RASC SUDBURY CENTRE

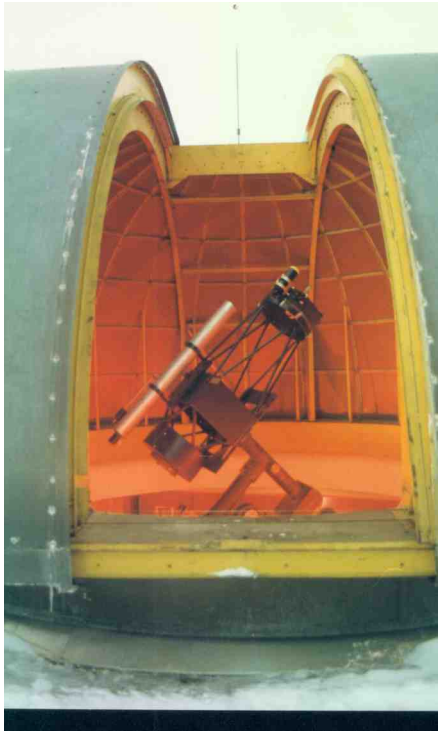
Up Above, The Heavens Await

The Stories of Sudbury's Observatories

Sudbury has had astronomical observatories active over the past 60 years. The intertwined stories of Sudbury's Observatories began with Fr. Roger Leclair. In the 1960's Father Leclair came to the newly-founded Laurentian University, not long after he had performed astronomical research at the Vatican Observatory. He brought with him a heavy 20-inch mirror, which became known as the Vatican Mirror, though its origins were elsewhere in Canada. In the 70's and 80's many people all over Nothern Ontario were introduced to Astronomy through Fr. Leclair's "Institute of Astronomy" at Laurentian.

With the vision of a major Telescope as a cornerstone of the Institute of Astronomy, Fr. Leclair arranged for the inclusion of a roof-top dome in the construction of the Fraser Science Building. As an employee of the Physics Department and Institute of Astronomy Paul Emile Legault assembled a massive telescope for the roof-top Observatory.

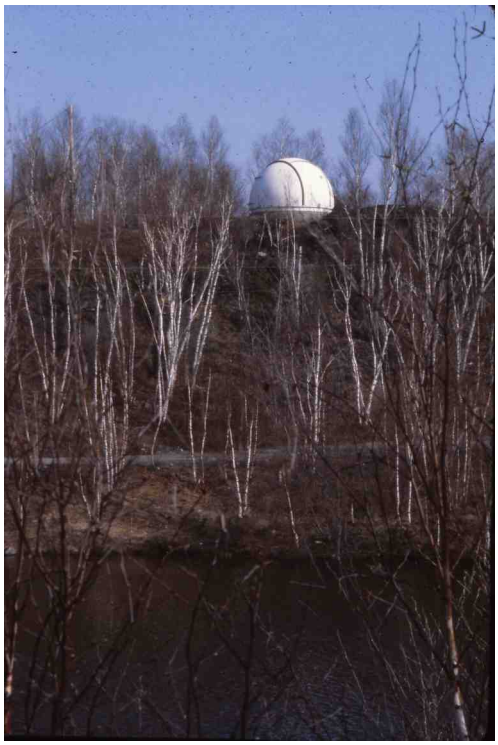
1 - 1633: Fr. Roger Leclair at Lake Laurentian



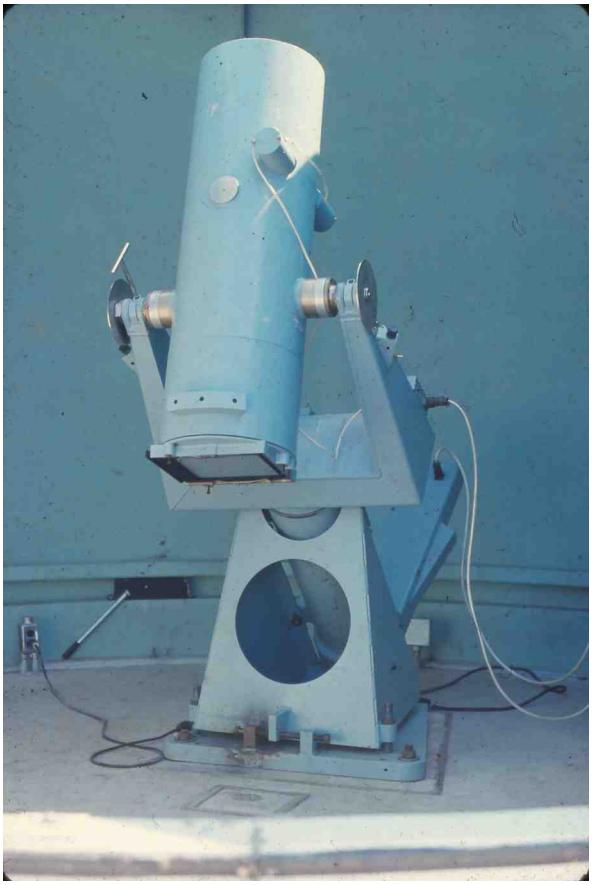
The Telescope you see in the Dome on top of the Fraser Building is NOT the one that Paul-Emile Legault built to mount the 20-inch mirror. The Telescope in this picture was built by Fred Boyer and Greg Beach, President and Vice President of the Sudbury Astronomy Club! A partial explanation of this puzzle will come in a few pages; but the full explanation will come later in a separate history.

2 - 1621; (Left, ca. 1986) 16-foot Dome on the Top of the Fraser Science Building - The Scope inside is NOT the 20-inch Scope built by Paul-Emile Legault. It is the 17 1/2 - inch Telescope built by Fred Boyer and Greg Beach of the Sudbury Astronomy Club! (Partial Explanation follows here; full explanation in a future article!

