The Valley Skywatcher

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Sun pillar, by CVAS member Steve Fishman

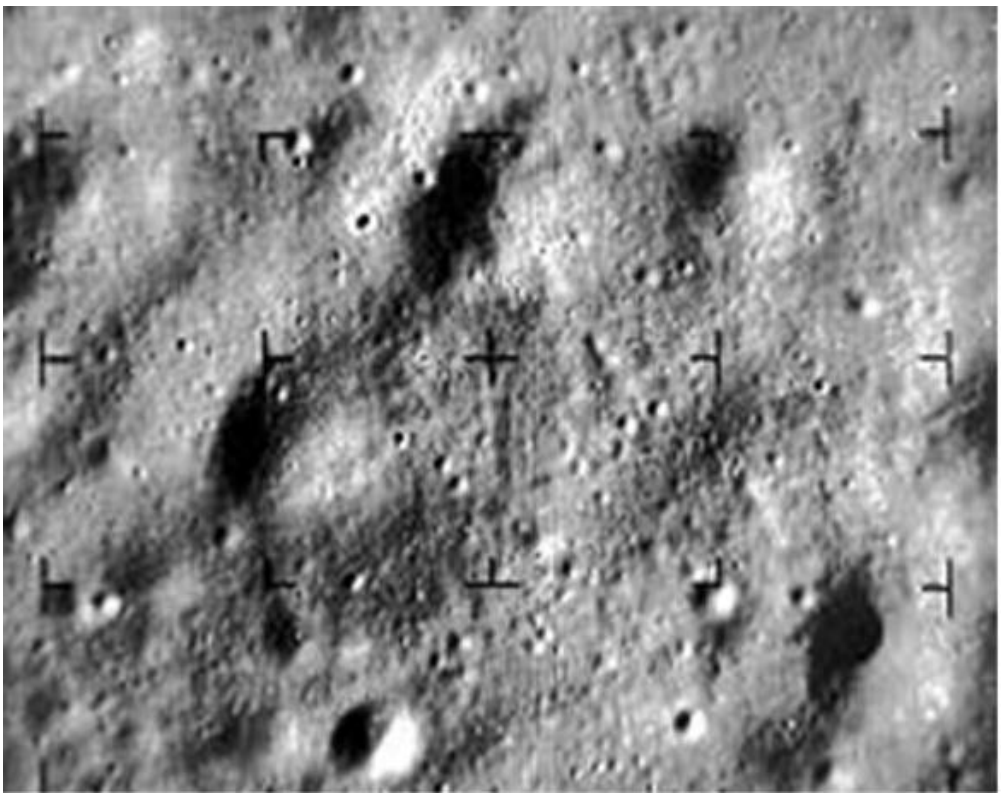
Planetary Exploration, in the CVAS Era

By Tony Mallama

The first close-up pictures of the Moon were shown on television to astonished viewers in 1965 during the infancy of the CVAS. These live images were relayed through broadcast TV networks during the final minutes before NASA's *Ranger 9* satellite crashed on the lunar surface. The opening shots resembled telescopic views where prominent lunar craters were visible. As the seconds ticked by, though, more and more details became apparent. There were small craters inside of larger craters and then even smaller craters inside of those. During the final few seconds the lunar surface took on an appearance never seen before, with innumerable pits and indentations strewn across an open plain. Prior to space probes the tiniest lunar features observable from the Earth were about the size of a football field. Now Ranger was zeroing in on the Moon and revealing such stunning detail that scientists hoped to study its surface dust particles!

Fast forward a few years and audiences are watching pictures from a *Mariner* spacecraft as it flies by Mars. Just as *Ranger* had changed the lunar paradigm *Mariner* did the same for the red planet. Until then canals were regarded by many as real features that crisscrossed the martial plains. Some even regarded them as the work of intelligent beings. *Mariner* revealed the true geological richness of Mars including outsized volcanoes and canyons that were beyond Grand. Canals, on the other hand, were nowhere to be seen and must have been merely tricks of the observer's eye.

The *Mariner* program included 10 spacecraft and resulted in fly-by encounters of all the terrestrial planets, Mercury, Venus and Mars. The final two missions in the series accomplished exceptional breakthroughs. *Mariner 9* became the first interplanetary orbiter when it circled Mars and performed a comprehensive survey of the planet. *Mariner 10* was the first spacecraft to employ a gravity assist from one planet in order to reach another. In this case the gravity field of Venus was used to accelerate *Mariner 10* to a sufficiently high



Ranger 9 **view of the Moon about 3 seconds before the spacecraft impacted on the surface. The grid of tick marks, called a reseaux, was a standard feature of early spacecraft imagery. Geometrical distortions from the vacuum tube vidicon sensors were corrected using this fixed pattern. Reseaux were no longer needed when solid state sensors replaced image tubes. NASA photo.**

velocity to encounter Mercury. NASA had originally planned for an 11th and 12th *Mariner* to extend mankind's reach to the outer planets Jupiter and Saturn. Later, though, their names were changed to *Voyager 1* and *2*. Besides Jupiter and Saturn, these probes would go even deeper into space and explore Uranus and Neptune.

The twin *Voyagers* gained celebrity status when they revealed active volcanoes on the Galilean satellite Io in 1979. Eruptions appeared as mushroom shaped plumes projecting from the moon's limb. The disk of Io, by contrast, was a crazy quilt of reds and yellows reminiscent of a pizza. No longer a mere dot of light in the eyepiece Io was now a pizza - with a mushroom topping!

The discovery photograph of Io's volcanoes taken by *Voyager 1*. One plume is visible on the dark hemisphere near the terminator and another is projecting from the limb. NASA photo.

Another triumph of the 1970s was the *Viking* program where scientific instruments were soft-landed on the surface of Mars. The cameras beamed back images from the surface revealing an alien Martian landscape with a pinkish sky that surprised everyone. The *Viking* instruments that made worldwide headlines though were contained in a small biological laboratory.

Excited scientists reported that one of the biology experiments indicated ongoing metabolism, which would indicate that living organisms were inhabiting Mars. However, this finding was inconclusive. Two other experiments failed to detect organic molecules thus arguing against a living planet. The contradictory results are still being debated today as the search for Martian life continues.

