

STAR GAZERS

SG 1621 – 5 MINUTE (MAY 23-29, 2016)

“SATURN!”

JAMES: WELCOME TO STAR GAZERS. I'M JAMES ALBURY, DIRECTOR OF THE KIKA SILVA PLA PLANETARIUM IN GAINESVILLE FLORIDA.

DEAN: AND I'M DEAN REGAS, ASTRONOMER FROM THE CINCINNATI OBSERVATORY AND WE'RE HERE TO HELP YOU FIND YOUR WAY AROUND THE SKY TONIGHT.

JAMES: DEAN AND I ARE REALLY EXCITED BECAUSE NEXT WEEK, ONE OF OUR FAVORITE PLANETS IS GOING TO BE AT OPPOSITION AND IT WILL BE THE BIGGEST AND BRIGHTEST IT WILL BE FOR THE ENTIRE YEAR.

DEAN: AND THAT PLANET IS THE EVER POPULAR AND LOVELY, RINGED PLANET, SATURN. LET'S SHOW YOU!

(STOP)

DEAN: OK, LET'S FIRST EXPLAIN A LITTLE BIT ABOUT WHAT OPPOSITION MEANS. IF WE COULD VIEW OUR SOLAR SYSTEM FROM HIGH ABOVE THE NORTH POLE OF OUR SUN, AS WE LOOK DOWN, WE CAN SEE EARTH'S ORBIT AND SATURN'S ORBIT AROUND THE SUN. EARTH IS ABOUT 93 MILLION MILES AWAY FROM THE SUN AND IT TAKES 365 1/4 DAYS FOR EARTH TO MAKE ONE TRIP AROUND THE SUN. IN LAYMAN'S TERMS, WE REFER TO THAT AS A YEAR.

JAMES: SATURN IS THE 6TH PLANET FROM THE SUN AND IS ALMOST 900 MILLION MILES AWAY. IT MOVES MUCH SLOWER IN ITS ORBIT AND IT TAKES ALMOST 30 EARTH YEARS TO MAKE ONE TRIP AROUND THE SUN. THEREFORE, EARTH MAKES 30 TRIPS AROUND THE SUN FOR EVERY ONE TRIP OF SATURN. SO IT'S QUITE OBVIOUS THAT EARTH AND SATURN ARE CONSTANTLY CHANGING THEIR POSITION IN SPACE WITH RESPECT TO ONE ANOTHER.

DEAN: WHEN SATURN IS AT ITS GREATEST DISTANCE FROM EARTH, IT IS ON THE OTHER SIDE OF THE SUN AS SEEN FROM EARTH AND THAT IS CALLED SUPERIOR CONJUNCTION; WHICH HAPPENED LAST YEAR ON NOVEMBER 29TH. ON THAT DAY, SATURN WAS A WHOPPING ONE BILLION MILES AWAY FROM US. BUT 6 MONTHS LATER, ON FRIDAY, JUNE 3RD, 2016, EARTH AND SATURN WILL BE LINED UP WITH THE SUN. SATURN WILL BE ON THE SAME SIDE OF THE SUN AS THE EARTH AND A LOT CLOSER.

(STOP)

JAMES: OR, IF YOU THINK OF IT FROM OUR PERSPECTIVE, THE EARTH IS IN THE MIDDLE AND SATURN WILL BE ON THE OPPOSITE SIDE OF THE SKY WITH RESPECT TO THE SUN. THIS ORIENTATION OF THE SUN, THE EARTH AND A PLANET IS CALLED OPPOSITION. AND WHENEVER A PLANET IS AT OPPOSITION, IT IS ALWAYS AT ITS CLOSEST AND BRIGHTEST. SO ON FRIDAY, JUNE 3RD, SATURN WILL BE JUST OVER 818 MILLION MILES AWAY, WHICH IS ALMOST 200 MILLION MILES CLOSER THAN IT WAS ON NOVEMBER 29TH, 2015! AND ALTHOUGH SATURN IS ALWAYS CLOSE TO EARTH AND VERY BRIGHT EVERY OPPOSITION, THIS OPPOSITION IS GOING TO LOOK GREAT BECAUSE OF THE WAY THE RINGS ARE TILTED TOWARD US.

(STOP)

DEAN: YOU SEE, EVEN THOUGH SATURN'S RINGS ARE ALWAYS TILTED AT THE SAME ANGLE WITH RESPECT TO ITS ORBIT, BECAUSE EARTH CONSTANTLY CHANGES ITS POSITION IN RELATION TO SATURN, IT'S RINGS SEEM TO TILT BACK AND FORTH AS SEEN FROM EARTH DURING SATURN'S 30 YEAR ORBIT. FOR INSTANCE BACK IN JANUARY 2003 SATURN WAS IN SUCH A POSITION THAT ITS RINGS WERE TILTED UP TO THE MAXIMUM WITH THE SOUTHERN SIDE OF THE RINGS WIDE OPEN - WHICH MEANS THAT MORE SUNLIGHT REFLECTED OFF THE RINGS AND MADE THE PLANET MUCH BRIGHTER THAN USUAL AND THE RINGS LOOK THEIR MOST DRAMATIC.

JAMES: THEN AS YEAR AFTER YEAR WENT BY, WE GRADUALLY SAW LESS AND LESS OF THE SOUTHERN FACE OF SATURN'S RINGS, THEY SLOWLY CLOSED, SO TO SPEAK AND BY JANUARY 2009 WE ACTUALLY FACED SATURN'S RINGS EDGE-ON, AND FOR A FEW NIGHTS THEY SEEMED TO DISAPPEAR. HOWEVER AS THE YEARS HAVE PASSED, WE ARE NOW POSITIONED SO THAT WE CAN SEE THE NORTHERN HEMISPHERE AND NORTHERN SIDE OF SATURN'S RINGS, MAKING SATURN APPEAR BRIGHTER IN THE SKY.

(STOP)

JAMES: SO CHECK OUT SATURN THIS WEEK AND IF YOU LOOK AT IT THROUGH EVEN THE SMALLEST TELESCOPE, TRUST ME YOU'LL BE BLOWN AWAY. TO FIND SATURN SIMPLY LOOK EAST SHORTLY AFTER SUNSET. IT WILL BE AMONG THE STARS OF SCORPIUS THE SCORPION, AND THE RED PLANET MARS WILL BE UP AND TO THE RIGHT OF SATURN AND THE SCORPION'S HEART STAR, ANTARES.

DEAN: AND WHILE YOU'RE LOOKING AT SATURN, PONDER THIS LITTLE BIT OF SATURNIAN TRIVIA. OF ALL THE PLANETS IN THE SOLAR SYSTEM, SATURN HAS THE LEAST DENSITY. THIS MEANS THAT FOR AS BIG AS SATURN IS, IT'S NOT AS HEAVY AS YOU MIGHT THINK. ITS DENSITY IS SO LOW THAT YOU COULD ACTUALLY FLOAT SATURN IN A BATH TUB FULL OF WATER; IF YOU HAD A BATH TUB BIG ENOUGH.

JAMES: HMMM...SATURN IN A BATH TUB? I WONDER IF SATURN WOULD LEAVE A RING.

DEAN: UGH! ON THAT NOTE, HAPPY SATURN WATCHING, AND...

BOTH: KEEP LOOKING UP!