

# AURORA



## Rudolf Minkowski by Chris Plicht

*The following biography is part of a series of biographies of interesting historical figures with a connection to astronomy. The series is written by Chris Plicht (Compuserve ID 100277,1136) and can be found on Compuserve's Astronomy Forum.*

Rudolf Leo Bernhard Minkowski was born in Strasbourg on May 28th, 1895 and died in Berkeley, California, on January 4th, 1976. He was the son of Oskar Minkowski, a professor for pathology. Rudolf married Luise Amalie David (1902 - 1978) in Leipzig, Germany, in 1926. They had one daughter and one son, Eva and Hermann.

Minkowski went to school in Koeln (Cologne), Greifswald, and Breslau. He started to study Physics at the University of Breslau in 1913 and planned to go to Berlin after the first year. These plans were disturbed by the war from 1914 to 1918, in which he served in the German Army. After the war he studied in Berlin, returned to Breslau, finished his studies and wrote his doctoral thesis under the supervision of Rudolf Ladenburg in 1921. After working in Goettingen for a year with James Franck and Max Born he moved to Hamburg in October 1922 and worked at the University there until 1935 when he left for the United States. From 1935 until 1960 he worked at the Mt. Wilson and Mt. Palomar Observatories as a research astronomer and from 1961 to 1965 at the University of California in Berkeley.

Minkowski's emigration was not planned. In 1933 Hitler took over power in Germany. The 'National Socialist Party of Germany' changed several laws, allowing only persons with aryan ancestors in official places like universities. In 1935 Minkowski lost his title of professor and was no longer allowed to teach. From then on he worked in Hamburg as a normal employee. His father-in-law, judge Alfons David at the court in Leipzig, was dismissed as early as 1933. Walter Baade, who had left Hamburg and was working at the Mt. Wilson Observatory since 1931, had made available a post for Minkowski as research assistant. He accepted and took a year leave from Hamburg, planning to return after this time. In California Minkowski received a letter from the University of Hamburg, informing him that he will be dismissed by April 1st, 1936. Within this year Minkowski was offered to stay at Mt. Wilson as a regular staff member. Later, in making good for the loss of his title under the national socialistic regime, Minkowski was appointed professor emeritus of the University of Hamburg, effective January 1954.

Minkowski's work can be divided into two phases. Prior to his emigration he worked on spectroscopic problems, in the US he made outstanding observations in the field of Astronomy and Radio astronomy. His doctoral thesis was the first paper of a series on specific problems in spectroscopy. These papers were in part prepared together with his teacher Ladenburg and published in the magazine for physics (Zeitschrift fuer Physik). Minkowski's main topic was the width of spectral lines, broadened by pressure and self absorption. Beside that he published papers on the behavior of electrons in metal vapor and the

(Continued on page 3)

### In This Issue

Rudolf Minkowski	Cover & Page 3
Calendar of Events / Maps	Page 2
Submitting Articles / Membership	Page 2
September Meeting Minutes	Page 4 & 5
The Silent Sky	Page 5
Proposed 2002 RASC Windsor Centre Council	Page 6

## Calendar of Events

### *Our next meeting...*

Tuesday, November 20, 2001  
8:00 p.m.  
at  
St. Stephen's Church  
Howard Road, 1.4 kms. south of  
Hwy # 3

### *Main Speaker...*

To Be Announced

### *Topic...*

"To Be Announced"

### *Activities...*

**Zodiacal Light:** Look for the Zodiacal Light in the morning sky just before the start of morning twilight from October 15 - 28.

**Double Shadow Transits on Jupiter:** See the Observer's Handbook for the details on a number of double shadow transits in October and November. The event on the morning of October 27th is particularly well placed for observers in Windsor. Look for the shadows of both Europa and Io beginning at 12:05 a.m.. Since Io travels around Jupiter much quicker than Europa you will see Io's shadow catch up to and pass Europa's shadow and then leave the disk at 2:18 a.m.

