

In Praise of Notebooks

W. Smith

Way back in 1966, when I was 15 years old, my interest in astronomy was new and I had made for myself a telescope (a refractor) using a cheap objective 'spectacle' lens I had bought by mail order for a few shillings and an eyepiece lens I took from a broken camera. The telescope tube was made from a roll of cardboard (which I had painted brown – imagine!), and the telescope stand was a flat piece of plywood with two vertical poles, between which the telescope could pivot in the vertical direction. In use I would plant the plywood board on top of the breeze-block wall dividing the neighbour's garden from ours and use the stand as an alt-az mount.

I remember I was particularly keen to see Jupiter at that time. Galileo had seen the moons of Jupiter with his telescope, would I be able to do the same? I must confess my telescope was not very impressive. No matter how hard I tried I could never get a sharp focus, due to the chromatic dispersion that was an expected feature of 'spectacle' lens telescopes. But, for the price of a few shillings, I could not complain.

On the night of 23 February 1966, Jupiter was riding high in the South and, between banks of cloud, could be seen shining brightly in the blackness of a sky that (back then) was untainted by glaring street light. I set up my telescope in a bitter cold breeze and worked in the wind with my frozen hands to find this jewel. When I did so, I managed to focus on the disk of the planet and suddenly three fuzzy stars popped into view, all on a line that ran through Jupiter's disk. These were three of Jupiter's legendary moons! What a buzz I felt at this major discovery of my own! That night I wrote of my discovery in a little notebook I had initially bought to record my observations of the early artificial satellites: Echo 1 and Echo 2, which were instrumental in directing my attention skyward in the first place.

The next night, in similar circumstances, I observed Jupiter again, and this time there were four fuzzy stars in line with Jupiter's disk. I had now observed them all. This event was duly recorded in my notebook – as was my observation of 'numerous lunar craters' made on the same night. I now had real astronomical events recorded in my notebook. But did I keep up this commendable habit? Not really. I think what must have happened was that the weather, never astro-friendly at the best of times in Anglesey, where I lived, had closed in for weeks on end and drowned my nascent enthusiasm. Nevertheless, on 20 May 1966, I did make another entry in my notebook: a partial eclipse of the sun 'at 10 o'clock approximately'.

That notebook was never used again. I had become friends with a lad from my school named James who was also interested in astronomy and together we nurtured our mutual interest. Keeping notes was an 'uncool' thing to do, and anyway I was embarrassed to reveal what I had written, thinking my choice of words might be 'unscientific'. So I put the notebook aside and for years afterwards, it lay hidden in a drawer somewhere, unused and neglected. Remarkably though, it remained in my mother's chest of drawers for many years, even after I had left home for University, never again to settle in the place where I grew up.

Recently, after more than 50 years, I found that notebook again. I scanned through it and smiled at my records of the Echo satellites and the language I used to describe them. (I have to say it was definitely unscientific!) Then I came across the page where I had recorded my observations of Jupiter and the partial solar eclipse. After staring at these notes for a while reminiscing, an idea came to me....

Sitting at my computer I fired up the planetarium program Stellarium. I set the date to 23 February 1966 and the time to seven thirty in the evening, when I would most likely have been outside with my telescope. Sure enough, Jupiter was high in the South. I zoomed in on the disk (as Stellarium allows you to do) and yes, there they were: the three moons of Jupiter just as I had seen them on that night over 50 years ago (Figure 1). But there was something else: the fourth 'missing' moon (which happened to be Europa) was also there – right on top of the disk of Jupiter itself! My primitive telescope had not revealed this to me and as a result I had believed for all the intervening years that it had been behind the body of Jupiter! How fantastic to learn something new about such an old observation.

I then set Stellarium to 24 February 1966 and again looked at the sky at seven thirty in the evening. I quickly found Jupiter with all four Galilean moons strung out in a line, just as I had recorded (Figure 2). My next investigation was the note I'd made of a partial solar eclipse at 10 a.m. ('approximately'!) on 20 May 1966. To my joy, this also popped out of a Stellarium sky for that date and time (Figure 3). The scribbled notes written over fifty years ago by a school kid had proven to be an accurate record! It is not hard to imagine how such apparently trivial observations could one day make connection with a real scientific investigation. (The great astronomer Edmond Halley once deduced there was a problem with our understanding of the moon's motion on account of a discrepancy between the actual timing of an ancient solar eclipse and the timing derived from Newton's theory of gravitation. The resolution of this turned out to be the slowing of the Earth's rotation over the millennia.)

And that is the point of my tale. Witnessing an astronomical event makes for pleasant memories, but recording the details in a notebook makes it science. Young scientists take note!



Figure 1: Jupiter on 23 February 1966 at 19:30 (Stellarium).



Figure 2: Jupiter on 24 February 1966 at 19:30 (Stellarium).



Figure 3: The Partial Eclipse of the Sun 20 May 1966 (~10 am) (Stellarium).

(c) Bill Smith 13 August 2020.