The early *Ranger*, *Mariner* and *Viking* initiatives were precursors to the *Galileo* and *Cassini* spacecraft and the Mars rovers of recent decades. Besides the increased sophistication of the later missions other important changes have taken place.

Today anyone can get in on the action by accessing NASA's on-line image archives and other data stores. These resources include real scientific data in addition to the stock publicity photos. Some web sites even display newly arrived images in near real-time.

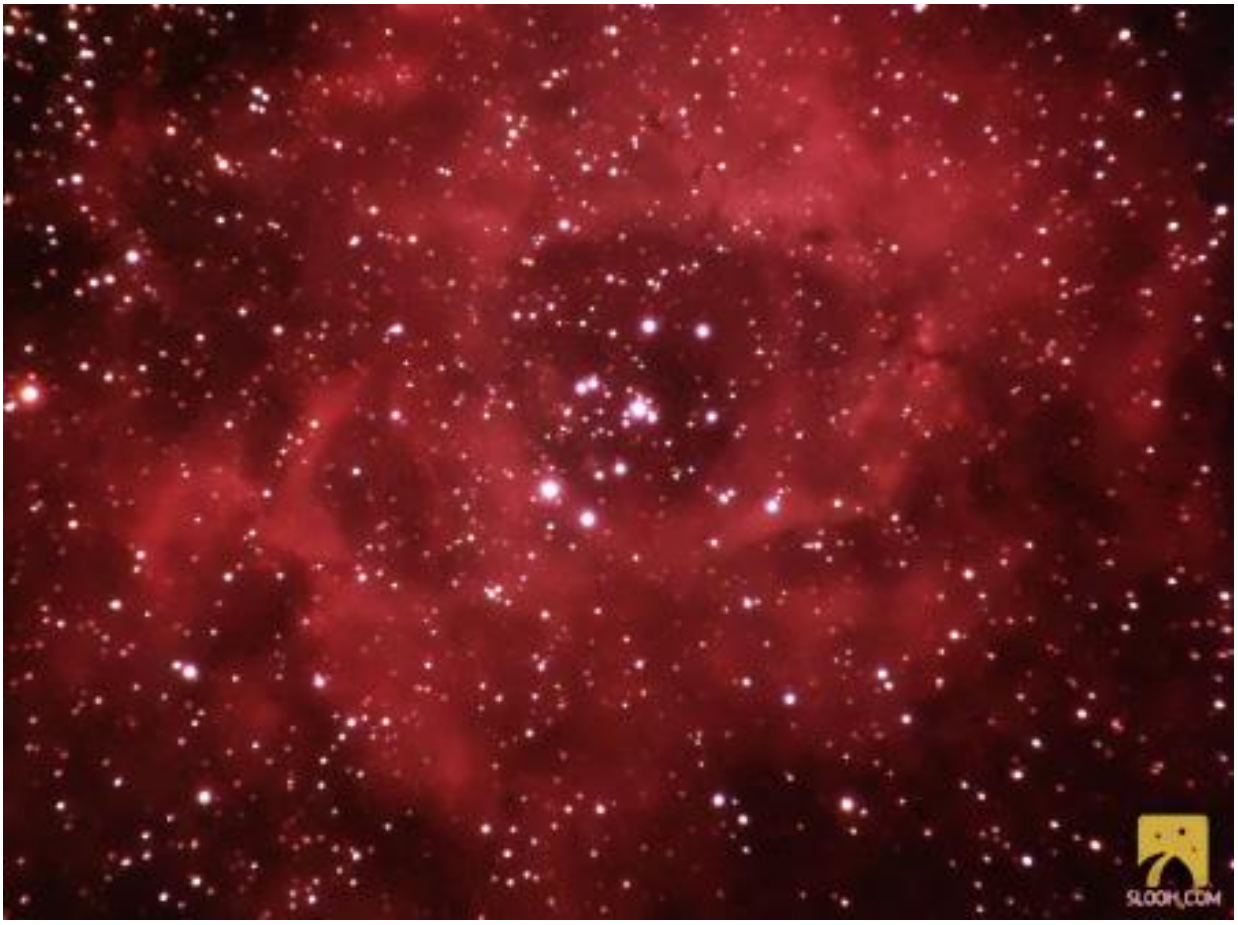
Amateur astronomers are discovering sun-grazing comets recorded by the *SOHO* solar observatory. Other arm chair researchers are sifting through *Kepler* spacecraft data in the hunt for planets outside our Solar System. Many more exciting discoveries await these enterprising investigators.

Students from elementary school through college years also benefit from the web-based data banks. These young people are rediscovering for themselves the awe inspiring lunar and planetary phenomena that amazed their parents when they were news headlines.

Astronomy Pictures of the Season

Winter Nights Are with Us Still

by David Mihalic



The Rosette Nebula NGC 2237, October 26, 2009 SLOOH 0.35 meter f/11 SCT La Dehesa, Chile

Well, winter has not yet quite left Cleveland. This is still a time when only the heartiest of astronomers dare the cold and sometimes snow for a glimpse of the heavens. There was a time in my youth when you would find me ankle deep in snow peering at the belts of Jupiter waiting for a Red Spot transit. But I no longer brave the cold nights thanks in great part to the advancements in technology.

In this case, I am speaking of the ability to engage in remote viewing through telescopes that can be in your backyard or even half way round the world. Thanks to the internet we can remotely control the opening of an observatory dome, the positioning of a telescope and the selection of filters, exposure times etc., of a CCD camera. So now I spend nights warmly, in my home office, at my computer, selecting celestial targets that I would otherwise ignore.

In last winter's newsletter I covered the colorful variety on winter targets in the Orion Molecular Cloud complex. We are going to take a photographic look at some other winter wonders this year.

Our first target, not likely to be seen visually, but a spectacular photo op, is the Rosette Nebula in the constellation Monoceros. Its designation is NGC 2237. This is a very large region of hydrogen lying at a distance of around 5,000 light years with a width of about 130 light years. There is also an open cluster at its center, NGC 2244. The whole region is an active stellar nursery. The resemblance to a flower is unmistakable.