**Mercury:** Look for Mercury in the morning sky in late October with greatest elongation occurring on the 29th.

**Leonid Meteor Shower/Storm?:** On the morning of November 18th at 5:01 a.m. E.S.T. according to at least one prediction we should be seeing about 2,500 meteors per hour! This is the only prediction/scenario that puts the east coast of North America in a prime viewing position. Conditions are excellent since this is a Sunday morning, the New Moon is on November 15 so it will not be in the sky, and the Sun doesn't rise until 7:26 a.m. with astronomical twilight beginning at 5:45 a.m.

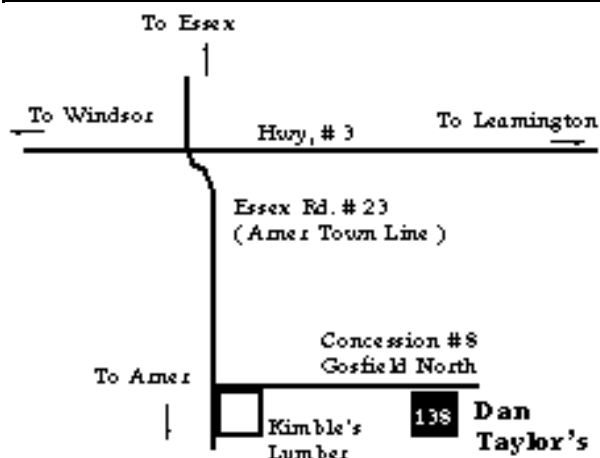
**Public Observing Night:** Saturday November 24 beginning at 7:00 p.m. at Malden Road and Forest Glade Parks.

### *Observing Nights*

**Frank Shepley's.....Last Quarter Moon**  
**Dan Taylor's.....New Moon**

(please call before showing up)

## Maps



## Submissions

Aurora is published monthly except for August. The September, November, January, March, May and July issues are full newsletters (usually 6 pages) with a number of member submitted articles. The October, December, February, April and June issues are short flyers (2 pages) with one short article. Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month. I will accept Emails at the address below, floppy disks, or written submissions.

Editor: Steve Mastellotto

Email: smastell@wincom.net

## Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at St. Stephan's church. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, the RASC Journal, a subscription to SkyNews magazine and access to the Centre's library and telescopes.

Annual Membership Fees are Regular - \$44.00, Youth - \$27.50 and Life - \$880.00.

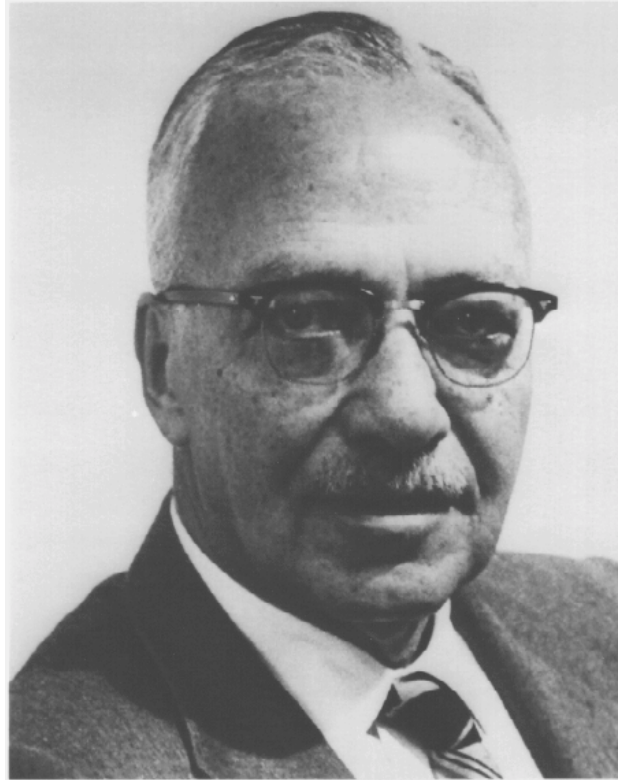
Contact Frank Shepley at (519) 839-5934 or visit our website at: [www.mnsi.net/~rasc](http://www.mnsi.net/~rasc) for more information.

