NOVEMBER LECTURE - COSMOLOGICAL TIME SCALES-Cont'd from page 3.

years as the age of the oceans presuming that they started as fresh water.

Radioactive dating of the earth's crust gives an age estimate of nearly two billion years, but some meteorites have been found to be 4½ billion years old by this method. Knowing the distance and the recessional velocity of galaxies we can extrapolate back in time to when all matter in the Universe would have been compressed into one great primeval atom. This so-called kinematic time scale provides us with a 3½-billion-year estimate for the age of the Universe.

Astrophysicists can now estimate the age of stars from theories of stellar evolution. Some stars appear to be as old as 30 billion years. How can some parts of the Universe be older than the whole? Father Heyden left us with this unsolved puzzle. .. Leith Holloway

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PRINCE GEORGE'S COUNTY JUNIORS

At our monthly meeting, we discussed the observing we have been doing during the past month. We put together a new 3 inch guide scope for our astrocamera which we remounted on a clock driven equatorial mount. We also submitted a check to the trustees for the money we made at the convention last June in Baltimore. We are making plans for giving star parties and other forms of educational aids to area elementary schools.

Sheila Duck, PGJ Editor

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FROM ALL OF US TO ALL OF YOU...BEST WISHES FOR A HAPPY HOLIDAY SEASON

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December 1965 Vol. XXIII No. 4

SOLAR RESEARCH FROM ROCKETS AND SATELLITES

Dr. Richard Tousey

Dr. Richard Tousey of the E. O. Hulburt Center for Space Research at the U.S.Naval Research Laboratory will trace the growth of Solar Research from above the earth's atmosphere since its beginning in 1946 to the present in his lecture on December 4. As yet, the sun is the only celestial body which has been extensively investigated. Its spectrum is now known in considerable detail, all the way through the extreme ultraviolet to 13.7 A in x-rays. Pictures of its surface have been made with different extreme ultraviolet emission lines and in x-rays. Many lines of its extreme ultraviolet spectrum have been reproduced in high temperature laboratory plasmas into which iron has been introduced. The white-light corona has been photographed from a rocket without a solar eclipse, and monitored from the second NASA Orbiting Solar Observatory. After receiving his bachelor's degree from Tufts University in 1928, Richard Tousey undertook graduate work in the Department of Physics at Harvard University. He received the Ph.D degree in 1933 for the determination of the optical constants of fluorite in the vacuum ultraviolet under Professor Theodore Lyman. The two following years were spent at Harvard University as an instructor in physics and as Bayard-Cutting Research Fellow. From 1935 to 1941, he was a research instructor in physics at Tufts University. In 1941 he joined the - Continued page 2.

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CALENDAR

DECEMBER 4 SOLAR RESEARCH FROM ROCKETS AND SATELLITES, lecture by Dr. Richard Tousey, Head of the Rocket Spectroscopy Branch of the Atmosphere and Astrophysics Division of the U. S. Naval Research Laboratory at 8:15 P.M. in the Department of Commerce Auditorium. Public invited. Short business meeting follows. DINNER WITH THE SPEAKER for the time and place call Mr. Henry Hudson 534-8378.

4 JUNIOR DIVISION Special Meeting to be held at 7:00 P.M. in Room 2062 at the Department of Commerce.

11 MD-DC JUNIORS meeting at 2:00 P.M. in the Silver Spring Library. Program to be announced.

19 PRINCE GEORGE's COUNTY JUNIORS, meeting at the home of Ted Noble at 2:00 P.M. Phone Lu 2-6721 for details.

7,14,21,28 TELESCOPE MAKING CLASS at the Chevy Chase Community Center with Hoy Walls from 7:00 to 10:00 P.M.

3,10,17 ADVANCED TELESCOPE MAKING CLASS at the Chevy Chase Community Center with Hoy Walls from 7:00 to 10:00 P.M.

SOLAR RESEARCH, continued from page 1

staff of the Optics Division of the U. S. Naval Research Laboratory where he began a program of upper atmosphere research. His first work was on brightness of the sky and the visibility of stars, and was the result of measurements conducted from high-flying aircraft. Since the inception of rocket research in 1946, he has been in charge of a program of spectroscopic work from rockets, concentrating in the study of the solar spectrum in the extreme ultraviolet. Results of this program include the first extension of the solar spectrum into the ultraviolet, high resolution solar ultraviolet spectra, the discovery of many emission lines in the ultraviolet spectrum of the sun, the determination of the profile of the Lyman alpha line of hydrogen, the measurement of the vertical distribution of ozone, and the direct measurement of the altitude of several night airglow emissions. He guided the Naval Research Laboratory program of research on the visibility of earth satellites, and was a member of the Science Program Committee of Project Vanguard. At present he is head of the Rocket Spectroscopy Branch of the Atmosphere and Astrophysics Division.