Father Leclair also secured a contract with NASA to photograph star fields using an 8-inch lens as satellites crossed through. The photographic plates would be measured for a NASA program to precisely determine the shape of the Earth (Geodesy). NASA supplied the University with a 16-foot fibre-glass dome, which was mounted on a concrete pad in the woods overlooking lake laurentian



3 - 1809 (Left): The NASA Dome at Lake Laurentian (May 1993)
4 - 1634 (Above): Fr. Leclair with the 8-inch Astrograph inside the NASA Dome (ca 1970)



5 - 1635 (Below) The 8-inch Astrograph and Equatorial Mount (ca 1970)

The Heavy Duty Equatorial Mount keeps the images of chosen Starfields stationary on the photographic plate while the satellite of interest passes through the field. The Plate Holder is the rectangular frame at the bottom of the Tube. The 8-inch photographic lens is visible at the top of the Tube in illustration #4.

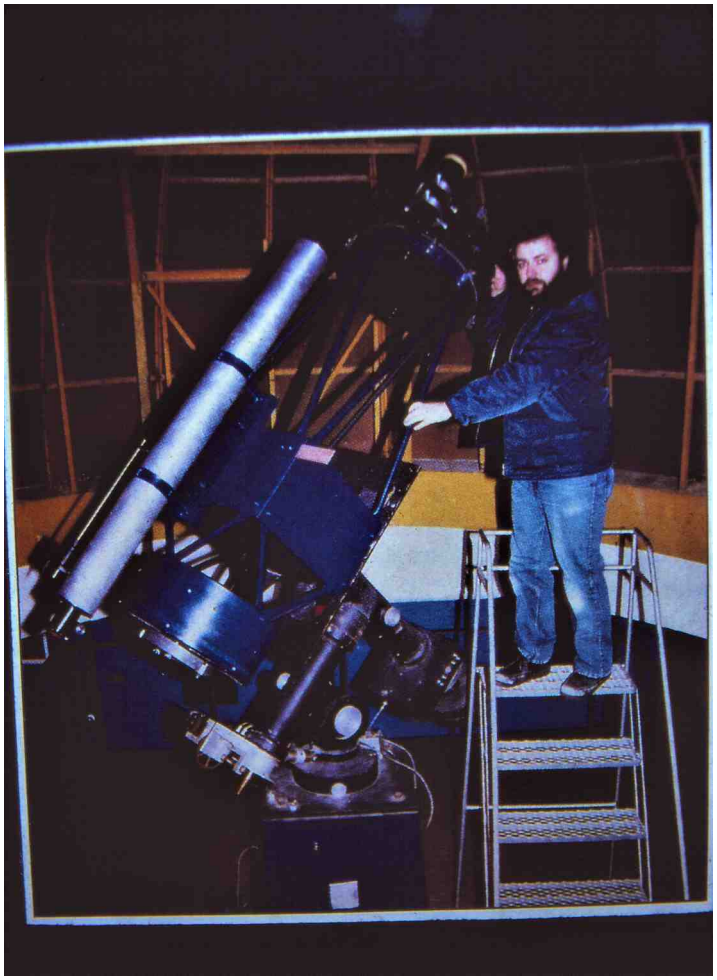
The Polar Axis that supports the mounting fork is accurately aligned parallel to Earth's Axis, and it points to the North Celestial Pole near Polaris. This well-designed and accurately alligned mount turns smoothly to track the stars while photographic plates are being exposed.

... A FEW YEARS LATER ....

In the Late 1970s efforts to obtain useful observations with the 20-inch ("Vatican") Mirror came to an end, and the big fibre-glass tube was removed from the heavy-duty equatorial mount. This Telescope project was defeated by an administration decision which pitted the scope's design against basic Physics! The 16-foot dome on the Fraser Science Building now housed an empty mount!

Then in the early 1980`s , Fred Boyer and Greg Beach who had been helping the Sudbury Astronomy Club build the Science North Observatory,simultaneously built this 17.5- inch Dobsonian Telescope.

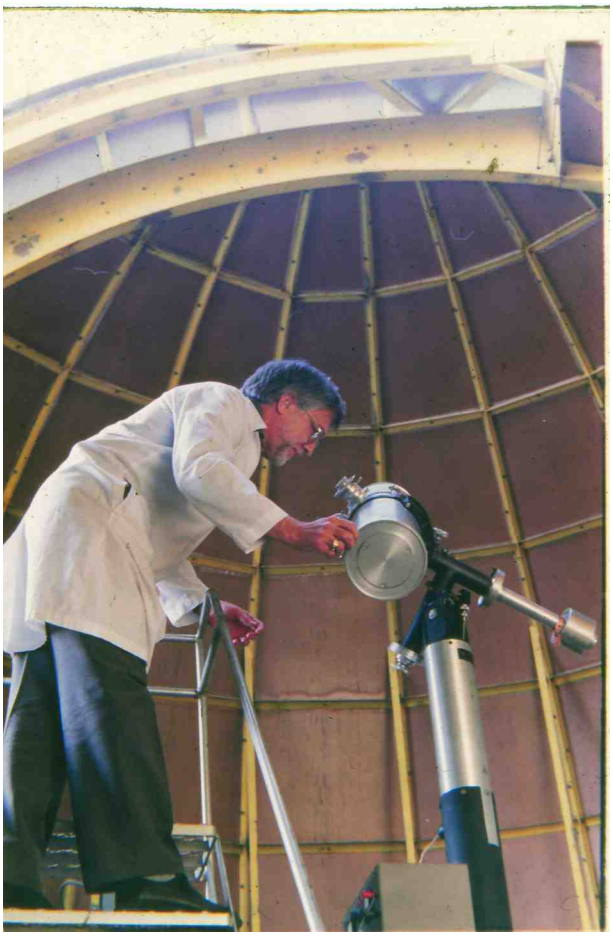
6 - A.W. Archive (Right) 17.5 -inch "Dobsonian Telescope" made by Fred Boyer and Greg Beach, on the shore of Lake Ramsey at Science North (ca. 1984)



Next, in the Mid-1980`s , Fred & Greg re-designed their 17.5-inch Scope, replacing the Sonotube and box with a steel ring and truss structure. Then, they obtained permission to mount their new Telescope on Paul-Emile Legault`s large Equatorial Mount.

(7- 1620, Left) Greg Beach with 17 1/2-inch Scope in the 16-foot Dome, Photo Published in Sky and Telescope for May 1987.