## Rudolf Minkowski (continued)

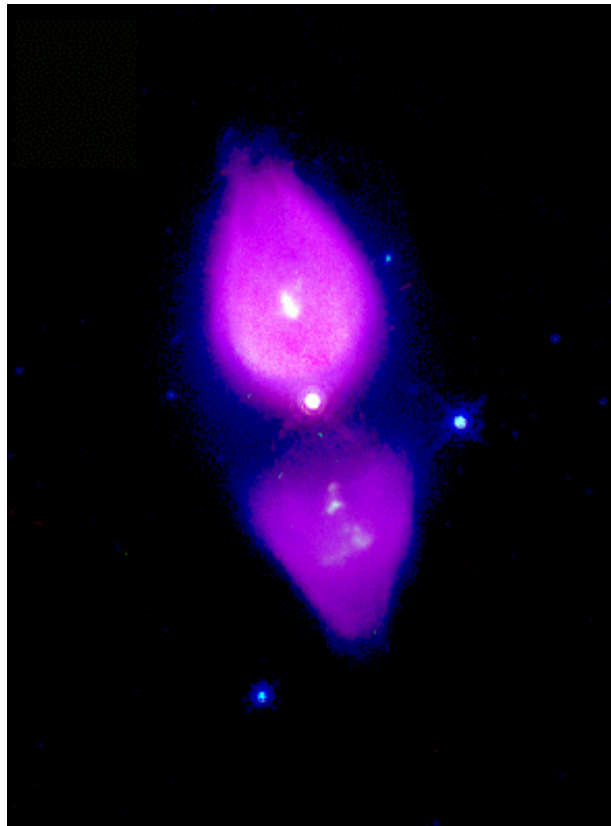
(Continued from page 1)

process of electrons passing through atoms (together with Hertha Sponer, 1924). Until 1935 Minkowski published 17 papers and two additional articles in books on physics. His last paper during his time in Hamburg described the atom beam method for determining the fine structure of spectral lines (Die Intensitätsverteilung der im Molekularstrahl erzeugten Spektrallinien). This paper was published together with H. Bruck.

As early as 1933 Minkowski had worked on an astronomical problem, the structure of features in the spectrum of the Orion nebula (M42). In the US his knowledge on spectroscopy was most useful while studying astronomical objects. The close collaboration with Walter Baade, who emigrated to the US from Hamburg in 1931, led to a very rapidly growing number of publications. These include further investigations on the Orion nebula, systematic studies on supernovae in other galaxies and supernova remnants in our Milky Way. Minkowski's classification of Supernovae into type I and type II described a useful tool in determining the distances in space (ApJ 89, 156 [1939] and PASP 53, 224 [1941]). Shortly after the Crab nebula was discovered to be a supernova remnant by Oort and Mayall, Minkowski and Baade identified the small central star. Minkowski also worked on the distribution of emission nebula in our galaxy and on the spectral features of comets. He discovered the comet 1950b Minkowski. Another celestial object carries his name: Minkowski's Footprint. It is a small and faint nebula (3" by 8") in the constellation of Cygnus.



*Rudolf S. Minkowski*



*Minkowski's Footprint. HST Image*

From 1950 on radio astronomy caught the attention of Minkowski. Together with Walter Baade he started to locate optical counterparts to new found radio sources. The first extragalactic optical counterpart found for a radio source was Cygnus A in 1954. Later he also worked on the distribution of galaxies in space and found in 1960 the galaxy (3C 295) with the then highest redshift at  $z=0.48$  (ApJ 132, 908 [1960]). An anecdote tells that he developed the plate the same night and, after finding the high redshift, joined other astronomers in the library of the 200 inch dome with a bottle of Whisky; the rest of the night was declared 'overcast'. It was the highest redshift for 15 years until Quasars were found. Minkowski was responsible for the photographic sky survey of the National Geographic Society at Mt. Palomar, today known as the POSS, the Palomar Observatory Sky Survey. This work was done with the 48" Schmidt camera on Mt. Palomar and covered the northern hemisphere from the celestial north pole to -33 deg. latitude.

