

May Meeting Minutes (continued)

Director of Observing Report

Susan Sawyer-Beaulieu was welcomed to the floor. She discussed the **Science Rendezvous** and the volunteers involved. She discussed the set up inside and the different telescopes that were set up outside.

Various **astrophotos** taken by the members displayed and discussed. A photo by **Julianna** showed the sun is in an inactive state and not much activity can be detected. **Space station** with the full moon taken by Starr. The **Full Flower Moon** taken by Tom Sobocan. The **Full moon with Jupiter** taken by Jeff Peacock. Numerous other pictures were shown and discussed, daytime moon, M81, M13, M57, and Clavius - a crater on the moon.

We are in **solar cycle 24** which shows very little activity. Upcoming 4 weeks - **last quarter** moon this upcoming Monday, **New moon** on a week from Monday, the following Monday is **1st quarter** and then **Full moon** the week before our next meeting.

Spring constellations are moving into the west and summer constellations coming up in the east, which include **Cygnus** the Swan and **Lyra**. We have **Leo** with **Virgo** following along with **Hercules** rising in the east. **Jupiter**, **Saturn** and the **moon** in the evening sky. **Venus** will be rising at 4 a.m. tomorrow morning, May 22, 2019.

Ceres will be in **opposition** on May 28th/29th. It is the largest asteroid and the brightest dwarf planet. **Easily visible through binoculars**. May 22/23 looking south **Saturn and the moon** come close together right near Sagittarius. Looking southeast at dusk between June 14 – 16 you will see **Jupiter and the moon** with **Antares** and **Scorpius**. June 17 and 18 **Saturn and the moon** again near Sagittarius.

This is the time of the year for looking at galaxies. There is so many you wonder where to start. For example, **Markarian's Chain**.

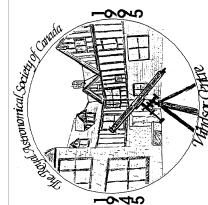
Double shadow transit on Jupiter June 11/12, Ganymede and Io.

Reminders: Astro Luncheon at **Skippy's Restaurant** every second Wednesday of the month, at noon Located at 954 University Ave West, Windsor.

Mike thanked everyone for coming out to the meeting and reminded everyone that the **next regular membership meeting** would take place on **June 18th 2019**.

Meeting adjourned at 9:17 p.m. May 21, 2019.

Recorded by Sandy van Gaalen, RASC Windsor Centre



AURORA



Volume 44, No. 9

The Royal Astronomical Society of Canada - Windsor Centre

June 2019

Flyer

Next Meeting

Tuesday, September 17, 2019

7:30 p.m.

at

[Ojibway Park Nature Centre](#)

5200 Matchette Road

Speaker: Steve Pellarin

Topic: *Revolutionary Discoveries
of Early 20th Century Astronomers*

Upcoming Events

Mercury and Mars: Mercury will pass 17 arc minutes North of Mars low in the evening sky on **Tuesday June 18th**.

Summer Solstice: The Sun will be at its furthest point North of the Celestial Equator on **Friday June 21st at 11:54 a.m. EDT** marking the start of Summer for the Northern Hemisphere.

Saturn Opposition: Saturn reaches opposition on **Tuesday July 9th**. Saturn rises in the SE as the Sun sets and is visible all night.

Perseid Meteor Shower: Peaks on the night of **Monday August 12/13**. The moon is Full on the 15th so it will interfere most of the night. The Windsor Centre will be hosting a **Dark Sky Night at Point Pelee** overnight on August 10/11 from 9:00 p.m. to 2:00 a.m. on the West Beach so come out and view some Perseids. The moon will be setting around 2:00 a.m. so this will be the best time to view the Perseids.

Monthly Meeting Minutes

May 21, 2019

The monthly meeting of the **Royal Astronomical Society of Canada - Windsor Centre** was held at the Ojibway Park Nature Centre.