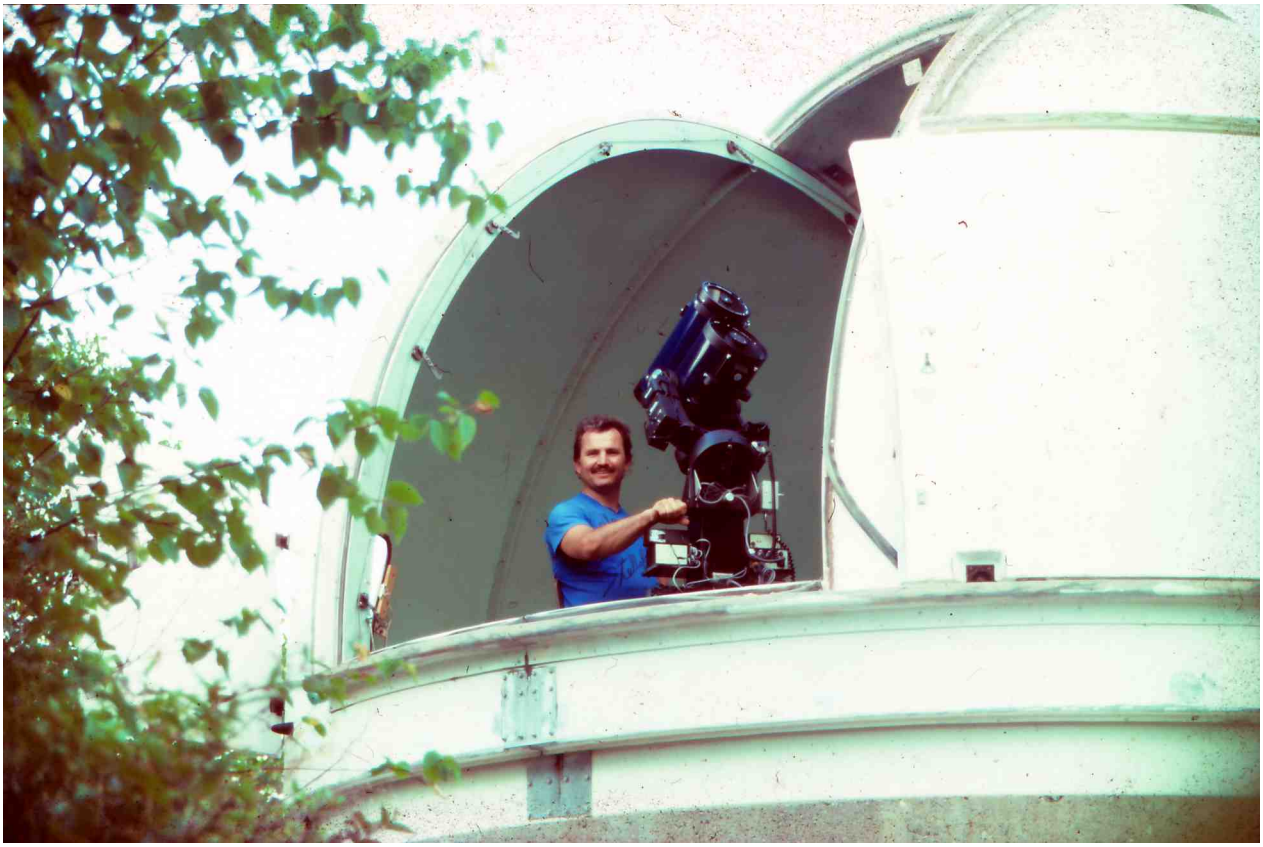
But this arrangement did not last long! Again, the explanation will be part of a future historical document! So what is NOW in the Frasier Dome ? See the next page!



The 16-foot Dome on the roof of the Frasier Science Building entered the new Millenium equiped wtih an excellent but somewhat more modest 6-inch Maksutov!

(8 - 1850) Left: Paul-Emile Legault in the 16-foot dome preparing to observe with the 6-inch Maksutov-Newtonian Telescope.

Meanwhile, the NASA Satelliite-tracking Geodesy Program had succeeded in its objectives, and NASA had transfered ownership of the Dome at Lake Laurentian to the University. The 8-inch Astrograph and Mount had been moved out to the Institute of Physics and Astronomy. The University allowed members of the Sudbury Astronomy Club to conduct their own observations and photography in the 14-foot Dome.



(9 - 1625) Sudbury Astronomy Club Member Gerry Bourque Preparing his 8-inch Meade SCT for a night of Photography in the NASA Dome. (ca 1990)

Then in April 1992 came a remarkable letter from the University to the Club! The NASA Dome was available as a donation to the Club, but on one Big condition: We had to completely remove the Dome within 10 days! So on a sunny early Spring Saturday (May 9,1992) a crew of Volunteer Club Members assembled to dismantle the NASA Dome!

(10 - 1808) NASA Dome at Lake Laurentian May 9,

(11 - 1813) Gerry Bourque and Dennis Desmeules arriving at the Lake Laurentian Dome Site with some of the tools and equipment needed to dismantle the NASA Dome! (ca 9:00 AM May 9,1993)

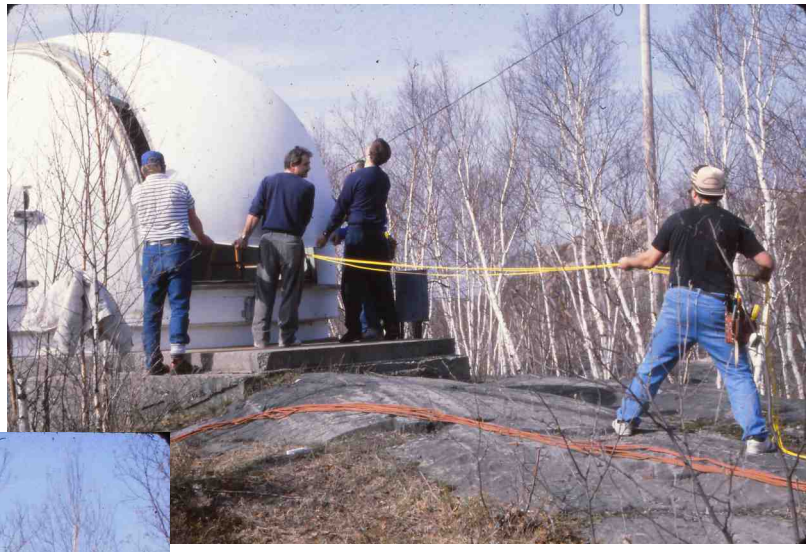
(12 - 1811) Greg Beach and Fred Boye preparing to work on the electrical panel. (May 9, 1992)