ASTRONOMY PICTURES OF THE SEASON

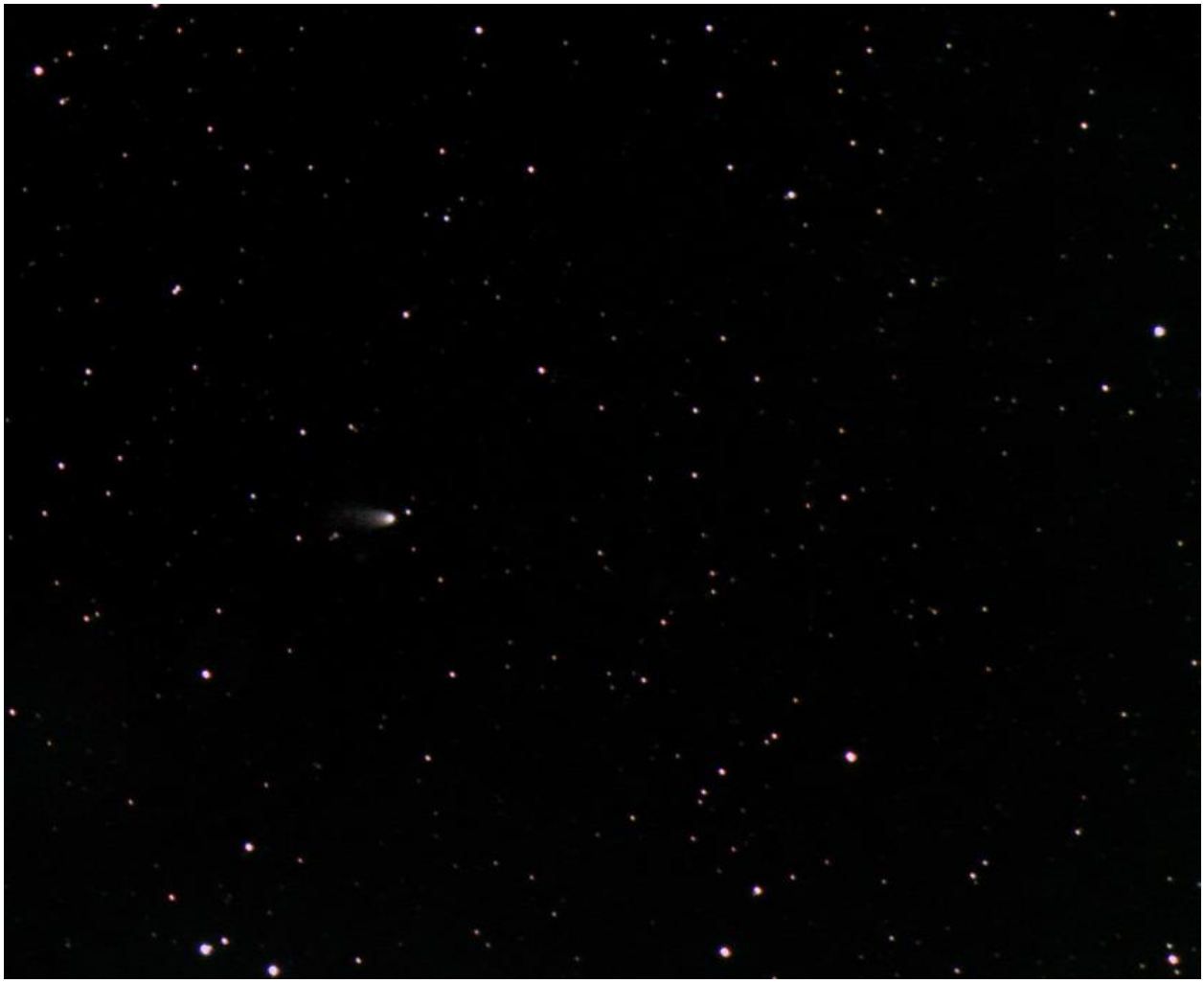
Winter Nights Are with Us Still (cont.)

The Pleiades M45 September 14, 2007
SLOOH 85mm f/5.6 Apochromatic Refractor
Mt. Teide,Tenerife, Canary Islands

Our next object is the ever beautiful Pleiades, M45, aka, the Seven Sisters. This is an open cluster near the constellation Taurus at a distance of around 425 light years. These are relatively young blue type B stars that are extremely hot. They even demonstrate a faint nebulosity when photographed. One of the nicest aspects of this grouping is that they are a great naked eye and binocular object. I have often observed that M45 looks like a small version of a dipper.

Astronomy Pictures of the Season

Winter Nights Are with Us Still (cont.)



Comet L4 PANSTARRS August 17, 2012 21:54:18 UTC
SLOOH 0.35 meter f/11 SCT
Mt. Teide,Tenerife, Canary Islands

This last picture is not a tribute to the fading winter but a look forward to what this year may bring – a Year of Comets! As I write this, comet L4 PANSTARRS is making itself just visible to northern hemisphere viewers (mid-March), if you have a clear western horizon that is. But what everyone is banking on is a spectacular late autumn showing of C/2012 S1 (ISON). This image of L4 PANSTARRS was taken from the Canary Islands back in August of last year.

PRESIDENT'S CORNER

By Gus Saikaly

Well, the date has been set: August 3, 2013, the day CVAS officially celebrates its 50th anniversary. Between now and then the contents of the day will be filled in bit by bit. Most of the events are still unknown. We do know a picnic will take place. It will be a step above, you might say, the hot dogs and chips variety without abandoning the informality of Jeans and T-shirts. What is still to be developed are retrospectives and exhibits of club history, achievements (astrophotography, papers, research...), and other ideas from any or all of you. Practical ideas are welcome. The goal is to have the plans set by no later than the May meeting.

Support for the club is already coming in. Our long-time partner, the Geauga Park District has offered its assistance, as well as the Township in making the celebration one to remember. In return, one of our founding members, George Gliba, has donated to the District some artifacts to exhibit at Observatory Park as donation from the CVAS. The artifacts included a moonwatch scope.

