



1  
00:00:05,638 --> 00:00:08,708  
>> Narrator: Mystifying man  
since the dawn of history,

2  
00:00:08,708 --> 00:00:10,610  
Saturn bears the name  
of the mythological god

3  
00:00:10,610 --> 00:00:13,913  
of the harvest, who  
reigned in the Golden Age.

4  
00:00:13,913 --> 00:00:17,450  
[soft electronic music]

5  
00:00:17,450 --> 00:00:20,787  
Traveling at more than  
55,000 miles per hour,

6  
00:00:20,787 --> 00:00:24,758  
Voyager 1 arrived  
in November of 1980,

7  
00:00:24,758 --> 00:00:27,594  
only 12 miles off course after  
an interplanetary journey

8  
00:00:27,594 --> 00:00:29,996  
of more than a billion miles.

9  
00:00:31,931 --> 00:00:34,401  
Voyager's instruments  
found Saturn's atmosphere

10  
00:00:34,401 --> 00:00:38,304  
to be a cold ball of  
hydrogen and helium gases,

11  
00:00:38,304 --> 00:00:40,907

racked by huge whirling  
storms and whipped

12

00:00:40,907 --> 00:00:44,177

by winds of up to  
1,100 miles per hour.

13

00:00:47,514 --> 00:00:50,817

Saturn's magnificent  
rings, thought to have been

14

00:00:50,817 --> 00:00:53,186

the result of collisions  
between earlier moons

15

00:00:53,186 --> 00:00:58,091

and asteroids, consist of  
thousands of particles,

16

00:00:58,091 --> 00:01:00,360

swirling pieces of rock and ice,

17

00:01:00,360 --> 00:01:03,797

streaked like the grooves  
in a phonograph record.

18

00:01:03,797 --> 00:01:07,267

Voyager atmospheric scientist,  
Dr. Andrew Ingersoll.

19

00:01:07,267 --> 00:01:08,668

>> Dr. Ingersoll: What  
Voyager discovered

20

00:01:08,668 --> 00:01:12,372

was the incredible  
structure in the rings.

21

00:01:12,372 --> 00:01:16,042

Saturn's rings are really

composed of countless numbers

22

00:01:16,042 --> 00:01:19,612  
of particles, ranging  
from the size of dust

23

00:01:21,147 --> 00:01:25,051  
and perhaps larger particles,  
the size of houses.

24

00:01:25,051 --> 00:01:29,889  
These particles are constantly  
bumping into each other.

25

00:01:29,889 --> 00:01:33,193  
These grooves are  
there because the rings

26

00:01:33,193 --> 00:01:36,763  
are constantly being  
disturbed by satellites

27

00:01:36,763 --> 00:01:40,934  
orbiting in with the smaller  
ring particles themselves.

28

00:01:42,402 --> 00:01:45,905  
>> Narrator: As the Voyager  
swept by, sunlight penetrated,

29

00:01:45,905 --> 00:01:47,640  
backlighting and  
brilliantly illuminating

30

00:01:47,640 --> 00:01:50,477  
the splendor of the  
rings, like the spokes

31

00:01:50,477 --> 00:01:52,979  
of a gigantic Catherine Wheel.

32

00:01:55,515 --> 00:01:58,284  
Voyager 1 flew within  
2,500 miles of the surface

33

00:01:58,284 --> 00:02:00,887  
of Saturn's largest moon, Titan.

34

00:02:03,456 --> 00:02:05,358  
One of only three moons  
in the solar system

35

00:02:05,358 --> 00:02:08,661  
known to have an atmosphere,  
Titan may help unlock

36

00:02:08,661 --> 00:02:11,231  
secrets to the origins of life.

37

00:02:12,565 --> 00:02:15,768  
Voyager project scientist,  
Dr. Edward Stone.

38

00:02:15,768 --> 00:02:17,337  
>> Dr. Stone: Certainly  
one of the more exciting

39

00:02:17,337 --> 00:02:20,974  
discoveries at Saturn was  
the atmosphere of Titan.

40

00:02:20,974 --> 00:02:22,742  
It's an atmosphere  
which is mainly nitrogen

41

00:02:22,742 --> 00:02:25,378  
like that here on Earth,  
but which contains methane

42

00:02:25,378 --> 00:02:28,047

so that the photochemistry  
going on there today

43

00:02:28,047 --> 00:02:30,316

may resemble very strongly  
that which occurred

44

00:02:30,316 --> 00:02:34,687

here on Earth billions of  
years ago before life evolved.

45

00:02:34,687 --> 00:02:36,589

>> Narrator: By  
swinging around Saturn,

46

00:02:36,589 --> 00:02:38,992

after a close-up view of Titan,

47

00:02:38,992 --> 00:02:40,960

Voyager 1 was propelled  
out of the plane

48

00:02:40,960 --> 00:02:42,629

of the Solar System.