(13 - 1812) Fred Boyer Disconnecting the Electrical Power Supply (May 9, 1992)

(14 - 1816, Top) How Many Astronomers Does It Take to Untangle the Rope?
(15 - 1817) Planning the Removal of the Dome Slit Cover (May 9, 1992, Both)

16 - 1820 So That's What the Rope Is For! Fred (Blue Coat) and Greg (Right) pulling the Dome Slit Cover forward (May 9, 1992). assisted by Dennis Desmeules (in Dome), and Roger McKerral.

(17 - 1821) Slit Cover Down But Not Off



(18 - 1822) Greg Beach Lowering the Slit Cover to the Ground. Roger McKerral behind Greg, Fred Boyer inside Dome, Gerry Bourque sitting on Dome Sill.

(19 - 1823) Dome Slit Cover Completely Liberated: L to R - Fred Boyer, Gerry Bourque, Wilf Meyer, Dennis Desmeules, Greg Beach, Roger McKerral (May 9, 1992)

(20 - 1824) Carrying Away the Slit Cover, Fred Boyer closest to the Camera (May 9, 1992)

21 - 1827 (Below) STRONG Man Greg Beach ? (May 9, 1992)

(22 - 1818) Half of Dome Moved Off the Foundation (May 9/1992)

By the end of the day, all the sections and pieces of the fibre- glass Dome were carried down a short path through the woods to a clearing accessible from South Bay Road, where they waited 4 days to be loaded by a Crane Truck onto a large Trailer.

(23 - 1829) Truck Arriving on May 13, 1992 to Load and Transport the Dome Sections. Ferd Boyer is guiding the Truck to the pick-up point. These half shells and other parts were waiting in this small clearing during the four days since dismantling.

(24 - 1831, Wed. May 13/1992) Fred Boyer Guiding a Dome Half onto the Trailer

(25 - 1834) Crane Lowering the Dome Half onto the Trailer - Dome Track in the Foreground

(26 - 1837) Dome Track being Loaded by the Crane.

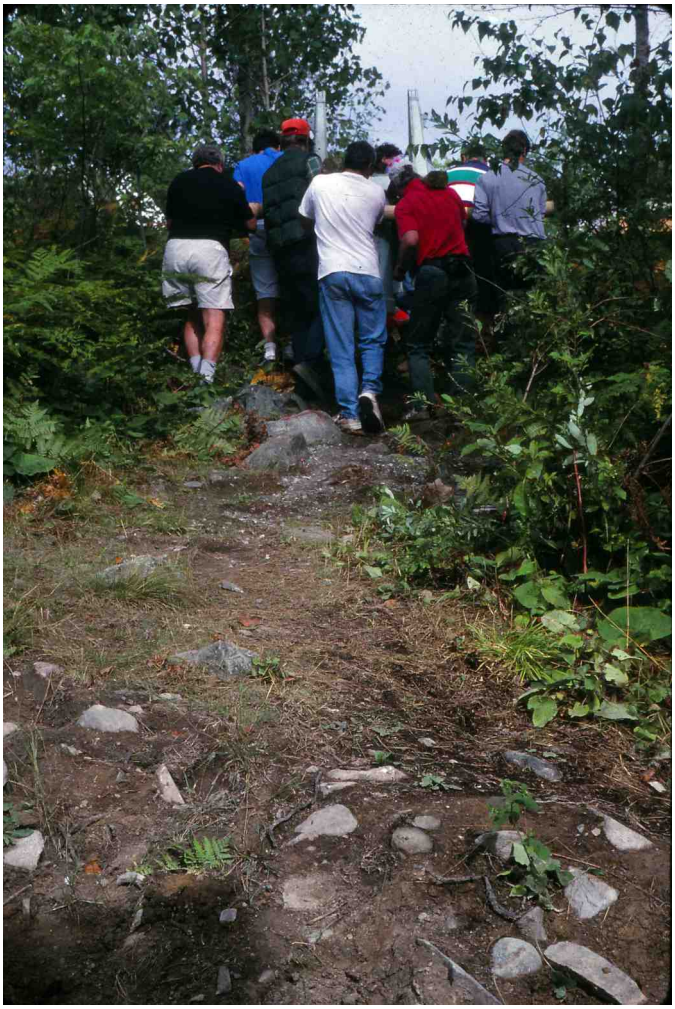
(27 - 1838, Wed. May 13/1992) Truck with Dome Turning onto Ramsey Lake Rd

(28 - 1839, Saturday May 17/1992) A Few Days Later, The Dome Sections Waiting for Assembly at Camp Wassakwa, Whitefish Ontario.

(29 - 1866, Last Saturday of August 1992) Pondering the Weighty Task Ahead - How to Move Bulky Heavy Dome Parts up a Steep Rocky Hill! From Left to Right: Fred Boyer, Gerry Bourque, Carl Hoeg, Alan Ward (Looking towards camera)

Next Season - Summer 1993

(30 - 1870, July 3/1993) Southeast Face of Observatory Hil. Surveying underway on the Summit. This rocky Face does not offer a negociable route for moving materials up.



(31 - 1825, August 28, 1993) How the Slope was Conquered! The South Face of Observatory Hill is not cliff-like, but it is still rocky and difficult! Members hear are slaving at the task of bringing a massive mounting fork up to the Observatory site!