News from Marty Mullet reveals the project to house the telescope donated by Ian Cooper has been delayed due to site location issues. We had explored the possibility of purchasing additional land from the Richards, from whom we bought the present land, but they decided to hold on to their property. Although this might seem like a setback I should mention to the newer members of the club that we owe a huge debt of gratitude to the Richards, without whom no Indian Hill Observatory and all that goes with it would be what it is today. In fact before the CVAS acquired the land, the Richards allowed the club to use the property and build the first roll off observatory to house the 16 in. telescope on a hand shake, without any remuneration whatsoever, and when we had star parties Mr. Richards mowed the hill and allowed the overflow of vehicles, observers and telescopes on his land. I should add the acquisition of the two acres was under the most accommodating and generous terms. For all of that and their kindness over the years a big heartfelt thank you to the Richards, great benefactors and neighbors.

Speaking of good deeds, if you haven't browsed our website lately, take a look. Russ Swaney has developed a system that shows the cloud conditions (and other indicators) on the Hill to determine whether it would be worth a trip to Huntsburg. This system, as I understand it, derives its information from a unit located on the Hill. Together with the Clear Sky Chart, which derives its information from satellite and radar imagery, should cover the ever vexing cloud problem from both sides now (with apologies to Joni Mitchell!), and the decision of "should I, or shouldn't I" make the trek to the Hill would be a bit easier to solve.

Back to the future! On the evening of March 16 a group of the club's officers trekked up the snowy Hill to discuss the plans for the August 3 celebration. A tentative agenda has been developed and will be shared in a special email to all and discussed at our April regular meeting.

Clear skies to all…

Observing Sun Pillars

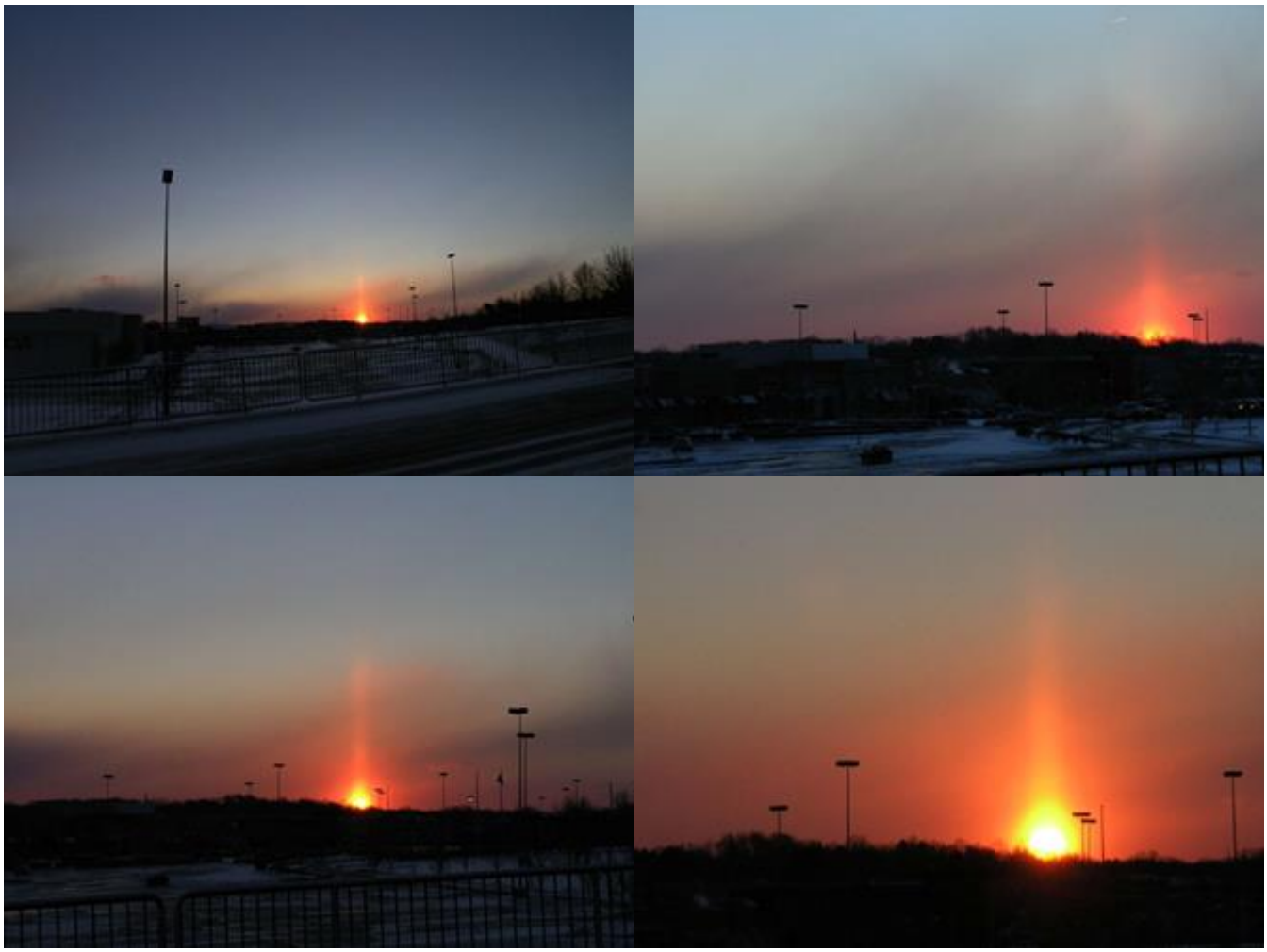
By Steve Fishman

In the last issue of the Valley Sky watcher, I wrote about observing sun pillars during the winter months. A sun pillar is created by the reflection of light from ice crystals in the Earth's atmosphere. On the morning of January 24th, the weather conditions seemed to favor the event so I hauled my camera with me to work.

The sky was partly cloudy that morning and fully cleared as I was driving through the Summit Mall parking lot, a minute from my work parking lot. I would have preferred a more natural setting instead of the foreground streetlights and buildings, but you have to grab whatever opportunity arises for these fleeting events.

