

The Sun in White Light

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The planetary, lunar or deep sky observer has more choices now than ever before to convert some of their scopes to part time solar viewing. From Baader film to Glass white light filters to the new Herschel wedge designs from Lunt and Baader, there is really no excuse anymore for an avid hobbyist not to have at least one solar setup. Shortly you may even be able to slip a Hydrogen Alpha or Calcium K module into one of your big Schmidt Cassegrains for absolutely breathtaking narrowband views of the Sun. What can you see with your equipment? Read on...

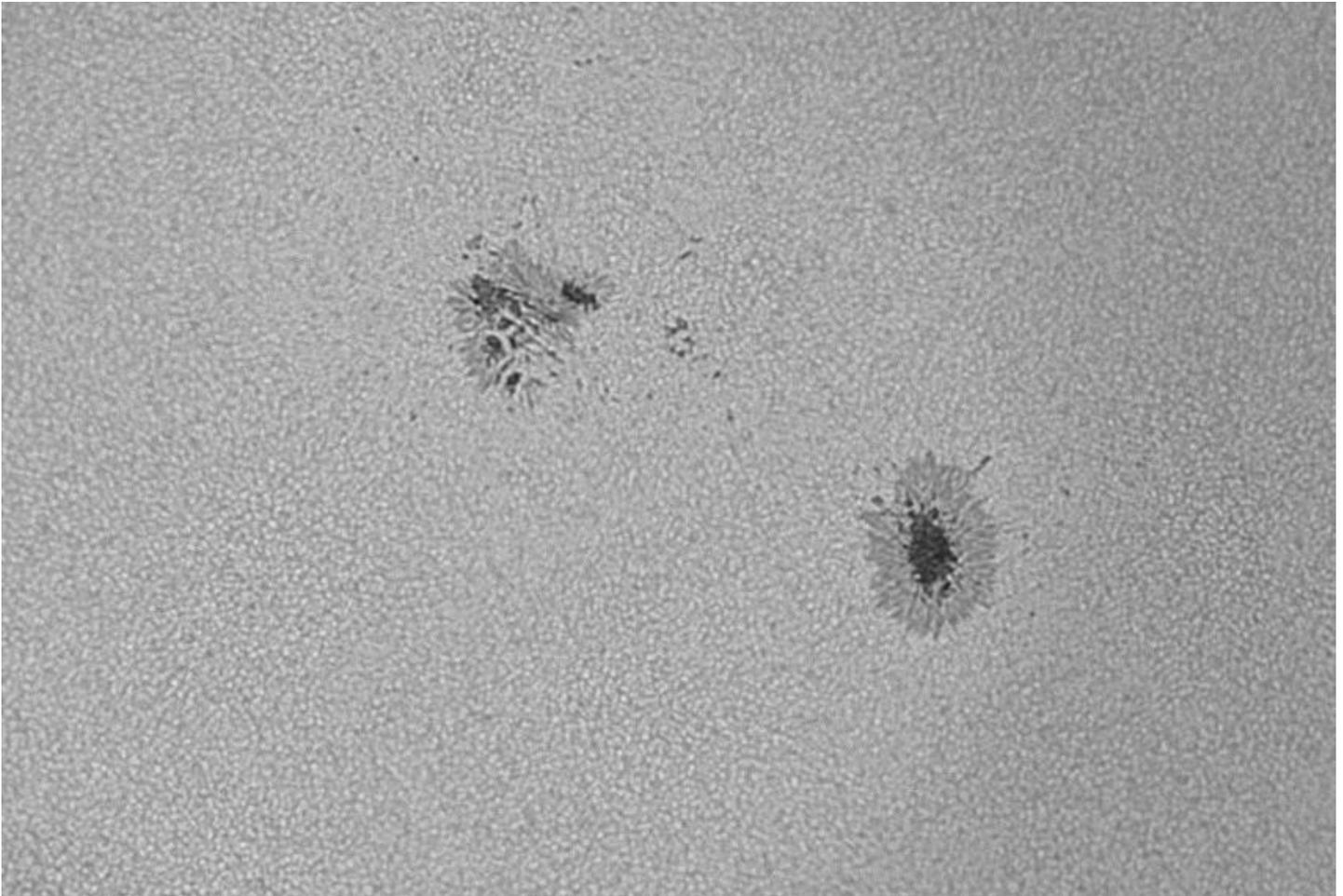
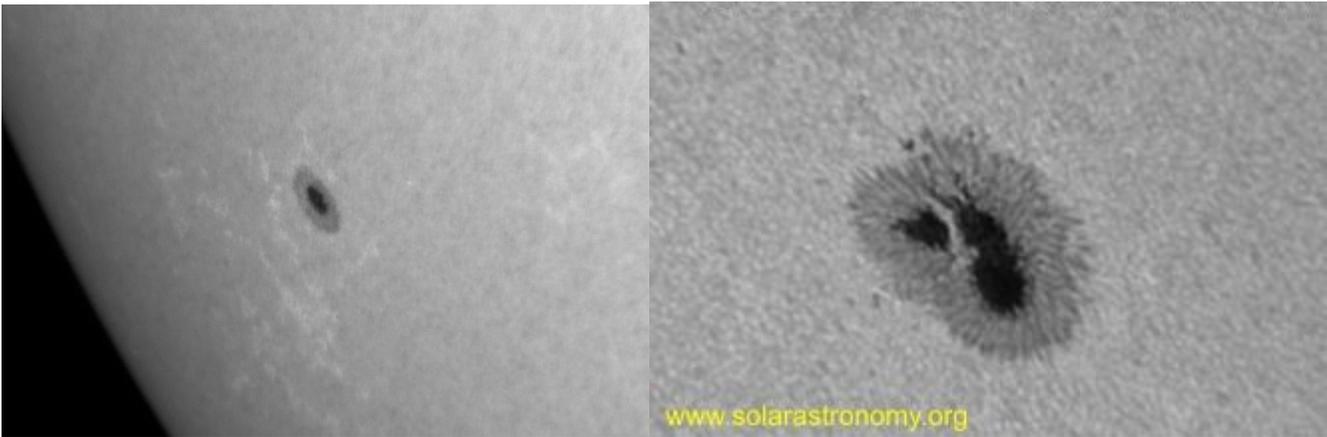


