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ROAMING THE REGION

For outstanding contributions to observational astronomy as an amateur, the 1981 Leslie C. Peltier Award was given to Ed Halbach, Milwaukee AS. Ed is a founder of the Milwaukee society and has inspired many amateurs to "Go out and look at something!" His observational work has been varied including variable stars, eclipses and occultations. The award was presented by the Astronomical League at its convention this summer in Kutztown.

The fourth annual Iowa Convention of Amateur and Professional Astronomers was held at Ames, Iowa, on August 28 and 29. Over 100 attendees heard a variety of papers and toured Fick Observatory. Partly cloudy skies hampered viewing through the 24" cassegrain, but perseverant observers were able to glimpse epsilon Lyrae, the Ring Nebula and M-13.

Good weather and a lot of help from society members made this summer's Open Houses a success for the Milwaukee AS. Over 1300 guests attended during the seven nights and the society benefited by sales, donations and additions to the society roster. See what a little effort can do?

NCRAL CONVENTION

The MilwaukeeAstronomical Society will host the North Central Regional Convention on Saturday, May 22, 1982. The location will be Carroll College in Waukesha, Wisconsin. 1982 is also the 50th anniversary of the Milwaukee Astronomical Society and we hope you and your club members will come to the convention and help us celebrate.

Chairman Bill Konig advises that a call for papers has already gone out. Anyone wishing to present up to a 15 minute talk on an astronomical subject is invited to contact Paper Chairman James F. Greenwald, 2431 N. 64th St., Wauwatosa, WI 53213. Further information on the convention and registration details will be mailed to all regional societies after the first of the year.

VIDEO ASTRONOMY

(by Emery Hildebrand, reprinted from the Chicago AS Observer)

One of the new frontiers opening up to amateur astronomers is the field of video astronomy. Equipment now becoming available at reasonable cost may change the way many amateurs use their telescopes. While this statement may seem to be farfetched, there are many indications that a video revolution may soon occur in astronomy just as it is now occurring in the home.

Major observatories have always started trends that were later adopted by amateurs. Such trends in the past have been: 1) the use of larger and more accurate objectives; 2) the use of photographic film; 3) the hypersensitization of photographic film.

Nearly all major observatories today are using video systems in order to get the most out of their instruments. These systems include image intensifiers, charge coupled devices and computer enhancing. While many of their methods are beyond an amateur's economic reach, some are not. The following is a discussion of some experimental trials and theoretical capabilities of equipment now available at a modest cost.

A typical inexpensive video camera is the surveillance type seen in banks. Prices vary widely, but they can be obtained for about $300. They are sensitive to an illumination ratio of about 10,000 to 1 and offer a resolution of 600 lines across the entire image. The minimum illumination to provide a weak image is about one-half foot candle.

In order to use such a camera astronomically, you need the camera, a monitor, a power supply and a means of attaching the camera to youor telescope. Most video cameras have removable lenses with the "C" mount found on movie cameras.

When setting up the equipment, the monitor should be visible to you so the object can be located, centered and focused. A drive corrector can be very helpful if the scopoe is not precisely aligned or if you want to pan across an image.

Hooked to the prime focus of a Celestron C-5, such a low cost camera can show a surprising amount of information. Although the camera is relatively heavy, it has been used without counterweights or drive corrector and it tracks very well. Since the camera has a 2/3" vidicon target, the apparent magnification achieved was about 190x. Obviously, the larger the monitor, the higher the true magnification will be. At 190x, only about a quarter of the moon's surface could be seen at one time, and its image filled the screen from corner to corner.

The image of the sun or moon (use a solar filter for the sun) is surprisingly clear and detailed, but not as crisp as direct viewing through an eyepiece. However, by varying the monitor's brightness and contrast controls, the image can be enhanced to reveal details difficult to see visually. For instance, the image can be adjusted to portray mare and rays of ejecta from bright craters which are normally too subtle in contrast for visual inspecting. Sunspots can be adjusted for optimum visibility of their aureoles and solar details such as limb darkening and spicules can be made more evident.

Planetary observing, even with a C-5, is very interesting. The image on the monitor is sufficient to show the belts on Jupiter and the rings of Saturn. With the inexpensive camera, none of the moons are bright enough to be seen. Using a C-8, planetary detail can be seen very well. Adjusting the brightness and contrast make Jupiter's belts stand out more clearly than visual observing and even Saturn shows its major belts. One interesting discovery was that, unlike visual observing, it is very evident that Saturn's rings are dim compared to the ball of the planet. Saturn shows up very well while his rings are ghostly dim around the disc.

Focal ratios higher than f/10 of the Celestrons render planetary images too dim to be detected by an inexpensive vidicon. The moon, being brighter, does not suffer the same fate and eyepiece projection may be used to obtain more magnification. Obviously, these inexpensive cameras will not record images as faint as stars (other than the sun).

Some of the drawbacks of current video systems are: 1) better systems are still beyond the economic reach of most amateurs; 2) balancing can be very difficult on newtonians; 3) imaging threshold on inexpensive cameras restricts their use to the sun, moon and planets; 4) absolute resolution, except for contrast, does not approach the view through an eyepiece.