But Wait! Doesn't the the object that the crowd of members are lifting up the Hill look like the NASA Mount in IIIlustration #5? YES! The University donated the Mount to the Club, and Fred & Greg adapted their 17 1/2-inch Scope to fit it!

(32 - 1840, ca. May 1992) Greg with 17 1/2"

(33 - 2040, Aug 28/1993) Due to the Narrowness of the Trail, Some fall by the Wayside, But the Mount Goes Steadily Up!

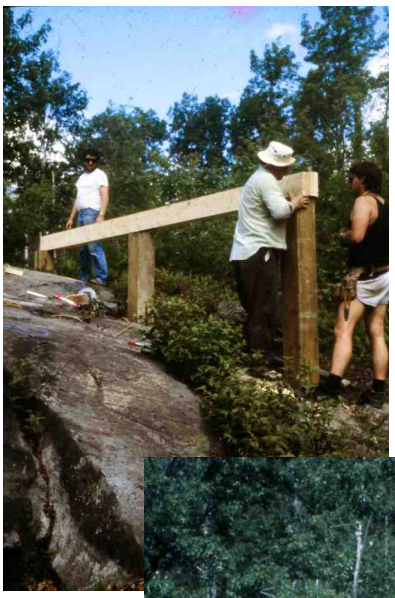
(34 - 1893) The Mounting Fork and wooden "Lifting Structure" More Visible.The Structure of "Mini Ties" allowed 8 or 9 people to get a grip and lift.

(35 - 2041) Close up wtih Alan Ward (Blue Shirt), Dennis Desmeules (Orange Hat) and Greg Beach (Black Shirt) along with details of the Mounting Fork and the Wooden Lifting Structure.

The Dome Hemispheres and other Parts were brought up the same trail by hand. Unfortunately photos of that improbable event are not available, but this was actually accomplished in 1993 ***before*** the moving of the mount

(36 - 2042) Dome Hemispheres in Storage on the Top of Observatory Hill, about 20 meters to the Southwest of their eventual placement Picture taken in the Cool of the Morning before the heavy work began on Aug. 28, 1993 The Author, Steve Dodson, is taking pictures while perched on top of the Dome Sections (Purple Shirt)!

A Level Deck for the Dome
Summer of 1993



(37 - 1872 Saturday July 3/1993) Installing a Level Beam on Posts to support the Deck (Left)

38 - 1969, Right) Surveying to determine what length of Post will make the Beam level. Dennis Desmeules (Orange Hat) assisting.

(39 - 1879) Dennis drilling into the rock to install post- securing hardware (Left)

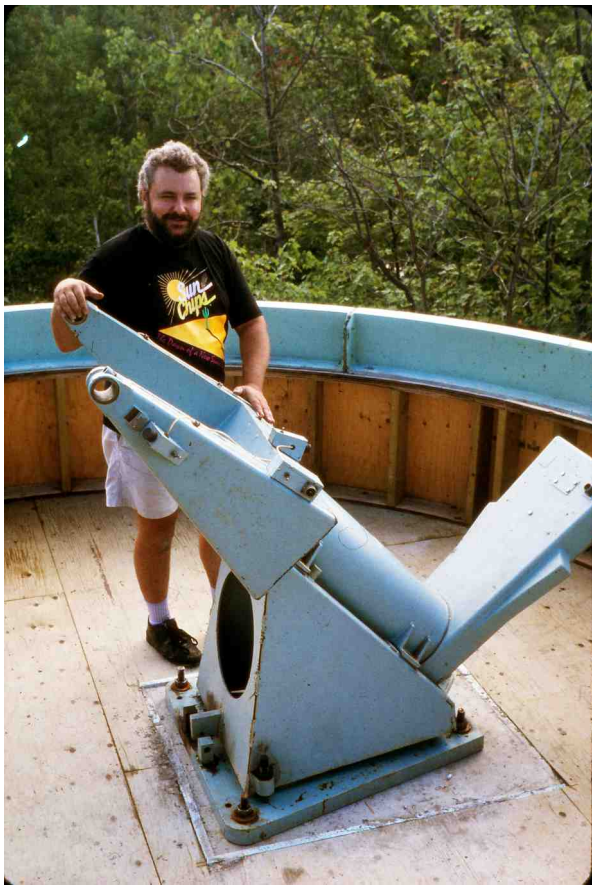
(40 - 1882) End of the Day's Work for July 3/1993. Ready to install the Deck Floor. In Right foreground: Dick,friend of Dennis, surveyor and Deck expert.

One Week Later, on July 10.1993, The Deck Floor and Knee Wall were built.

(41 - 1883) Dennis Desmeules with Deck Builder Dick in foreground: Deck almost ready for Dome

The equipment moves at the climax of the 1993 progress came on Saturday August 28. The first item to be brought to its designated spot on the new Deck was the heavy Mounting Fork seen in Illustration # 34

(42 - 1896) Lifting the Mount Up the Observatory Steps.



(43 - 1900) Greg Beach with the Assembled Fork Mount Sitting on top of the Concrete Pier.

(44 - 1901. Saturday August 28/1993) Six Members Lifting the First Dome Half. President Fried Boyer (white shirt) and Dennis Desmeules (orange hat) plus four others lifting.