The photos were taken with an Olympus 8080 digital camera between 7:48 and 7:51 am. The average exposure was 1/400th of a second at f/8, but varied a bit depending on the zoom level, from 32 millimeter wide angle to 200 millimeter telephoto. The photos approximate the naked eye view, but I intentionally overexposed a bit to bring out the pillar causing the blooming effect around the sun. It was a pretty short event, taking 10 photos over a 3-minute period. Thirty minutes later, a squall line came thru, dumping an inch of show.

The original photos are 3 megabytes in size, so to be email friendly to our editor, I resized the resolution to a more manageable level and also adjusted the contrast a bit with Paint Shop to bring out more structure in the pillar. I'll have originals on the laptop if anyone is interested in seeing the full resolution at our monthly meetings. And, with what appears to be an extended cold period this winter into spring, there's still more opportunities to witness this event.



What's Planned for Indian Hill in 2013

By Ken Fisher

This coming year brings a wide variety of things we will be doing to improve the buildings and grounds at Indian Hill. There are 3 projects related to the buildings (2 of which will be fairly significant in scope), and at least one site improvement project with a number of additional site improvement projects on the slate.

Building Projects

Probably our most critical building project is a home for the 18" that Ian Cooper has donated to CVAS. The plan is to build a deck for this scope with rails sunk into the floor of the deck on which will rest a "doghouse" for the 18". This shed could then be rolled right back off of the deck allowing full access to the main surface of the deck and allowing for unobstructed viewing (i.e. no walls!) with the scope. Based on the size of this telescope, the deck will most likely need to be in the 16'x16' to 18'x18' range. A number of possible locations have been discussed and they are primarily divided into two areas being 1) at the top of the Hill or 2) down below. The problems presented in locating this deck at the top of the hill are that if its located on the north or south side of the Hill it would be built overhanging some amount of downward slope and if its built on the east side it will be close to the property line thus requiring zoning approval. The problems with building this deck down below are that the area is far more prone to fog/dewing, and we would either need additional land or we would have to clear land, add drainage, and probably do some grading. Once a location is finally decided upon, we will need to get a more detailed design ready and a building permit, then we will be able to start construction.

The other main building improvement will be to the North Observatory. As we all know, access to the property can be severely limited from December through April and Indian Hill sees minimal use during those months. In an effort to get around the weather conditions we are planning to fully automate the North Observatory. As it currently stands, I believe both scopes in the North Observatory can be remotely controlled. What we need to accomplish this summer is allowing remote operation of opening and closing the roof. We can certainly do this with motors but the idea of trying to use a garage door opener of some sort is also being discussed. The goal is to have this operational for the 2013 – 2014 winter season.

Another item is that I would like to get some maintenance done on the exterior of the dome – it will need to be cleaned and buffed out again this year and I will need to get another coat of wax on it. If there's any spare time beyond these three projects, the main observatory building and the shed could use a good cleaning out, and the blades for the mower on the tractor should be removed and sharpened.

Site Improvements

Marty Mullet was kind enough to take the initiative and bring out a general contractor who evaluated our site with respect to drainage, clearing, and access issues. This yielded a lot of good ideas and a laundry list of work that should be done. As we all know, even once the snow clears our property generally stays wet well into June thereby limiting access and making walking/driving around a messy proposition. With the addition of some strategically placed drainage, by clearing some existing drainage, and by opening up certain areas to more light during the day we can greatly improve how well our property drains and how quickly it dries out. There is also the beginning of a discussion to extend our drive straight to the bottom of the Hill which again would improve access on the property. Of the various suggestions offered by the contractor, I have chosen one that I would like to begin immediately and complete as early this year as weather will allow.

There is a stand of trees in a depression just to the north of the North observatory. This currently separates our drive from where most of us commonly park. The goal is to remove this barrier and really open up the lower part of our property as usable space for additional parking capacity, more viewing area to set up in, and/or more room for camping out the night. There aren't many trees in this area to begin with so clearing it is not expected to be all that involved or time consuming…maybe a solid weekend or two. The real work will come in where the drainage and other site work is concerned. We will need to tie in to the existing culvert that opens into this area at the south side and

run that culvert all the way to where drainage formally resumes at the north side of this area. Once installed, we will then need to bring in a fair amount of fill and soil to bring this area to grade and we will need to level it out.

Remaining suggestions for site improvements would be adding drainage at the base of the Hill, clearing existing drainage along the east side of the property, and adding/repairing drainage across our drive. Also, whether or not we proceed with extending the drive to the base of the Hill, we should probably get some stone in to dress the areas that see the heaviest traffic and parking.

Marty did a real nice drawing of all of this and other proposed site work and it is reproduced here on the following page. Everything discussed above and shown on the drawing will probably add up to a multiple year undertaking but at least this way we have a path forward.