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IRENE WARTHEN .....NCA CHARTER MEMBER

Irene and her Umbrella Planetarium

Time passes quickly but Irene Warthen, a friend of NCA since joining in Nov.'37 can help us re-live the growing-up of our organization. She was on the forward-looking committee that purchased the 5 inch Alvin Clark telescope that we are cherishing today as a prized possession. The Juniors were under Irene's direction for many years ... Carl Werntz was one of those Juniors.

To help members become acquainted with constellations, Irene held a weekly class at the Naval Observatory and also at Coolidge High School with Mr. R. Master's help. Even while giving of her services in these various ways, Irene found time to participate in the study classes that NCA sponsors from time to time. Irene tells of groups observing at the 5 inch Alvin Clark all night and even following Venus into the daytime sky.

Irene received her T.N. Degree by completing a 6 inch reflector at old Central High with Mr. Nagy. During war time the 5 inch had to be stored and the telescope classes had to be moved to Mr. U. S. Lyons' home. Irene never missed an opportunity to give service and Mr. DeFrees at G.W. University asked her to instruct a class of Girl Scouts on the work needed on the Astronomy Merit Badge. The umbrella in the photo was acting as a planetarium in the constellation study. Children still use this practical approach to constellation study and diurnal motion. Irene's brother, Professor at Maryland University then, had made the umbrella planetarium for her in 1936 before NCA organized, but NCA activities gave it more good use.

Comets have always been fascinating to Irene and she has followed many of them all hours of the night. Perhaps some members remember the delicious coffee that Irene brewed in a big white pot at the picnics and NCA outings. She said "it would be black with soot after cooking over the open fire" and "does anyone remember putting out the fire with hot coffee?" Irene can tell some exciting stories about NCA field trips, like the bus catching on fire on the way to Philadelphia and the motel floor breaking through at Harrisonburg, Va....Cont'd.

IRENE WARTHEN ... NCA CHARTER MEMBER ....Cont'd. from Page 2

After the war the 5 inch was returned to the Naval Observatory and the telescope making class resumed at Central High with Irene as instructor. Telescope classes have been moved from place to place, as, Central High to Irene's own home, then to Roosevelt High then to Chevy Chase Center our present location. Mr. George Borreson, another good friend of NCA, gave Irene excellent assistance at Roosevelt High and made it possible to help many children and adults enjoy astronomy.

Irene and NCA make a fascinating story because Irene likes people, especially people interested in astronomy and telescopes. The friends mentioned here have been an essential part of the work sponsored by Irene in serving NCA. Irene gave her entire collection of STAR DUST copies to NCA to complete a file that is being bound. The friendly personality and good humor of Irene is enjoyed. in NCA. The telescope, the umbrella, the step-stool and chair tell her story. The step-stool is for the very young, needing a little more height to look through the 'scope. The 'scope representing many 'scopes that proud owners finished with Irene's assistance. The umbrella planetarium shows the practical and visual aid that helped youngsters and oldsters to become more friendly with stars. The chair is only for Irene to rest in, for a minute, before she is up and ready to go again. The National Capital Astronomers Society is proud of Irene Warthen as she lives the aim of the society — that is to "encourage interests in astronomy."

--- Margaret Noble

Comet Ikeya-Seki (1965f)

This picture of Comet Ikeya-Seki (1965f) was taken by Mike Jewell, a Prince George's County Junior, on Oct. 30, 1965 at 5:15 A.M. EST using Tri-X-film, a ten second exposure with a Miranda 35 mm. Single lens reflex camera with a 50 mm. foca l length lens at f/2.8.

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NEW APPLICANT FOR MEMBERSHIP .....George J. Leuches
2400 41st St. N.W.
Washington,D.C. 20007

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NOVEMBER LECTURE - COSMOLOGICAL TIME SCALES

Estimates for the age of the Universe are increasing exponentially with time as man's methods become more sophisticated, and unfortunately the current procedures do not agree on a date for the Universe's creation. Our November speaker, Rev. Francis J. Heyden, S.J. of Georgetown University Observatory, discussed the various time scales upon which the divergent age estimates are based.

If they trace biblical history back generation by generation to the first Chapter of Genesis, scholars determine that according to the Bible, the earth and sun are only 6,000 years old. Archaeological studies yield an estimate an order or two of magnitude longer than this, but this period is still far too short for the age of the earth. A better time scale is the chemical method of dating in which the amount of salt in the oceans is compared with the rate of inflow of salts by the world's major rivers. This method gives 100 million-Cont'd.