



Capitol Skies

The Newsletter of the Madison Astronomical Society

May/June 2006

From the President's Desktop

by Neil Robinson

The spring season carries in opportunities for star gazing and for cleanup at the YRS observatory. We are hoping to get the C11 mount finished in time for the June picnic. In addition, the re-roofing of the clubhouse should start soon.

Recent MAS meetings have featured lectures on topics such as the SALT telescope and Zircon dating of meteoritic samples. Upcoming meeting lecture topics include amateur radio astronomy.

Nominations for club officers for next year are being accepted and I encourage any member who is interested to participate in club governance. Contact me to get on the ballot.

We will also be accepting nominations for next years student telescope scholarship(s). We now have enough instruments to offer more than one scholarship to interested young people, so encourage your young friends to apply.

New Clubhouse Roof

by Tim Ellestad

Two years ago this Spring the shingles on the clubhouse at YRS began to show their age. The clubhouse building is twenty-two years old and they are its first roof. The shingle tabs began to lose their sticky attachment to the shingle below and the corners of many of them were beginning to turn up. On a steeper roof this wouldn't be of too much concern, at least not right away. But our building has a roof with a pretty shallow pitch and the clubhouse sits perched high on a hill with little wind protection. Before long driven rain will likely be finding its way under the wind lifted shingles and eventually into the rafters.

So at the February meeting the attending members approved a bid to re-roof the clubhouse. In the proposal that we considered it appeared that the best value was to go with 50 year rated shingles as opposed to the standard thirty year durability indicated in the base price. We anticipated that this repair should keep the clubhouse sound for many years to come for only a modest increase in the total cost. It was also stipulated that we insist on the better "D" style aluminum roof edging.

We assume that the roof has no damage to the structure underneath. This, however, is a standard lurking possibility in any roofing job. Should any problems be found with roof boards, rafters, or the Styrofoam block insulation, the members authorized on-the-spot approval for the necessary repairs.

Calendar of Events

- May 12 MAS monthly meeting at Space Place (2300 S. Park St., in the Villager Mall). Business meeting 7:00 pm, main meeting 7:30; Our own Jane Breun will give a talk entitled "Eclipsed in Turkey, March 29, 2006."
- May 17 MMSD Planetarium Monthly Program: *Wisconsin's Summer Sky Highlights*. Prepare for a summer of skywatching around southern Wisconsin by learning what to see, when to see it, and how to get the best views — whether you're in your backyard or a state park under dark country skies. MAS members will get a half-priced admission (2 for 1) if they mention "MAS." Programs at 6:30 and 7:45. Admission \$2.00 per ticket. Memorial High School, 201 S. Gammon.
- June 9 The MAS annual meeting and picnic will be on Saturday, June 9th at Yanna Research Station. This replaces the regular June Friday evening meeting at Space Place. You are welcome to show up anytime mid-afternoon - there will be a short meeting and election of officers at 4:00 followed by the picnic at 5:00. Please bring a dish to share & your own drinks - MAS provides brats, burgers, hot dogs, plates, utensils, and grills. Call the Ellestad's at 608-233-3305 or any other officer if you need directions to YRS.

East is a Big Bird: aspects of non-western navigation methods

by Don Martin

A brief summary of the two basic methods of navigation will be helpful in understanding indigenous navigation in the vast Pacific Ocean.

The first method is based on Western technologies including celestial navigation (using a sextant for example) and loran to establish precise positions without knowledge of where you have been (other than in a general sense), but they depend on complex technologies of timekeeping and star tracking or of electronics.

The second method is dead reckoning in which one's position at a given time is determined on the basis of distance and direction traveled from the last known location, and conversely, you are lost if you lose track of how far you have come from where you were.

Dead reckoning is no more or less accurate than technological ones if sophisticated techniques for keeping track of direction and distance traveled are available, and can establish a position with great precision. Inertial navigation (widely used on submarines and missiles) is based solely on dead reckoning, whereas Puluwat dead reckoning is less sophisticated and so its accuracy is not as great.