After his retirement from the Mt. Wilson and Mt. Palomar observatories he received an invitation from the Radio Astronomical Laboratory in Berkeley. There he worked from 1961 to 1965, then retiring the second time.

Minkowski was member of the Royal Astronomical Society, the US National Academy of Sciences; he received the Bruce Medal of the Astronomical Society of the Pacific in 1961 and a Dr. h.c. at Berkeley in 1968.

# September Meeting Minutes

---

## General Meeting Minutes

September 18, 2001

**President:** Randy Groundwater began the meeting at 8:05 p.m. He expressed a welcome to all persons in attendance and acknowledged that there was a wonderful turnout. He asked members to review the minutes for the last membership meeting.

**Motion #1, 09-18-2001** - Henry Lee put forward the motion for members to accept the minutes for the meeting of June 19th, 2001. Rev. Harry Brydon seconded the motion. The motion was carried.

### Reports

**Secretary:** Joady Ulrich said that there was no correspondence to report on.

**National Council Representative and Treasurer:** Frank Shepley reported that dues for a year of membership had gone up. They are now \$44 for adults, \$27 for students and at the same amount for life members. Frank also mentioned that people who had unsold tickets for the raffle must return them to him at the next membership meeting in October. He also said that he and his wife Judy are moving to Toronto sometime in the future, with the date not yet finalized. He mentioned that a new treasurer would have to take over the responsibility for that office. The responsibilities for being treasurer include doing email and one does not have to have great skill in accounting. The person could start as an assistant treasurer.

Randy said that we need a person to be involved in a long term commitment as treasurer. Anyone interested in this position could contact Randy or Frank.

Frank also said that when members renew their memberships that they should bring the renewal form they get from National Office. Having those forms makes his job much easier to process their memberships for the coming year.

Concerning the upcoming raffle for the personal computer projector, Frank Shepley showed the first prize for this event, which is a DVD player that is being donated by Tim Bennett.

**Librarian:** Tom Sharron asked that members who borrow materials from him to show their membership card.

Tim Bennett said that he was passing around a sheet showing what issues the Windsor Centre yet needed for *Sky & Telescope* and *Astronomy* magazines that members may want to contribute. He also had brought duplicate copies of *Sky & Telescope* magazines for people to take home.

**Phone Committee Chairperson:** Steve Mastellotto asked members to check if their addresses are correct. He also encouraged more people to give him their email address so they could be informed about meetings.

**Aurora Editor:** Steve Mastellotto mentioned that we have past issues of our newsletter on our Windsor Centre web site at the newsletter archive page. There are 55 to 60 people on the Windsor Centre email list.

**Director of Observing:** Robin Smallwood announced that there would be a public observing night at two parks, one at Malden Road and the other one in Forest Glade. The exact date for this event will be determined at the next Council meeting and will be in the latter part of October.

**Director of Public Education:** Randy Groundwater mentioned that he would be giving a presentation in October at the Windsor/Essex County School Board to teachers there at the astronomy portion of instructions to them.

Steve Mastellotto will be giving an astronomy presentation in the next few weeks to two Grade 6 classes at St. Pius X School.

**Light Pollution Committee Chairperson:** Susan Sawyer-Beaulieu reported that she had sent a letter to Leeann Doyle (uncertain spelling), who is the administrator for the county planning organization. Susan read a letter that she sent to her. In the letter she mentioned the advantages of using cut off light fixtures that would put light where needed and save on energy costs. She sent the letter and received a reply from Leeann Doyle, who requested more information on this subject. Susan will send her further information on the subject that she received from Rob Dick, who is the chairperson of the light pollution committee for the RASC. Tim Bennett said that he would give Susan information to forward to Leeann Doyle about a type of cut off light fixture that London, Ontario is now using that is the most cost effective. There was some further discussion on the need to let people know about proper street lighting. Susan will also approach the City of Windsor on this issue.

