

STAR GAZERS  
SG 1713 - 5M  
MAR. 27 - APRIL 2, 2017

"ROYAL OPPOSITION" (REPEAT OF 1503)

**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.

**JAMES:** IF YOUR FAVORITE PLANET IS JUPITER, HAVE WE GOT A SHOW FOR YOU!

**DEAN:** THAT'S RIGHT, JAMES! JUPITER IS IN SUCH A GREAT LOCATION FOR VIEWING RIGHT NOW, WE'VE DEVOTED THIS EPISODE TO THE LARGEST PLANET IN OUR SOLAR SYSTEM.

**JAMES:** PLUS, ON APRIL 7TH, YOU'LL GET TO SEE JUPITER AT ITS BIGGEST AND BRIGHTEST! LET'S SHOW YOU!

----(STOP & DROP)

**JAMES:** OK, WE HAVE OUR SKIES SET FOR 10 PM, ANY NIGHT THIS WEEK. IF YOU LOOK TOWARD THE EAST, YOU'LL SEE JUPITER AMONG THE STARS OF VIRGO THE MAIDEN.

**DEAN:** TO BE SURE YOU'VE FOUND VIRGO, SIMPLY LOOK TO THE NORTHEAST AND YOU'LL FIND THE FOUR STARS THAT MARK THE BOWL OF THE BIG DIPPER AND THE THREE STARS THAT MARK ITS HANDLE. BY TRACING AN ARC WITH THE STARS IN THE HANDLE, YOU'LL RUN SMACK DAB INTO THE STAR ARCTURUS.

**JAMES:** IF YOU CONTINUE DRAWING A STRAIGHT LINE AWAY FROM ARCTURUS TOWARD THE SOUTH, YOU'LL RUN INTO SPICA, THE BRIGHTEST STAR IN VIRGO. JUPITER IS THE BRIGHT, NON-TWINKLING LIGHT JUST UP AND TO THE LEFT OF SPICA.

----(STOP & FLY)

**JAMES:** JUPITER IS NOT ONLY THE LARGEST PLANET IN OUR SOLAR SYSTEM, BUT ITS GRAVITY IS SO STRONG THAT IT'S SOMETIMES REFERRED TO AS THE SOLAR SYSTEM'S VACUUM CLEANER.

**DEAN:** JUPITER'S GRAVITY ATTRACTS NEARBY ASTEROIDS AND OTHER SMALL SOLAR SYSTEM BODIES, AND IT HAS BEEN KNOWN TO DRAMATICALLY CHANGE THE ORBITS OF INBOUND COMETS, WHICH CAN SHORTEN OR LENGTHEN THE AMOUNT OF TIME IT TAKES FOR THE COMET TO ORBIT THE SUN.

**JAMES:** IN JULY 1994, FRAGMENTS OF COMET SHOEMAKER-LEVY 9 COLLIDED WITH JUPITER, PROVIDING THE FIRST DIRECT OBSERVATION OF A COLLISION BETWEEN TWO SOLAR SYSTEM OBJECTS.

---(STOP)

**DEAN:** THE PLANET JUPITER HAS BEEN OBSERVED IN THE SKY SINCE ANTIQUITY. THE ANCIENT ROMANS NAMED IT AFTER THE KING OF THEIR GODS, WHOM THE GREEKS REFERED TO AS ZEUS.

**JAMES:** BABYLONIAN ASTRONOMERS HAVE RECORDS OF JUPITER DATING BACK TO THE 7TH CENTURY B.C. IN HIS BOOK THE ALMAGEST, GREEK ASTRONOMER CLAUDIUS PTOLEMY USED

JUPITER'S MOTION WITH RESPECT TO THE EARTH TO REFINE HIS EARTH-CENTERED MODEL OF THE SOLAR SYSTEM.

**DEAN:** BY DOING THIS, PTOLEMY SHOWED THAT JUPITER TOOK ALMOST 12 YEARS TO MAKE A COMPLETE CIRCUIT OF THE SKY, WHICH WE NOW KNOW AS THE AMOUNT OF TIME IT TAKES JUPITER TO ORBIT THE SUN.

**JAMES:** IN 1610, ITALIAN ASTRONOMER GALILEO GALILEI STUDIED JUPITER USING A TELESCOPE AND IS CREDITED WITH DISCOVERING THE FOUR LARGEST MOONS OF JUPITER; IO, EUROPA, GANYMEDE AND CALLISTO. THE MOTIONS OF THESE MOONS AROUND JUPITER PROVIDED GALILEO WITH AN EXAMPLE SUPPORTING NICHOLAS COPERNICUS' VIEW OF A SUN-CENTERED SOLAR SYSTEM, BECAUSE IF YOU LOOK AT JUPITER AND ITS MOONS, THEY DO LOOK LIKE A MINIATURE VERSION OF OUR SOLAR SYSTEM.

**DEAN:** ASTRONOMERS GIOVANNI CASSINI AND ROBERT HOOKE BOTH NOTICED A LARGE RED SPOT ON JUPITER DURING THEIR TELESCOPIC OBSERVATIONS IN THE 1660'S. THIS SPOT, AFFECTIONATELY CALLED THE GREAT RED SPOT, IT IS SO LARGE THAT YOU COULD FIT THE TWO EARTHS INSIDE IT!

----(STOP & DROP)

**DEAN:** SPEAKING OF SIZE, AS PLANETS GO, JUPITER IS ENORMOUS. IF JUPITER WERE HOLLOW, YOU COULD FIT OVER 1000 EARTHS INSIDE IT, AND IT HAS OVER 120 TIMES THE SURFACE AREA OF THE EARTH. IN MORE DOWN TO EARTH TERMS, IF JUPITER WERE THE SIZE OF A BASKETBALL, EARTH WOULD BE ABOUT THE SIZE OF A SMALL MARBLE.

**JAMES:** JUPITER ALSO SPINS VERY FAST. OF ALL THE PLANETS IN THE SOLAR SYSTEM, JUPITER HAS THE SHORTEST DAY, LASTING ONLY 9.8 HOURS. WHICH MEANS THAT WHEN JUPITER RISES AT SUNSET DURING THE WINTER MONTHS (WHEN THE SKY IS DARK FOR MORE THAN 12 HOURS), IN THE COURSE OF ONLY ONE NIGHT, YOU CAN ACTUALLY SEE THE ENTIRE SURFACE OF THE PLANET.

**DEAN:** THIS RAPID SPINNING HAS CAUSED JUPITER TO TAKE ON AN M & M SHAPE AND BECAUSE JUPITER IS NOT A SOLID BODY, JUPITER'S ATMOSPHERE ACTUALLY SPINS FASTER AT THE EQUATOR THAN IT DOES AT THE POLES, MAKING THE CLOUDS FORM THE STRIPES WE'VE COME TO KNOW AND LOVE.

**JAMES:** AND LASTLY, OF ALL THE PLANETS, JUPITER HAS THE STRONGEST AND LARGEST MAGNETIC FIELD. THE SOLAR WIND CAUSES THIS FIELD TO EXTEND AWAY FROM JUPITER TO ALMOST THE ORBIT OF SATURN!

----(STOP - CLOSE UP ENDING)

**DEAN:** SO, GET OUTSIDE AND GAZE UPON THE KING OF THE PLANETS.

**JAMES:** IT'S EASY TO DO WHEN YOU...

**BOTH:** KEEP LOOKING UP!

---(STOP)