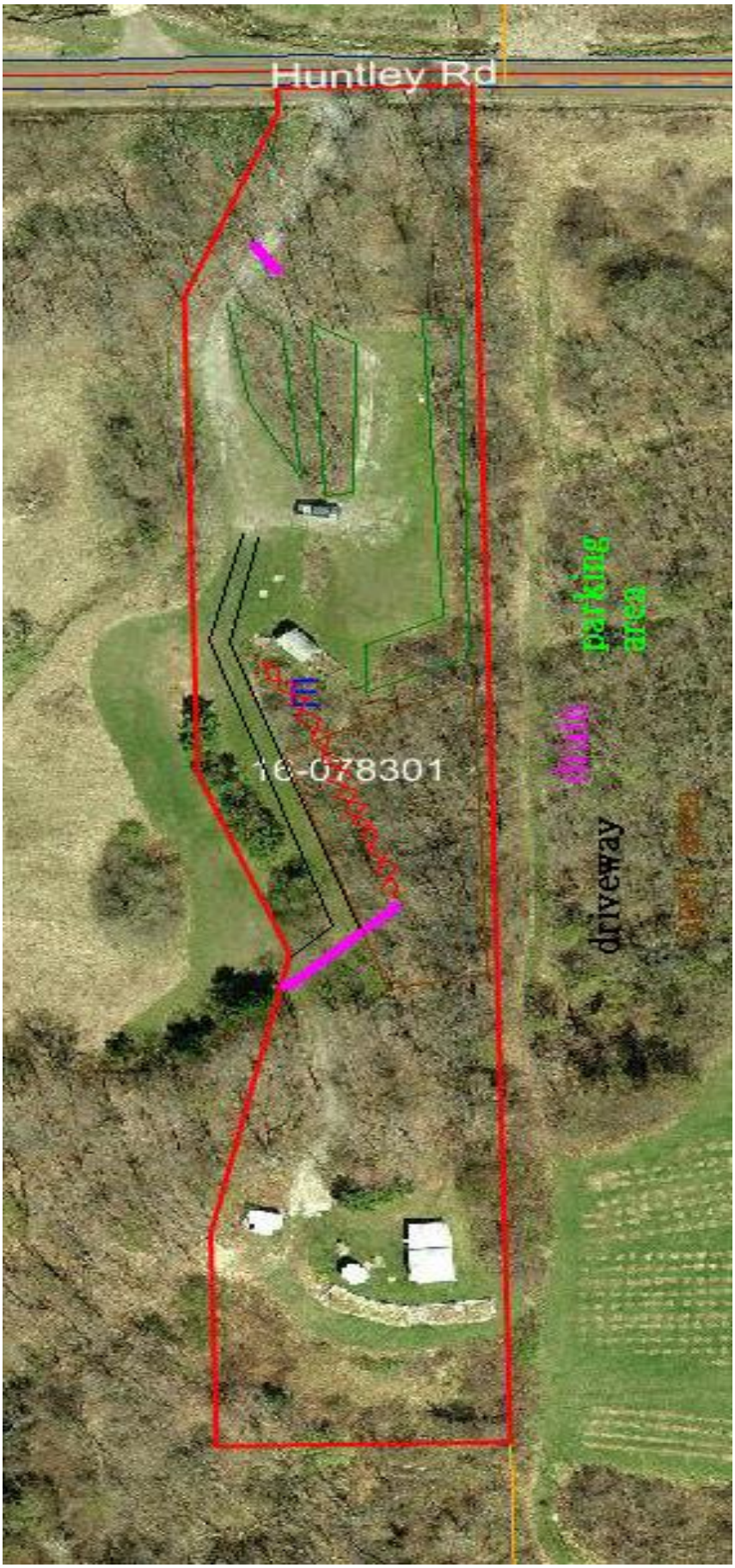
The final item of note is our continuing discussion about purchasing additional property to extend our western line another 50'. The need to do so was largely dictated by location of the 18" so if it ends up on top of the Hill, purchase of more land will not be as urgent. Even so, it would be nice to have a bit wider of a parcel…this would give us greater freedom for future buildings, parking areas, drives, etc.

Getting Involved

As you can see there is a whole lot of work that we should be doing in the near future and it nearly all translates into improvements for club members by allowing more access to equipment and more/better access to the property. Club members are by no means obligated to participate in this work. Come on out, use the facilities, and enjoy what Indian Hill has to offer. But anyone wishing to lend a hand would be greatly appreciated. There are only a couple of us who regularly dedicate our summer weekends to maintenance of Indian Hill – as you can see by what's been outlined above we're going to be busy! Also, anyone having further ideas/suggestions about what's been discussed above, by all means please join the discussion. Feel free to contact me at any time, my mobile is 216.502.9144 and my personal email is fisher45014@yahoo.com

Clear Skies!

Author's note: Since drafting this article, the location of the deck for the 18" has been determined and will be at the top of the Hill located between the dome and the main building and extending southward out from the top of the Hill. A preliminary materials list has been generated along with an estimated cost and a sketch of the deck. A more detailed sketch and refined price list will be discussed at either the April or May meeting. Construction start will be as soon as the ground at the Hill is dry enough to transport building materials to the top of the Hill. We are hoping to have the deck finished and the 18" in place and operational prior to our 50th anniversary celebration.



Planned Improvements to the Indian Hill Observatory

N. E. Ohio Amateur Astronomers & Citizen-Scientists during Operation Moonwatch

By G.W. Gliba

Many people don't know that amateur astronomers and citizen-scientists played an important role in tracking the first few man-made satellites during the early days at the dawn of the Space Age, back in the late 50s and early 60s.

During that time a government project called Operation Moonwatch was run by the Smithsonian Astrophysical Observatory (SAO), under the directorship of the famous comet and meteor astronomer, the late Fred L. Whipple. These were the days before NASA, and in 1958 the U.S. Army and the Naval Research Laboratory were planning to launch the first artificial satellites for the International Geophysical Year (IGY). The Operation Moonwatch teams were formed to be primarily a back-up system of visual observers with small specially designed Moonwatch Telescopes that would help keep track of the U.S. satellites, and any possible Soviet Union satellites, that may be launched, during the IGY (July 1, 1957, to December 31, 1958). Although there was a U.S. Navy system in place called Minitrack that was to be used for Radio Doppler Tracking, it did not give the accurate positional information provided by visual and photographic tracking. For that the U.S. would rely on the sophisticated Baker-Nunn cameras the IGY would have under the direction of the SAO.

However, the USSR shocked the world when they launched Sputnik I early on October 4th, 1957! The planned IGY network of sophisticated Baker-Nunn cameras were still not ready, and their deployments were still months away. They were still being built at the Boller & Chivens optical shop in Pasadena, California. So, the Operation Moonwatch Tracking Teams had to take on the task of being the primary satellite tracking system for the U.S. and for the USSR Sputnik 1 & Sputnik 2 satellites; and later the U.S. Explorer 1 satellite. The Baker-Nunn network was finally put in place several months later. They did frantically assemble one in the parking lot at Boller & Chivens to get a few quick pictures, but this didn't amount to much. It was the Operation Moonwatch Teams that saved the day.

The U.S. Naval Research Laboratory frantically tried to launch our first satellite Vanguard TV3 before the end of 1957, and before the Soviets launched a 3rd satellite. To add insult to injury, it blew up on the launch pad which was shown live on TV on December 6, 1957. Finally, the U.S. Army launched the first successful satellite for the United States on January 31, 1958, Explorer 1, after the two highly successful USSR launches of Sputnik 1 and Sputnik 2 (Sputnik 2 carried the dog named Laika). However, Explorer 1 became the first satellite to make the first significant scientific discovery of the Space Age when it detected the Van Allen Belts!

