

STAR GAZERS
SG 1646 - 5M
NOVEMBER 14-20, 2016

"SEVEN SISTERS, A DOUBLE CLUSTER, AND MORE"

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

DEAN: AND I'M DEAN REGAS, ASTRONOMER FOR THE CINCINNATI OBSERVATORY.

JAMES: IT'S THAT TIME OF YEAR WHEN YOU CAN SEE ONE OF THE MOST FAMOUS STAR CLUSTERS, THE PLEIADES, BETTER KNOWN AS THE SEVEN SISTERS.

DEAN: BUT DO YOU KNOW THAT THERE ARE TWO MORE STAR CLUSTERS, TWIN CLUSTERS SO TO SPEAK, JUST A SHORT VISUAL DISTANCE AWAY.

JAMES: AND HAVE YOU EVER WONDERED WHAT WAS THE FARTHEST THING YOU CAN SEE WITH THE NAKED EYE? LET'S SHOW YOU:

----(STOP)

JAMES: O.K., WE'VE GOT OUR SKIES SET UP FOR NEXT WEEK AROUND 9 P.M. IF YOU LOOK ABOVE THE EASTERN HORIZON YOU WILL SEE WHAT LOOKS LIKE AN EXQUISITE TINY LITTLE-DIPPER-SHAPED CLUSTER OF STARS, THE SEVEN SISTERS.

DEAN: NOW MOST PEOPLE SEE ONLY 6 STARS HERE WITH THE NAKED EYE, BUT REALLY GOOD EYES UNDER IDEAL CONDITIONS, CAN SEE SEVEN OR MORE. WITH BINOCULARS YOU CAN SEE SEVERAL DOZEN. THERE ARE REALLY OVER 250 STARS HERE, ALL MUCH LARGER AND HOTTER THAN OUR OWN SUN.

JAMES: AND COSMICALLY SPEAKING, THEY'RE NOT VERY DISTANT, ONLY ABOUT 400 LIGHT YEARS AWAY WHICH MEANS THAT WE SEE THE PLEIADES AS THEY EXISTED 400 YEARS AGO, ABOUT THE TIME GALILEO FIRST TRAINED A TELESCOPE ON THEM.

DEAN: NOW TO FIND THE TWIN CLUSTERS, LOOK DIRECTLY ABOVE THE NORTH STAR WHERE YOU WILL SEE 5 STARS THAT TRACE OUT THE 'M'-SHAPED CONSTELLATION OF CASSIOPEIA THE QUEEN. THEN TO THE RIGHT OF CASSIOPEIA YOU WILL SEE TWO FAINT FUZZY Q-TIP LIKE OBJECTS AND IF YOU ARE FAR AWAY FROM CITY LIGHTS WHERE IT'S GOOD AND DARK OUT YOU WILL NOTICE THAT THEY ARE EMBEDDED IN THE RIVER OF LIGHT WE CALL THE MILKY WAY.

----(STOP - IN SPACE)

DEAN: NOW THESE TWO DIM FUZZY BALLS OF LIGHT ARE CALLED THE DOUBLE CLUSTER OF PERSEUS. AND ALTHOUGH EACH HAS ABOUT 100 MORE STARS THAN THE PLEIADES, THEY'RE NOT AS BRIGHT TO US BECAUSE THEY ARE SO MUCH FARTHER AWAY. IN FACT, UNLIKE THE PLEIADES' 400 LIGHT YEARS DISTANCE, THEY ARE A GRAND 7000 LIGHT YEARS AWAY.

----(STOP)

JAMES: NOW LET'S GET BACK TO MY QUESTION ABOUT THE FARTHEST THING THATS VISIBLE WITH THE NAKED EYE. LETS START WITH THE MOON. ITS VERY EASY TO SEE AND ITS ALMOST A QUARTER MILLION MILES AWAY. LET'S STEP IT UP A NOTCH AND TAKE LOOK AT VENUS. NEXT WEEK VENUS WILL BE ABOUT 100 MILLION MILES AWAY, STILL EASILY SEEN WITH THE

NAKED EYE. LET'S GO ANOTHER STEP AND LOOK AT JUPITER NEXT WEEK. THE KING OF THE PLANETS IS ABOUT 600 MILLION MILES AWAY AND STILL EASILY SEEN WITH THE UNAIDED EYE.

DEAN: WE'RE APPROACHING THE ANSWER BUT WE HAVE A LONG WAY TO GO YET. WE CAN'T DESCRIBE HOW FAR WE CAN SEE IN TERMS OF MILES ALONE. WE HAVE TO SHIFT TO LIGHT YEARS WITH EACH LIGHT YEAR BEING ABOUT 6 TRILLION MILES, QUITE A JUMP, HUH? WE'RE NOT TALKING ABOUT JUST A FEW LIGHT YEARS EITHER. WE'RE TALKING ABOUT OVER TWO MILLION LIGHT YEARS. BUT WHAT COULD BE SO BRIGHT THAT WE CAN SEE IT WITH OUR UNAIDED EYES AT SUCH A DISTANCE?

----(STOP)

JAMES: TO ANSWER THAT, LET'S FIRST FIND PEGASUS THE HORSE. IF WE DRAW LINES BETWEEN FOUR NOT-SO-BRIGHT STARS WE WOULD TRACE A GREAT CELESTIAL SQUARE. AND WITH A FEW OTHER STARS, AND A LITTLE IMAGINATION WE COULD CONNECT STARS TO THIS SQUARE TO MAKE A LONG NECK. THE BRIGHT STAR ENIF CAN MAKE OUR HORSE'S NOSE.

DEAN: A FEW DIM STARS CAN FORM TWO SHORT FRONT LEGS, AND SOME OTHERS CAN STAND IN FOR TWO HIND LEGS. NOW MOST PEOPLE CALL THE HIND LEGS SOMETHING ELSE - ANDROMEDA THE PRINCESS. AND MAYBE THE NAME ANDROMEDA WILL GIVE YOU A GALACTIC HINT AS TO WHAT IS THE FARTHEST THING YOU CAN SEE WITH THE NAKED EYE.

JAMES: IT'S DIFFICULT TO FIND AND YOU MUST HAVE CLEAR, DARK, MOONLESS SKIES LIKE NEXT WEEK. BUT IF YOU SQUINT, YOU MAY SEE A DIM, FUZZY PATCH OF LIGHT. IT IS CALLED M31, THE GREAT GALAXY OF ANDROMEDA WHICH, THROUGH A TELESCOPE, REVEALS ITSELF TO BE A GIGANTIC FAMILY OF A TRILLION STARS THAT'S OVER TWO AND A HALF MILLION LIGHT YEARS AWAY.

DEAN: SO WE HAVE THREE STAR CLUSTERS AND ONE GALAXY THAT ARE VISIBLE IN A FAIRLY SMALL CHUNK OF THE NIGHT SKY NEXT WEEK. TO FIND THEM YOU MUST...

BOTH: KEEP LOOKING UP!
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