Windsor Centre **President, Mike Mastronardi** chaired the meeting. Mike called the meeting to order at 7:36 p.m. and welcomed members and guests to the Ojibway Park Nature Centre.

Mike invited members to review the **minutes of the April 16, 2019** meeting which were printed in the Aurora newsletter. A **motion to accept the minutes** of the April 16, 2019 meeting was made by Steve Mastellotto and seconded by Susan Sawyer-Beaulieu. **MOTION CARRIED.**

Mike provided an overview of the meeting and introduced the main speaker for the evening.

Main Presentation

Mike welcomed **Steve Pellarin** to the floor for his talk on *“Discoveries of the 20th Century”*.

Steve’s talk started with advancement due to development in observations from 1880 to 1940 (referred to as the **Golden Era**) which includes the time where **Einstein** developed his theories and **Edwin Hubble** doing much of his work on galaxies. Many factors played a role such as war ending, European immigrants and the development of the railroad.

The **development of observatories** also played a key role. There were six major observatories in the U.S. and three in Canada. There were 39 observatories built around the world which included new photographic techniques, mirror designs and spectroscopes. **Spectrographs** were being incorporated with cameras. It allows a beam of light to be spread through the rainbow of colors. Through this they could determine that **specific elements** create a specific color. When this light was passed through a slit, lines were being created and different sets of lines were created by each element as the electrons fell back into their orbits. A prism would allow you to break up these colors.

Dark lines are the **absorption lines** and end up in the same place as the **emission lines**. Dark lines caused by atoms in the upper atmosphere of a star are being excited by photons from below. These together can determine the gases in the space around the star and the star itself. With this they can go back over the years to see how the stars have changed.

Electrons transfer orbits (fall back) and **emits a certain color of light** therefore the chemicals can be identified by this. It is referred to as finger-printing the chemicals. The bright lines are created when the atom gives up energy (photons) and the dark lines when the atom absorbs photons.

Further areas of interest, 1881 Lick Observatory and 1900 spiral nebulae.

People of interest during this era...

- 1881 **Edward Emerson Barnard** had a huge refractor telescope which allowed him to see the rings of Saturn.
- 1891 **James Keeler** was the first to observe “The Encke Gap”. In 1895 he used the spectroscope to prove that different parts of Saturn rings rotate at different speeds and were made up of different size particles.
- 1900 – 1910 **William Campbell** measured the stars moving toward / away from us.
- 1894 **Percival Lowell** observatory – built his own telescope
- 1901 **Vesto Slipher** with his high-resolution refractor telescope could measure the line broadening - doppler effect which determines how fast they rotate. The wider the lines means the faster the planets are spinning.
- **Zeeman effect** – magnetic effect means the galaxies are moving away from us.
- **Clyde Tombaugh**, an amateur astronomer hired by Slipher. He discovered Pluto, 10’s of asteroids, 2 comets and 100’s of variable stars. He discovered a lot of things that hadn’t been seen before.
- **1912 Slipher** observed spiral nebula. Using a spectra graph, the lines shifted from the doppler effect which showed the galaxies are moving away from us.

1920’s the **100” Hooker telescope** become a more popular telescope which was better qualified to continue the work that had been started.

Yerkes observatory in Wisconsin was built in 1897 and had a 40” refractor telescope.

Measuring parallax - distance to the stars using basic geometry. They would measure the angle from one side of the Earth’s orbit and again six months later, when the Earth is at the other side of its’ orbit. The distance can be calculated using the angle and the distance between the two observation points

Mike thanked Steve for his presentation.

Break and 50/50 draw - Starr was the winner and donated it back to the club.

Tom Sobocan discussed the **National meeting** he attended via teleconference. He mentioned **three basic goals for RASC...**

- 1) To serve the members,
- 2) To serve the professional astronomers, and
- 3) To serve the general public

Tom also mentioned **possible increase to membership fees**. They are not making a profit from the magazines and a decision is yet to be determined.

Tom mentioned he will be discussing the **Apollo 9, 10, and 11** missions as a second presentation for our **June meeting**.