So, these Operation Moonwatch Tracking Teams were instrumental in providing positions for these first three satellites in particular, allowing orbital determinations and predictions to be made, not only for scientific reasons, but also for our national security. For this happened during the Cold War and the nuclear arms race, and many in the U.S. government were justifiably terrified of the prospect of not knowing what was flying over our American cities and towns! Luckily there were 205 Moonwatch Teams in place by the end of 1957, 114 that were in the US, 71 in Japan, and the rest in 9 other countries friendly to the USA. After the early 60s the Moonwatch teams were not as important, but they continued to do good work, be it of lesser importance, until 1975, when Operation Moonwatch officially ended.

There were two Moonwatch Teams from Northeastern Ohio that became well known for their good observers and leadership. One was in Cleveland, under the leadership of the late Tom Van Flandern, who later moved to Cincinnati and formed another successful Moonwatch Team there. Several years later he got his PhD in astronomy and became a professional astronomer of note. While still an amateur astronomer, he set an Operation Moonwatch record for the most satellite observations in one night. So besides being a great team leader and a good mathematician, he was also an excellent observer. Although he was

considered a maverick scientist with his views on several scientific topics, he still did well respected research on lunar occultations and meteor shower dynamics. Partnering up with the noted meteoricist Esko J. Lyytinen, he had the most accurate prediction for the time and rate for the 2002 Lenonid maximum, according to observations made by myself and others. He died in 2009, but was honored with an asteroid named after him, 52266 Van Flandern.

The other well-known Operation Moonwatch Team from Northeastern Ohio was organized by the famous amateur astronomer from North Canton, Ohio, the late Richard H. Emmons. He was a teacher of physics and astronomy at Kent State University. He organized and ran the North Canton Moonwatch Team from the North Canton Planetarium, which he built in his own backyard. He also went on to help establish 22 other planetariums.

He was also an accomplished amateur telescope maker (ATM), and taught telescope making to many, including his wife to be. Later some of his students also became accomplished ATMs. Although he considered himself to be an amateur astronomer, he became an aerospace engineer. After he taught at Kent State University, he went on to work for Goodyear as an aerospace engineer. He later got a grant to be an observer at Palomar Mountain, a few miles away from the famous 200-inch telescope, using a 24-inch Mobile Telescope provided by NASA to get positional data on the Echo satellites.

In 2000, the asteroid "Emmons 5391" was named after him. Later, the Astronomical League established an annual national award in his honor for teachers of college-level introductory astronomy for non-science majors. Mr. Emmons died in 2005 at age 86.

Unfortunately, I was unaware of these nearby Ohio Moonwatch teams, although I did know about Operation Moonwatch in the early 60s before CVAS was formed. It had been mentioned in Sky and Telescope magazine, which I started getting in 1961 when I was 13 years old, and in a few other Fawcett Book magazines I bought at Nall's Drug Store in downtown Chagrin Falls. I actually sent a letter off to Operation Moonwatch Headquarters at the SAO, and got a response, which was a good sized stack of back issues of the Operation Moonwatch Publication: "Bulletin for Visual Observers of Satellites". However, there was no letter or instructions on observing them. So, I ended up getting distracted by the other types of observing. I later found out that they wanted to discourage so called "lone wolf" observers so that Moonwatch Team leaders could train with their own methods. So that was the extent of my slight association with Operation Moonwatch, although it was fun just watching the bright Echo 1 & 2 satellites.

While looking online for more information on Moonwatch Satellite Scopes recently, I came across an article by Dr. W. Patrick McCray, author of the book "Keep Watching the Skies: The Story of Operation Moonwatch and the Dawn of the Space Age".

It was posted on a blog called "Leaping Robot Blog" posted on February 6, 2013 titled "Apprehending the Artifact". I had met Dr. McCray in 2008 after a talk he gave on his newly published book at a Goddard Colloquium. He told me he didn't have a Moonwatch Telescope, but would like to get one someday. Well, I eventually found one and sent it to him. If you want to see this blog and learn more about the history of Operation Moonwatch, go to:

http://www.patrickmccray.com/tag/telescopes/

The above mentioned book, Keep Watching the Skies, by Dr. W. Patrick McCray, and Google was the source for most of the factual information for this article. It is also hoped that Observatory Park will have a display on this subject in their planned Nassau Station Museum. My communication with Tom Curtin, Executive Director of the Geauga Park District, indicates that he is in favor of possibly doing that.

CONSTELLATION QUIZ

By Dan Rothstein

This month's questions:

1. This figure of a man has no right foot, or it is hidden. Who is it?
2. Where is Globus Aerostaticus?
3. The Quadrantid Meteor Shower is named after an obsolete constellation. What does the grouping represent and where is it?
4. What is the connection between α Draconis and Regulus, which was quite important from a calendrical standpoint 4000 years ago?

Answers to last issue's questions:

1. The irregular variable Eta Argo Navis (η Carina) has been as bright as Sirius or below naked-eye visibility. The nebula surrounding this star, which was first seen by Halley in 1677 is known as the great diffuse nebula NGC 3372, called the Keyhole by Sir John Herschel in 1837, because of its shape. Herschel found words inadequate "to convey a full impression of the beauty and sublimity of the spectacle offered by this nebula, when viewed in a sweep, ushered in as it is by a glorious and innumerable procession of stars, to which it forms a sort of climax. Dark lines divide the nebulosity into several separate islands of glowing light, the brightest of these contain an irregular dark elongated mass-the keyhole itself" (Burnham's, Vol I, p. 467). The most brilliant portion observed by Herschel seems to have disappeared sometime between 1837 and 1871. He saw 1203 stars scattered over its surface. It was 2nd mag in 1730, falling to 4th about 1782, brightening again about 1801, fading to 4th again in 1811, to 2nd again in 1822. Its maximum brilliancy appears to have occurred in 1843 at -0.8, but it slowly faded to below the naked-eye limit in 1868. Since 1870 variations have been comparatively unspectacular. Today it is below magnitude eight but appears to be on the increase.
2. Due to its resemblance to the Greek letter Delta (Δ), our modern constellation of Triangulum was called Deltaton by Aratus.
3. "Napoleon's star" was not actually a star. It was Venus when seen in daylight. Authors have associated Napoleon with various celestial objects, including Venus, the comets of 1811 and 1821, Sirius, and the belt and sword of Orion. Napoleon, throughout his public career, made many references to his "guiding star." For example, one evening Napoleon repeatedly pointed to the starry heavens and declared "That is my star! So long as it shines I will have no doubt of success." In 1797, a dazzling Venus was observed in broad daylight by Napoleon himself and by a crowd of twenty thousand people gathered for a public reception in his honor. In 1798 when Venus reached greatest elongation and brilliancy the planet somehow became identified as a comet on a collision course with the Earth. For several months Paris was swept by comet panic, including a play which detailed the destruction which was to be expected at the impact. D.W. Olson, Abstracts of the American Astronomical Society, 1993.
4. Which two Greek constellations formed the outstretched right hand (along with the shoulder and arm) of the Pleiades? The early Arabians referred to our Cassiopeia as the large Hand Stained with Henna, the bright stars marking the fingertips, although they included the nebulous grouping in the left hand of Perseus. In low Greek it was the Hand of, i.e. next to, the Pleiades. The triple star combination of θ, 4.4, and μ Cassiopeia were known as Al Marfiķ, the Elbow, or Marfak, although α Persei, Mirfak also qualified as the Elbow. There may have been different representations of both figures in their day. Menkib, ξ Persei, was referred to as the Shoulder (again, next to) the Pleiades, although on modern charts it marks the left ankle. The clusters χ and h (the Double Cluster) was the wrist. I have been unable to find a reference to whose arm this chain of objects actually represents, if any.

NOTES & NEWS

Observatory Park's Technical Advisory Group met on February 5th at Nassau Station.
Summary provided by Dan Rothstein

News from Observatory Park

1. A wind turbine is in the process of being installed at OP.
2. We now have sight lines established for the henge stones.
3. There will be a space camp at OP this summer. GPD is looking for someone to staff it since the naturalists are already occupied.
4. Construction of a picnic pavilion will begin this season. Where was not announced.

The Nassau Station Restoration

1. Drawings were shown of the new look of the building. All the additions are on the back of the building. The present flat roof will be replaced with a peaked roof over the current living quarters, which will be converted to offices and storage.
2. The present drive will be widened to accommodate two-way traffic, with the parking lot expanded to accommodate 30-40 cars.
3. Most of the pine trees surrounding the building will be cut down and replaced with native species, with a possible exception of those right along the highway.
4. The access trail between Observatory Park and Nassau will be made of aggregate to accommodate the park's people-mover, and will have benches and displays along the ½ mile path, including adding Pluto to the planetary walk.
5. The round room under the scope will house a museum focusing on the history of astronomy in Ohio, especially the contribution of Warner and Swasey, with the walls, piers and stair walls being used for permanent programming or other temporary displays. A committee will address what story we want to tell and how to do it.
6. The new wing will be accessed through the present living room and will contain the elevator and waterless restrooms similar to those at OP. Elevator access to the scope will be through the current computer room.
7. A subcommittee will determine what works now and recommend what the functions the scope will serve. Ian Cooper, Russ Swaney, and I will be members of the committee. A few of the questions to be answered:
    - What type of observing floor seating will be best: built in benches, drop down benches, temporary seating; how to accommodate large and small groups.
    - Classroom style writing capability, white board, video?
    - Manual, automated, and/or hand paddles controls for the scope?
    - Mix of eyes on and screen viewing? Transmission to the McCullough Center?
8. Daytime solar observing will be handled by the two scopes at OP, not by the 36".
9. Dr. Nick Sandulek's ashes are located on the property. A plaque was suggested.
10. Cleveland State wants to get involved in the project.
11. Grants are in process and donations are being raised.

NOTES & NEWS (CONT.)

Talks and Presentations

Meteorologist Mark A. Thornton spoke at our February membership meeting. Mark provided information about weather systems, and how they can affect our sky transparency and seeing conditions.

At our March meeting, Jeffrey M. Woytach from NASA's DSI/Systems Integration Branch made a presentation entitled "Exploring Our Neighborhood: Current and future exploration of the solar system and some of the latest revelations from the Hubble Space Telescope and other Great Observatories ".

Spring Sky Special Events

- The moon will appear as a very thin crescent on April 11, only 38 hours past new. From northern latitudes at sunset, very young moons occurring during the period February through April are favored because the ecliptic intersects the horizon at a good steep angle. This means that the separation between the sun and the moon is almost vertical. This effect is further enhanced at the start of the April lunation because the moon will pass the sun a few degrees to the north.
- Jupiter and Venus are separated by 1 degree on May 28, with Mercury roughly 3 degrees above Jupiter.
- The northern solstice occurs on June 21 at 5:05 UT.

General Information

The CVAS website has information about upcoming astronomy events and activities in our area. There is a host of astronomy related information, and links to interesting and useful sites. Send comments and suggestions to the webmaster, Russ Swaney, russ_swaney@ameritech.net

The Valley Skywatcher has a long tradition as the official publication of the Chagrin Valley Astronomical Society. All material in this issue has been written and provided by individuals within our membership community. CVAS welcomes astronomy related contributions from all members and friends, and this journal provides a unique opportunity to share interests. Published quarterly, the next issue will be available near the end of June. If you would like to contribute material to the publication please contact the editor, Ron Baker, rbaker52@gmail.com

Recent issues of *The Valley Skywatcher* are available on our website here.

REFLECTIONS

The scenery of the ocean, however sublime in vast expanse, seems far less beautiful to us dry-shod animals than that of the land seen only in comparatively small patches; but when we contemplate the whole globe as one great dewdrop, striped and dotted with continents and islands, flying through space with other stars all singing and shining together as one, the whole universe appears as an infinite storm of beauty.

John Muir
Travels in Alaska, 1915