Figure 1 Sunspot image taken with a small refractor and Lunt 2 inch Solar Wedge April 25th, 2011

Most astronomers can easily and affordably enjoy the incredible complexity of a big sunspot group as it churns across the photosphere. These groups of oppositely charged regions of polarity put on a rhythmic dance of magnetic ferocity as they form and reform into ever changing groups of cooled solar “blemishes”. The magnetically aligned grayish penumbra seen around the black cores, or umbra, will appear in stark contrast to the granulated photosphere even in the smallest of refractors giving the astronomer a real time, close-up view of the surface magnetic force lines as they usher the hotter material in to fill the cooler regions in the sunspots recessed umbra.



Faculae, or regions of intense brightening, thought to be electromagnetically related to sunspot groups, can be viewed in white light during periods of heightened activity (such as now) even in a modest white light setup. These fields of superhot photospheric plasma come and go in a ghostly partnership with meandering groups of sunspots. The lucky observer may even see the illusive white light flare in the coming weeks if they study the Sun carefully and often. It was such a white light flare as seen by Richard Carrington in September 1859 that touched off global interest in the Sun and its tenuous relationship with Mother Earth.



Figure 2 Faculae visible near and far from a small Sunspot group August 11th,2011

Now to granulation; it can be seen through a decent refractor in the 4 inch or higher range and more easily through Baader film or a Herschel wedge than the typical glass solar filter. Granulation is the effect caused by rising plumes of magnetically charged plasma bubbling up from the Sun's convective zone into the photosphere to display their dome like structures, each from 500 to 1000 miles in diameter. This patchwork of bright areas bounded by darker lines gives the look of the complicated cellular structures normally seen in plant life or the grouped skin cells of our epidermis.