**Observatory Committee Chairperson:** Peter Bondy reported, with enthusiasm, that the official reading at the Lake Shore Council for the rezoning of land (near Comber) to be used for the observatory had been done recently and official approval which is expected, should be granted in 20 days, later this month. Last Sunday (September 16th) some members went to the proposed site and staked out the place where the observatory building will be placed. After the approval for the zoning change, then applications for funding including to the Trillium Fund will begin. As well, development of the site will take place with the building up of the land there with land fill.

### Business

Randy mentioned that the next Council meeting is on October 9th.

Tom Sharron mentioned that a 4.5-inch reflecting telescope is missing. Though the person has moved attempts will be made to find it and get the instrument back since it is the Windsor Centre's. Randy mentioned that this is the first time that a telescope had not been returned after use.

Susan Sawyer-Beaulieu asked that people who had come to the meeting tonight make sure and sign the guest book.

Randy Groundwater showed two good wide angle slides he'd taken of Mars during the summer. He asked the membership about who had attended star parties and four people said that they were at Starfest and Dan Taylor stated that he attended Stellafane.

**Observing Report:** Robin Smallwood talked about people who had been at one observing site in the county on a regular basis. People could see him if they needed directions to get to it. He asked for people's recent observations. Peter Bondy mentioned that the Veil Nebula was nice in his Oxygen 3 filter. One member saw Jupiter and the Moon close together. Another member saw Saturn occulted by the Moon but did not see it reappear. Robin mentioned that he'd seen various planetary nebulae including the Blue Snowball. He had handed out a list of those objects to look for. Steve Pellarin mentioned that he'd seen the Blinking Nebula. Robin also talked about a distinctive red star not far from Beta Cassiopeiae.

Derek Maser won the 50/50 draw, which had a total of \$17.50.

One visitor, Mike Stupawich and one new member, Dennis Bartholomew were specifically welcomed by Randy.

Tim Bennett introduced our guest speaker, Randy Atwood, who is the immediate Past President of the RASC.

Randy's talk was titled "Sending a Spider to the Moon" about the development and use of the Lunar Excursion Module in the Apollo program. He gave a well prepared and interesting presentation. A book that he mentioned for further reading was *Man on the Moon* by Andy Chaikin.

Steve Pellarin thanked Randy Atwood for giving his presentation.

Randy Groundwater ended the meeting at 10:36 p.m.

### THE SILENT SKY

Tonight I see a different sky,  
a sky like that of days gone by.  
No flashing lights, no airplanes fly.

There is no joy in this silent night,  
as we contemplate our neighbours plight.  
In humble silence I ponder this sight.

Never in my lifetime did I think,  
not to see the airplanes blink.  
Terror has caused my heart to sink.

In silence our ancestors saw the stars,  
unhampered by lights of passing cars.  
Tonight no joy in my view of Mars.

We long for dark and silent skys,  
but not at the expense of innocent lives.  
Conclude this night with saddened sighs.

Martha Pinch

# UNIVERSAL SCIENCE

Windsor's Astronomy And More Store

*We are operating on a pick-up and delivery system*  
*Competitive pricing on MEADE, CELESTRON and SKYWATCHER scopes and accessories*

## INCREDIBLE DOBSONIAN DEALS

Skywatcher 8" Dob with Metal Tube, Complete system NOW has 9x50 finder and two plossl eyepieces – **ONLY \$549**. Note this scope is sold out all over Canada and we are taking orders for December delivery.

Skywatcher 6" Dob with Metal Tube (IN STOCK), Complete system with 6x30 finder and two SMA eyepieces – **ONLY \$399.99**

ONE COPY LEFT – "MESSIER MARATHON Field Guide" Pennington – \$34.99

Contact Robin Smallwood  
Monday - Friday 9:00 a.m. - 5:00 p.m., Saturday 9:00 a.m. - Noon, Closed Sunday  
Telephone: (519) 967-1655 Fax: (519) 967-1657  
Email: unisci@sympatico.ca