East is a Big Bird: Navigation and Logic on Puluwat Atoll is an ethnographic study by Thomas Gladwin with respect to indigenous navigation methods. It is a dead reckoning system dependent on features of sea and sky characteristic of Puluwat's location in the chain of islands comprising the Western and Central Carolines. Historical records exist of its uses and in the 1960s was still in use. I don't know if there are any master navigators still alive on Puluwat.

While there is little historical data available on indigenous navigation in Polynesia – its use there was lost with the incursion of missionaries who did all they could to suppress indigenous cultures and practices – but corollaries with Micronesia and Melanesia can be drawn for Polynesia from both historical records

and, up to the 1960s at least, contemporary navigation still employing indigenous methods. It is doubtful a completely unique set of principles was used in ancient Polynesia, or that they depended upon observations of quite different natural phenomena since there are limits to what is available for detection by human senses in an oceanic environment: Waves, winds, clouds; stars, sun, moon; birds, fish, and the water itself is about all there is to be seen, felt, heard, or smelled; thus the principles would be similar but practices could be quite different. For instance, comparable, but different local characteristics are evident in the latitude of stars, in the maximum distances to be navigated between islands, in the species and habits of sea birds, in the distribution and typical depth of reefs, and in the size and visibility of islands.

Astronomical Navigation Methods on Puluwat

On Puluwat only a master navigator is trusted to undertake long open ocean voyages, but to earn that honor takes many years, starting on land at a canoe house where great masses of detailed and specific factual information must be committed to memory, information that is specific as well as potentially of life-and-death importance: Open ocean sailing cannot be taken lightly, a canoe out of sight of any land can easily be lost long enough for the occupants to perish from factors like starvation, thirst, heat exhaustion, and typhoons.

Each master navigator has his own subsystem of navigation which he teaches to his students, but at the heart of the whole system are the stars, specifically the points or directions where certain stars rise and set around the horizon, and from which course directions between islands are established. Land training includes making diagrams on mats with pebbles, arranged in a circle, usually represent stars, but they can also illustrate

islands and how these islands "move" as a canoe passes on one side or another.

These pebbles are used in the star component of training, each pebble representing a star or asterism, which the student must learn to name. Once individual names are memorized a student must learn the various star course as related to the rising or setting of stars used in sailing from one island to another. Stars and their respective courses must be learned for every pair of islands between which a navigator might find himself sailing; there are at least twenty-six separate islands or atolls to which Puluwat navigators have sailed, a number of others which a navigator is expected to know the sailing directions to or from if he is called upon to navigate between them.

When you consider that a navigator could sail from any one of these islands to any other, the number of possible island pairs for which star courses must be learned grows to a very large number. Gladwin noted that he recorded directions for 55 commonly made voyages (110 when return voyages are included) and that the more remote islands add as many more.

This body of knowledge is taught and memorized through endless reiteration and testing, and learning is not complete until a student, at his instructor's request, can start with any island in the known ocean and name the stars both going and returning between that island and all the others which might conceivably be reached directly from that island. This recitation of a sequence of stars between a given island and all the other islands around it is not an "inventory" memorized by rote. Gladwin states that his own instructor, Hipour, flatly stated it was not, and the fact that a navigator, the moment he is asked, can give at will not only the star course but also a lot of other information about sailing between any two islands. Thus critical information is learned in a way that each item is discretely available, as if it floating on the surface of the navigator's mind, rather

than embedded in a long mnemonic chain.

Mental ability and insight on Puluwat

Keeping in mind that Gladwin's study was about how logic was perceived and practiced by Puluwat navigators, there was an interesting incident which relates that Hipour, along with other men, were very interested in a star chart Gladwin took to Puluwat; an interest which surprised Gladwin since seeing stars printed on paper could add nothing to their complete knowledge of the heavens. However, the incident illustrates the flexibility and insight of Puluwatans in perceiving spatial relationships. The chart, Bernard's Nautical Star Chart, published in Glasgow, is a schematic diagram designed solely for the use of Western celestial navigators which is laden with conventions and symbols: stars are shown as five-pointed with magnitude represented by size, stars listed in nautical almanacs are in red while the rest are black, lines are drawn

between stars linked in the constellations of European folklore, the projection is Mercator's with gross distortion of the polar regions, and lastly, east and west are reversed so the chart must be held over the head to look right when used at night.