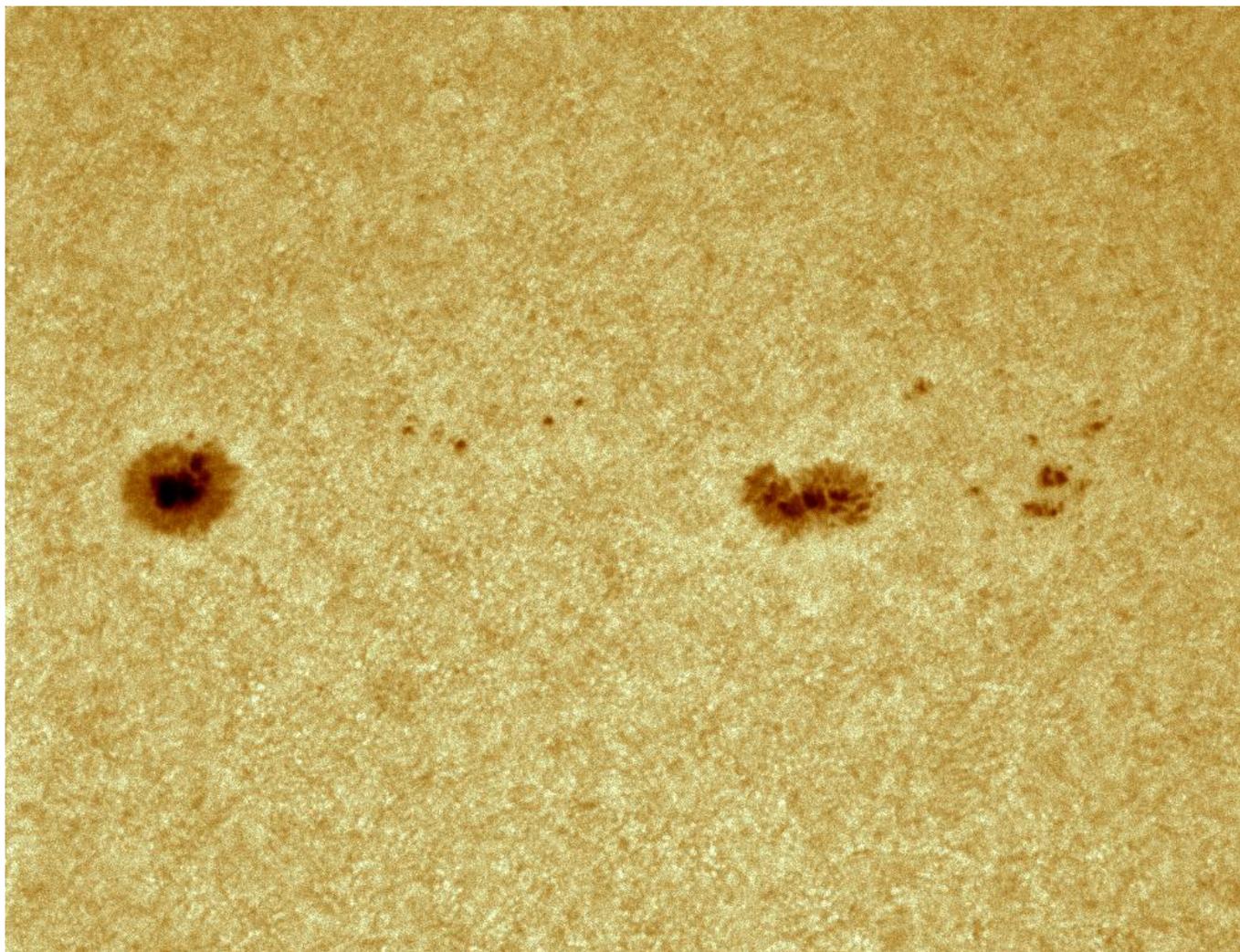


Figure 3 Sunspots and granulation as imaged by a middle school student at one of my recent outreach events May 5th, 2011

These visible light structures last for 4-6 minutes before dropping back down only to be replaced by the next energy releasing granule. Granulation and, for that matter, all of these features revealed in white light remain mostly a mystery as we continue to study the data provided by the NASA Living With a Star program or collected by the ever growing ranks of amateur solar astronomers around the world.

I am fortunate enough to be given the opportunity to view the Sun with hundreds of students and faculty at many schools every week this time of the year through my program The Charlie Bates Solar Astronomy Project. The introduction of new technologies in narrowband solar scopes along with cheaper and better camera technology has ignited a global boon in solar astronomy. Those of you lucky enough to own a narrowband solar scope already know how beautiful and fiery the Sun's ballet of plasma can be. I invite the rest of you star lovers to come join the hottest thing in astronomy by taking the plunge into safe solar

astronomy. The next two years should reveal the best solar activity in recent history so now's the time to get involved. I am available to provide support to anyone interested in public solar astronomy outreach.

Contact me at sramsden@solarastronomy.org or through my website www.solarastronomy.org.