 00:03:02,000

another readying for their august first

78

00:03:06,229 --> 00:03:04,400

conjunction

79

00:03:09,750 --> 00:03:06,239

you can learn more about nasa missions