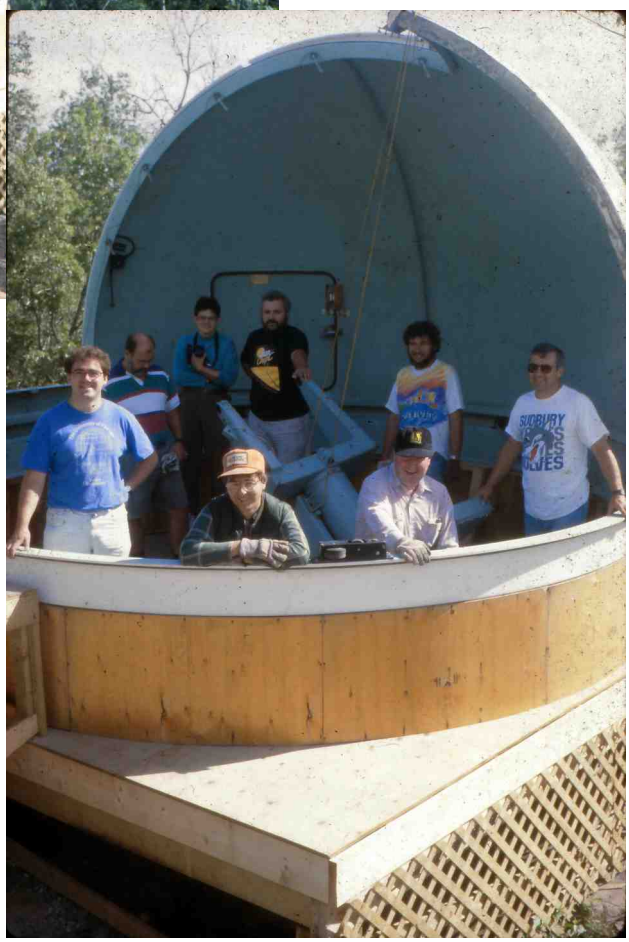
(45 - 1903) Tricky Footwork Carrying the Dome to the Deck

(46 - 1904 Lower Left) Lifting the Dome Half into Place.

(47 - 1908, Below) Locating the Dome Half on it's Track)

(48 - 1909, Saturday August 28/1993) Engaging the First Dome Half on its Track. Greg Beach (Black Shirt) and Alan Ward (Blue Shirt) lifting. Bob Ulrichsen is inside the Dome guiding.

(49 - 1914) First Dome Half Rotated 180 degrees on its Track - The crew members catching their breaths.



(50 - 1915) A Moment of Victory Before Tackling the Second Dome Half. Among those present are Alan Ward (left) Dennis Desmeules (Orange Hat) and Fred Boyer on the right. Bob Ulrichsen is behind Alan and Greg Beach is behind the Fork Mount.

(51 - 1918,Upper Left) Saturday August 28/1993): Carrying the 2nd Dome Half

(52 - 1920,Above, Middle Left): Preparing to Lift the 2nd Dome Half

(53 1922, Above, Middle Right) Lifting the 2nd Dome Half onto the Track

(54 - 1932, Below) Installing the Lower Slit Cover. Fred Boyer (White Shirt) pushing the Slit Cover into the Open Position. Alan Ward (Left Foreground) and Greg Beach (Black Shirt) looking on.

Mind the Gap!
(Aug. 28/1993 - Sept. 30/1995)

Actually a lot transpired in the Two Years and One Month before the Official Opening and Dedication of the Observatory:

* Fred and Greg's 17 1/2 - inch Telescope, truss Version, was installed on the Big Fork Mount

* Before the end of 1993, Club Treasurer Denis Desmeules announced that he had secured a $15,000 Government Grant for the Observatory Program. Discussions ensued to determine which instrument would best serve the observing needs of Club members. The grant came from the Ontario Department of Northern Development and Mines.

* I Discussed the choice of observing equipment with noted Astronomer and Author Terence Dickinson, who recommended a mid - size Astrophysics Refracting Telescope.

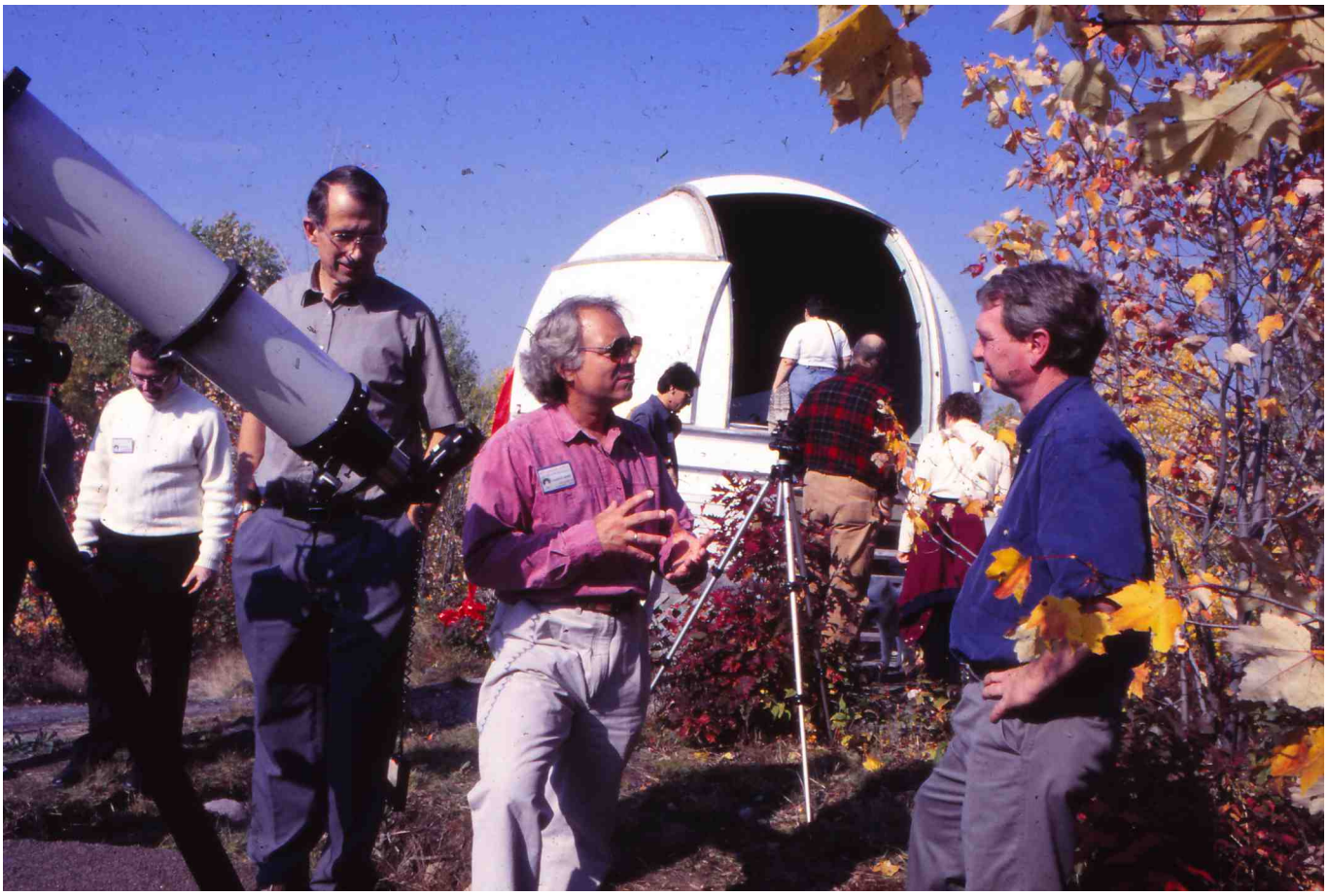
* I reported Terence Dickinson's recommendations at an Executive Meeting, where the idea was supported!

