
P.G.A.S. Newsletter #16 1990 Feb 20

Hello, everyone!! It's good to be getting back to the swing of things. There wasn't a newsletter last month simply because I left it too late and I didn't have anything to say (!!).

RECENT EVENTS AT TMO:

There haven't been any simply because I can't get up there! I tried a few weeks ago but the road was icy and even with a four-wheel drive it didn't seem wise - getting down would have been the real problem! When the ice eases I hope to get up there to check things out, set the mouse traps, etc.

Some weeks ago we submitted the request to the government for a set of casino nights - I understand that the waiting period is a few months (which would be OK). This is our big chance - with the money in view, we should be able to start the power line going with a view to re-opening TMO possibly this year.

LAST MEETING:

Hey, all you people who stayed home missed a good presentation! Brian Potts talked about comets, where to find some of the current ones, etc. He also talked about his trip to Hope in an attempt to time an occultation (unsuccessful, unfortunately). Star charts were passed out and a good time was had by all (I believe).

WHAT'S GOING ON IN THE SKY:

Well, there've been a few clear nights lately. Forests for the World is a reasonable viewing site and I and a few others have been up there. Jupiter is prominent and when the air is steady, one can see many features on the planet.

Since we have the ephemerides for several comets, now would be the time to look for them! Comet Levy, although past its maximum, should still be visible high in the southern skies around 10:00. Comet P/Wild 2 is a more difficult object low in the southeast in the wee hours. Comets Machholz, Hartley 2, Wirtanen and Faye will be upcoming in late spring, summer and fall. See Sky and Telescope for 1991 Jan or come to the meeting for details.

The giant Coma and Virgo clusters of galaxies will be visible in dark skies to the southeast these nights and are a fascinating sight.

SHORT ARTICLE - COMETS:

Comets have been observed since the earliest times. Until comparatively recently, they were not recognized as celestial objects; moreover they were thought to be indicators of coming evil. The first "modern" observer to investigate comets was Tycho Brahe in 1577. He determined (by a lack of diurnal parallax) that comets were at least several times away as the moon and were therefore celestial. Kepler observed what was later called Comet Halley in 1607. Newton, applying his law of gravitation to comets, recognized that comet orbits should be conic sections (circles, ellipses, parabolas or hyperbolas). Only the first two are bound orbits, that is periodic (ie returning). Edmund Halley published calculations of the orbital constants of 24 comets, noting that the comets of 1531, 1607, and 1682 could well be the same comet, returning to perihelion (closest approach to the sun) every 76 years. If this were true, Comet Halley (as it came to be called) would return about 1758. True to prediction, the comet was discovered Christmas night in 1758 and has been named in Halley's honour. Subsequent investigations revealed that Comet Halley has been observed off and on since 239 BC. The 1986 apparition was the 30th observed perihelion passage of the comet.

Today, much is known about comets. Most of them travel highly elongated orbits, close to parabolic (eccentricity = 1), but all are believed to be members of the solar system. There are the short period (periodic) comets having periods as short as 3.3 years (Comet P/Enke) - these only go out as far at aphelion as the orbit of Jupiter or so (Comet Halley goes out to Uranus' orbital distance). Also seen are the non-periodic orbits, so-called because their periods are too long to have been seen more than once (these periods can range up to millions of years). If they are bound objects they could go out to 50,000 AU from the sun (over 1000 times Pluto's orbital radius).

There are two complications to comet orbits: one is that the major planets (esp Jupiter) can perturb the orbits, changing an elongated orbit to one more nearly circular, and changing a long-period orbit into a periodic one. Another complication is that of non-gravitational forces.

Comets are known to be mostly ice with impregnated dust (the "dirty snowball" theory). Therefore when they approach the sun, the intense rays vapourize some of the ice making a jet and creating a tail. The tail can actually consist of two parts: an ion (gas) tail and a dust tail. These are accelerated outwards by the solar wind and radiation pressure resp. The action of the jet(s) then can give non-gravitational forces.

Come to the meeting for more comet tales (pun).

NEXT MEETING:

This Thursday, Feb 28 at 7:30 in room 2-223 (Physics lab) at CNC. I hope to talk further about comets and show 3-D images of comet orbits using high quality stereo viewers. We have on the Physics computer a recently acquired piece of software "Deep Space 3D" which, among other things, generates these 3D diagrams of comet orbits. It's shareware, so if you have access to an IBM-compatible, bring along a 3" high density floppy diskette.

If there's time and interest, I'll show slides of my 1980 trip to Kitt Peak. Tea and coffee will, as usual, be served.

Bob Nelson, President