(cont. p. 4)

CHARTING THE MOON

(by Alan C. Scannell, reprinted from the Dubuque Astronomer)

The month of October, 1981, has proved to be less than favorable for me to observe the moon. The month's cloudiness came at time when the moon would have been ideal for observations. In order to compensate for inability of direct observation, I have begun the age old practice of attempting to sketch various localities of the moon's surface. To assist me, I have used photos of the moon which have been published in various texts. Some books by Dinsmore Altar have been especially useful.

The Mare Imbrium region is an area of the moon's surface which I found particularly suitable for starting to sketch. Being quite new at trying to draw lunar surface features, I began to draw some of the major features of this lunar quadrant: Mare Imbrium, the Appenines, the Alps and the Carpathian Mountains. Then I began to fill in some of the major craters like Eratosthenes and Plato. Of course, I make this sound easy, but, being very poor artistically, I used up a good deal of paper. But that is what this is all about! After all, I am attempting to learn something new and, in the process, I am learning the features of the moon's surface in greater detail.

As a matter of detail, however, it is necessary to determine the cardinal directions to be noted on the drawings. Unfortunately, it is not just a simple matter of establishing North at the top and East to the right. According to the International Astronomical Union, Mare Crisium would be located on the East (and to the right) with the crater Tycho at the South (and at the bottom). This differs somewhat from the "telescopic" mapping of the moon and from the classical conventions used before the IAU attempted to standardize the directions.

However, with the advent of lunar landings, yet another convention has become established, an "astronautical convention." The astronautical convention of lunar mapping and directions is more practical as far as the astronaut is concerned because it established directions similar to a map of the Earth. (cont. p. 4)

NEPTUNE'S ROTATION

(from SCAN , newsletter of Des Moines AS, and a Kitt Peak news release)

Tucson - August 31, 1981

Astronomers at Kitt Peak National Observatory have made the most accurate measurement to date of Neptune's rotation. The astronomers concluded that the rotational period is 18.2 hours, plus or minus 24 minutes. An astronomy textbook copyrighted 1981 can give the period only as "15-20 hours." Drs. Michael Belton and Lloyd Wallace, and Sethanne Howard arrived at their conclusion after making 300 infrared observations using the Kitt Peak 1.3 meter telescope.

Neptune, about four times larger and 17 times more massive than the Earth, is one of the least known of the nine planets. It is 30 times more distant than the Earth from the Sun, and is now the most distant planet since Pluto's highly eccentric orbit has brought it clcoser to the Sun than Neptune.

Astronomers need to know Neptune's rotation rate to get a better understanding of the forces that affect its atmosphere. Besides giving them the outside perspective of another planet with which to compare Earth's atmospheric behavior, knowing Neptune's rotation rate will help understand its internal chemical make-up and structure. It is information such as this that gives astronomers insight into how the solar system was formed 4.6 billion years ago.

The Kitt Peak researchers said that one difficulty that will prevent astronomers from determining the exact length of a day on Neptune is the fact that they can only observe the cloud tops of the planet. The clouds are travelling at varying speeds and astronomers must now infer the planet's rotation from the observations.

Neptune has been carefully studied recently for hints that its orbital behavior might be influenced by some as-yet undiscovered tenth planet. Astronomers are also speculating about the possible existance of rings around Neptune. It is now the only one of the four Jovian planets without a known ring system.

ASTROFEST '81

Although the attendees claimed a more proper name would have been "Aquafest," "Astromess" or "Astroswamp," all of the nearly 100 registrants agreed that the meeting was worthwhile. Even the hoardes of mosquitoes were soon adopted as mascots and dubbed "Astropests"! It seems that no mere weather problem will prevent amateur astronomers from gathering to share ideas or just to reminisce.

The paper sessions started almost on time and most of the topics dealt with some aspect of instrumentation. The first keynote speaker was Mr. William Andrewes of the Rockford, Illinois, "Time Museum." He spoke on the History of Astronomical Clocks. Another keynote address was delivered by

Mr. Ralph Winrich of NASA Lewis Research Center who showed slides and spoke of the Voyager Missions.

Anyone not listening to the papers could be found inspecting the equipment of Racine's Modine - Benstead Observatory or watching science fiction movies thanks to the miracle of videotape. A large tarp provided protection for the astronomical "flea market" which attracted lots of fleas.

The drizzle stopped in the early afternoon long enough to allow participants to set up their instruments for the telescope display and judging. The ingenuity of the amateur astronomer was evident once again. The instruments ranged from large reflectors and refractors to a camera platform based on a simple door hinge.

The banquet was a catered buffet, served under the flea market tarp (the "fleas" having departed), and eaten in a tent. The featured speaker after the banquet was Mr. Robert Cox of Telescope Making. He gave an interesting talk on amateur instrumentation.

Most participants departed soon after the banquet address in order to find something DRY. Those who stuck it out were rewarded with clearing skies about 10:30pm and many amateur instruments plus the Racine 16" were set up for observing.

My last thought as I left the observatory site was the line from an old Paul Simon tune, "Slip sliding awaaaaaay ..."

Moon
(cont.)

I would certainly like to recommend to anyone interested in studying the moon to further their interest by attempting to sketch some of the features which they have observed. Such a practice should do much to enhance their knowledge of the moon's surface and aid in learning directions no matter which convention is employed.

Video
(cont.)

In time, even more sophisticated systems will become more affordable. Until then, even the inexpensive units are useful for group viewing and instruction. Using a remote monitor, they also offer the ability to leisurely explore the sun and moon from the comfort of your living room!

February 28 is Deadline

for March issue