Gladwin thought that the chart, with its many cabalistic signs, fine for a Scottish mariner, would render it incomprehensible to a Puluwatan, but that was far from the case. "After my first lesson in star identifications I could point to a few stars on the chart by their Puluwat names. Hipour at once understood what I was demonstrating. After puzzling over the whole chart scarcely a minute he began pointing to other stars and naming them. I got out the list of equivalents given by Goodenough (1953) and all the identifications agreed. I later tried this with some other men. The navigators in particular understood the chart with no more trouble than Hipour. Tawaru was so delighted he insisted I leave the chart with him on my departure. I did so even though I felt sure he knew more than the

chart did. I was also personally delighted because this saved me many late nights of peering into the heavens to verify star identifications."

Another example of Hipour's presumably spatial and angular sophistication recounts when, prior to his departure, Gladwin gave Hipour the chart they used during his stay showing the islands around Puluwat. The chart, laminated in flexible plastic for protection, had the familiar circles showing degrees of bearing and magnetic deviation, and Hipour, after taking the chart along on a trip to Pikelot Atoll, inquired of Gladwin how to transfer a line of bearing between two islands on the chart to an adjacent bearing circle, believing that if he could do this, even though he could not read the bearing numbers, he could count divisions on the circle on the chart, and thus transfer readings to a compass which he had come into possession of some years earlier.

Next issue, details on Puluwatan Celestial Navigation.

MAS Telescope Scholarships

by Neil Robinson

Most MAS members know that we offer a youth scholarship of one year's use of a telescope to the teenager/student who we feel can make the best use of our equipment based upon their essay answer about their interest in astronomy.

What is new about this program is that MAS has recently received two new donor scopes from members and friends and that MAS is considering making these scopes available to additional students through the Youth Scholarship Program.

One is a larger 10 inch Dobsonian reflector and offers greater light gathering power than our original scholarship scope

albeit at the cost of some decrease in mobility.

In addition, the other of these instruments is a rather sophisticated 8 inch Schmidt-Cassegrain scope with clock drive and finder scope, eyepieces and filters. It also has mounts for a guide scope, and a beefy tripod with a wedge mount.

It is contemplated that this telescope might present the opportunity for MAS to offer an Advanced Telescope Scholarship which could be available as a follow on second year award to teens who have completed their first years' scholarship and wish to move up to a more complex instrument.

I hope that MAS members will spread the word to friends and acquaintances about this program and help us to drum up interest in getting young people involved in astronomy.

(As of the end of April, no applicants have been found for the existing scholarship telescopes for the 2006-2007 school year. One of our current recipients is interested in upgrading to one of the advanced telescopes mentioned by Neil, but we need to get the word out to area students on the availability of these programs. Please consider how you might get involved in helping to spread the word about this unique program. - ed.)



Capitol Skies
2810 Mason Street
Madison, WI 53705

First Class

MAS would like to thank:

IDC

for hosting our web presence

Officers

PRESIDENT

Neil Robinson
238-4429

neilandtanya@mailbag.com

VICE PRESIDENT

Wynn Wacker
274-1829

wkw@mailbag.com

TREASURER

Mary Ellestad
233-3305

ellestad@mailbag.com

SECRETARY

Dave Odell
608-795-4298

dodell@midplains.net

OBSERVATORY DIRECTOR

Tim Ellestad
233-3305

ellestad@mailbag.com

AT-LARGE BOARD MEMBERS

Jeff Shokler
301-0191

jshokler@wisc.edu

Mark Hanson
833-8988

markh@tds.net

Madison Astronomical Society members are active in sharing the pleasures of astronomy with the public, acting as a resource for students and teachers, and exchanging information at Society meetings which occur monthly. The Society continues to pursue its original goal to "promote the science of astronomy and to educate the public in the wonders of the universe."

For more information about the Society, please contact one of the officers listed at left or visit us on the web at:

www.madisonastro.org

MAS Membership Form

Name _____

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Please circle membership type:

Student (\$5.00)

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Enclose check and make payable to the Madison Astronomical Society.

Mail to MAS Attention Mary Ellestad,
2810 Mason St., Madison, WI 53705