* After 10 years of Service the long-serving Executive of the Sudbury Astronomy Club retired. Alan Ward and Harold Healy were voted in as President and Vice President.
* The 6 - inch Astrophysics Refractor and Mount were received. It was thought that this Instrument could be more readily used by more members, so it took the place of the bigger Telescope in the Dome.

Bottom of Previous Page: 55 - (S.A.C. Archives, Friday June 9, 1995) The 17 1/2 - inch Telescope of Fred Boyer and Greg Beach inside the Dome at Camp Wassakwa during a Club Meeting at the Camp. In the Background are Prof. Doug Hallman (gray shirt) and Paul Emile Legault (Director of the Doran Planetarium, navy suit)

Grand Opening and Dedication, Sept.30, 1995 : Ken Odaisky Memorial Observatory

(56 - S.A.C. Archive, September 30, 1995) Participants and Club Members Visited the Dome, and Observed the Sun with the Astrophysics Refractor seen in the mid-ground. They also attended a dedication ceremony in the Camp Hall at the bottom of Observatory Hil. We were fouunate that the weather turned out to be perfect for the outdoor portion of the event!



(57 - S.A.C. Archive, Sept 30, 1995) Grand Opening Scene: The Writer (Steve Dodson, Rose Shirt) talking to Walden Mayor Kett (right). Doug Hallman is close behind the Astrophysics Telescope.

(58 - S.A.C. Archive) Indooor Dedication Ceremony and Talks. The Image on the Podium is a Portrait of Ken Odaisky, in whose name the Observatory was Dedicated. The Art on Glass was created by Gary Lalonde.

(59 - S.A.C. Archive) Dedication Attendees inside the Dome Later in the Afternoon, after the Refractor had been moved inside.

TOP (60 - S.A.C. Archive) Fred Boyer Looking Out the Dome Slit

BOTTOM -(61 - Celebrational Balloon Release

SHARING THE WONDER

From coast to coast, Canada's astronomy clubs have a lot to offer

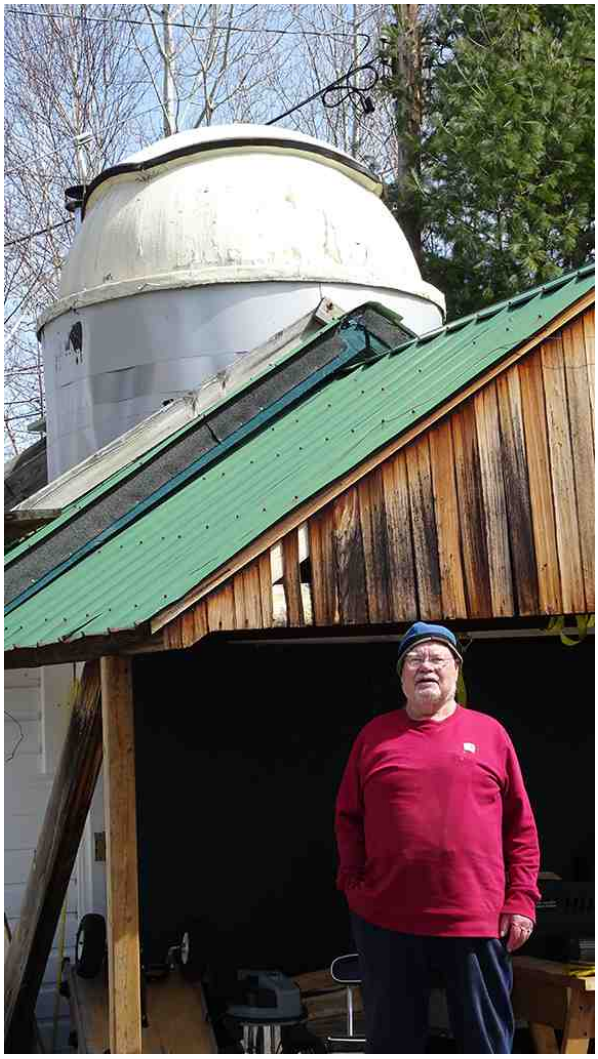
BY CHRISTINE KULYK

IF YOU ARE JUST STARTING OUT IN astronomy and are a bit overwhelmed by all its possibilities—telescopes, accessories, computer controls, software, star atlases, catalogues, reference books, and so on—consider tapping into one of the most user-friendly and inexpensive resources available: your local astronomy club. Ranging in size from 6 members to 600, astronomy clubs are open to anyone interested in astronomy. In the typical club, you'll find an eclectic mixture of men and women of many different backgrounds, ages and levels of astronomical experience, from beginners to those with a lifetime of valuable knowledge and skills that they are happy to share.

"It can be the beginning of a lifetime of friendships and learning"

Club membership generally includes access to some, or even all,

(62 - S.A.C. Archive) Alan Ward Cuts the Ribbon.
A Sky Niews for May 1997 Featured Coverage of our Observatory Dedication. They Supplied more Details in another article in the September 1999 Issue!



Other Sudbury Observatories

(63, 65, Photos by Patrick Dodson, April 20/2025) In the mid-1980's Visitors to Science North asked me if I'd heard of the Dentist in Copper Cliff who had built an Observatory on the roof of his garage. A few months later Dr.Robert Ulrichsen took a break from Dental Surgery at Health Sciences North to introduce himself to me across the street at Science North. He is the builder of the facility.