# October Meteors

## Epsilon-Geminids

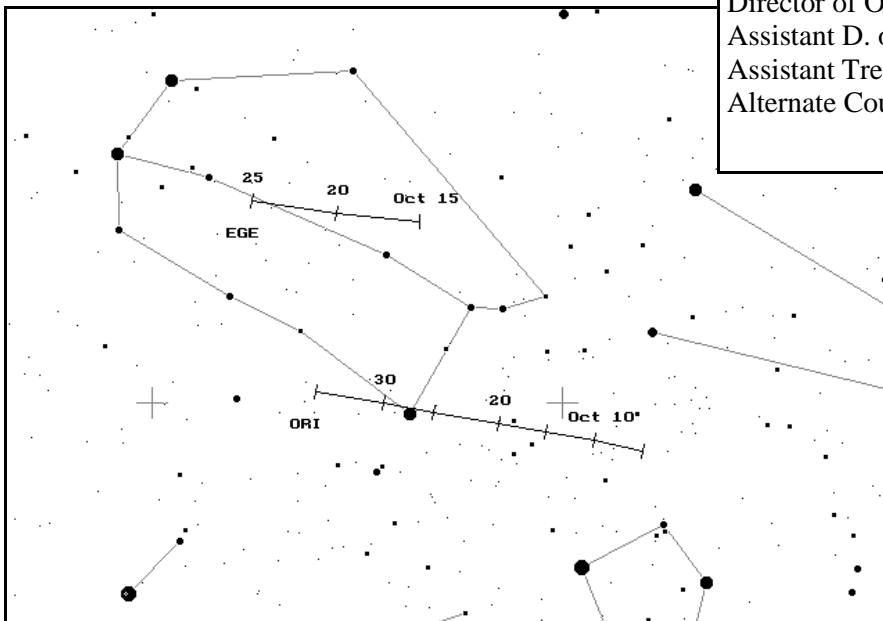
**Active** October 14-27  
**Maximum** October 18

A weak minor shower with characteristics and activity nearly coincident with the Orionids, so great care must be taken to separate the two sources by instrumental techniques - especially video or telescopic work - or visual plotting. New Moon on October 16 presents an excellent opportunity to obtain more data on them from either hemisphere, although northern observers have an advantage, and can usefully access the radiant from about midnight onwards.

## Orionids

**Active** October 2 - November 1  
**Maximum** October 21, 08h UT  
**ZHR** 20 meteors/h

October's waxing crescent Moon enhances the Orionids this year too. They are noted for having several maxima other than the main weekend one detailed above, with activity sometimes remaining almost constant for several consecutive nights centred on this peak. In 1993 and 1998, a submaximum as strong as the normal peak was detected on October 17-18 from Europe, for instance. All observers should be aware of these possibilities. Several subradiants have been reported in the past, but recent video work suggests the radiant is far less complex; photographic, telescopic and video work to confirm this would be useful, as visual observers have clearly had problems with this shower's radiant determination before. With a radiant almost on the celestial equator, the shower can be seen from most of the globe, and observations are possible from midnight onwards in both hemispheres, perhaps a little before in the north.



*Radiant position of the Orionids and epsilon-Geminids*

## Proposed Nomination List for 2002 Council of the RASC - Windsor Centre

### Elected Officers

President	Randy Groundwater
1st Vice-President	Steve Mastellotto
2nd Vice-President	Robin Smallwood
Treasurer	Frank J. Shepley
Secretary	Joady Ulrich
National Council Rep.	Tim Bennett

### Councilors

Paul Preney	Susan Sawyer-Beaulieu
Henry Lee	Lindsay Fish
Steve Pellarin	Peter Bondy
Rev. Harry Brydon	Tom Sharron
Ken Rount	

### Appointed Officers

Honorary President	Dr. William Baylis
Past-President	Susan Sawyer-Beaulieu
Librarian	Tom Sharron
Recording Secretary	
Public Education Director	Randy Groundwater
Public Relations Director	2nd Vice-President
Newsletter Editor	Steve Mastellotto
Director of Observing	Robin Smallwood
Assistant D. of O.	Steve Pellarin
Assistant Treasurer	
Alternate Council Rep.	