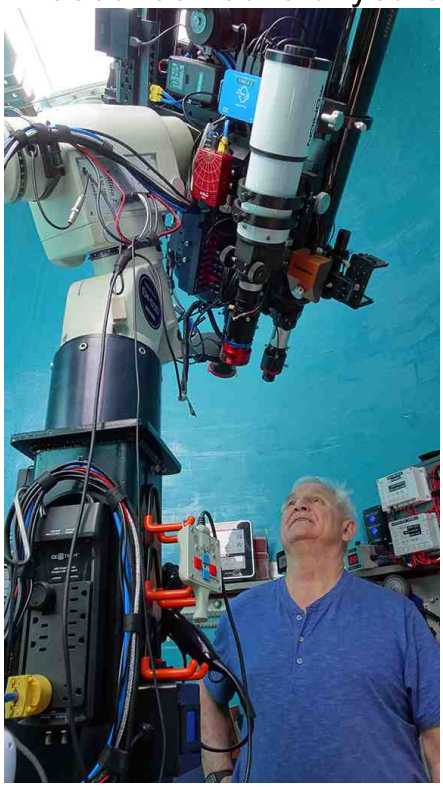
(64, Patrick Dodson Photo Below): The Writer, Steve Dodson, is at the top of the ladder that takes the observer from the garage ground-floor (a wood-working Shop) to the Observatory. The black pier under the Dome once supported a 10-inch Schmidt-Cass. Telescope, and will soon hold a Refractor.

(67 - Photo by Patrick Dodson, 2021) Alan Ward Showing Off his Backyard Observatory. His 6-inch Ward Apo Refractor shines in the background.

Alan trucked the separated sections of the Dome and cylindrical walls up from the Kitchener Area, where they had been in storage for several years. He leveled a section of his backyard, layed patio stones, and built a deck on which to erect the structure. Before the Observatory could be assembled on the deck, extensive cleaning was needed to restore the shiny white exterior. The Prize-winning Apochromatic Refractor allows convenient viewing of the Moon and Planets etc.

(68 - Caltech Photo) Not a Sudbury Observatory! The Observatory housing the 200-inch Telescope on Mt. Palomar was the inspiration for the Sudbury Observatory built by Gerry Bourque (69 Below).

(70 - Photo by Author, April 28/20250 Gerry Bourque with his Observatory. In the late 1990's Gerry visited the Observatory on Mount Palomar with Fred Boyer and Greg Beach. The Beautiful Dome and incredible Massive Telescope made a strong impression on Gerry, who spent the next few years planning the Observatory above. Building and equiping the new Observatory in the early 2000s took several years.



(71, 72: Photos by Patrick Dodson April 28/2025)
The Telescope Installation inside Gerry's Obser-vatory. The main instrument is a 14-inch Meade SCT, and is outfitted with Guide Scopes and Cameras. Every Function is controlled electronically: Tracking, Guiding, Imaging, locating targets, and even the opening and closing of the Dome Slit. Gerry has accomplished all this with elegance and efficiency - no tangle of cables here!

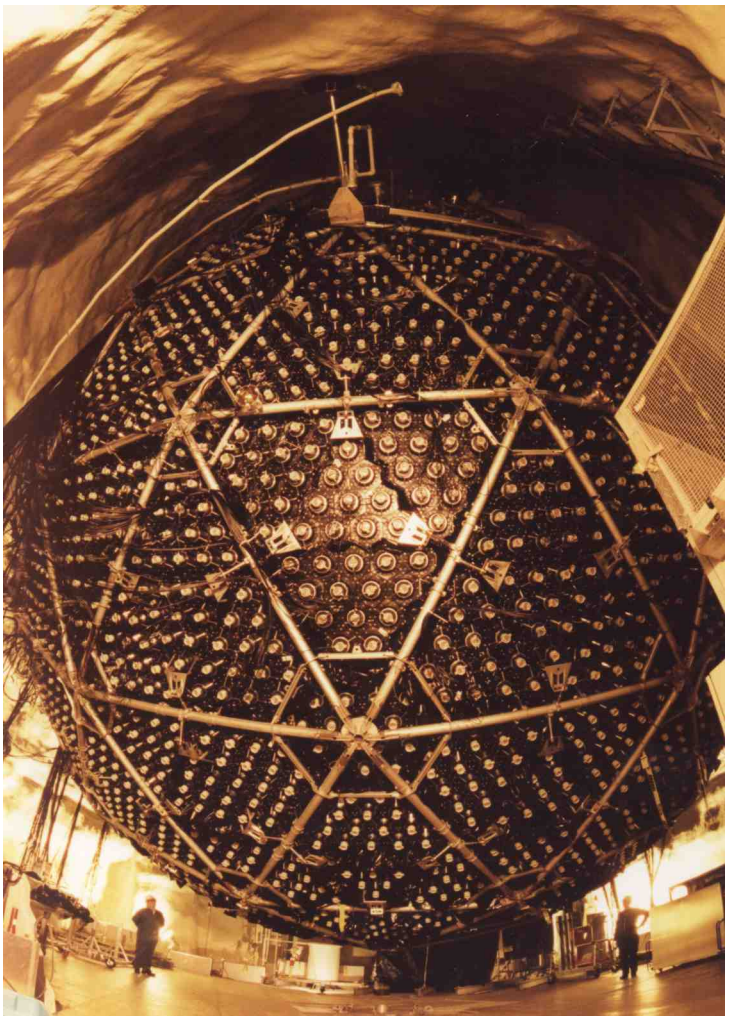
NOW: Sudbury's Most Famous Observatory!

The Sudbury Neutrino Observatory or SNOLAB is located beyond the reach of Starlight, and yet could discover the Milky Way Galaxy's Next Supernova! It is located over 2 kilometers underground in a working mine!

HOW IS THIS POSSIBLE ? The two kilometers of Canadian Shield rock block most of the high-energy particles from Space, but not Neutrinos, which are then more easily detected by SNOLAB's sensitive equipment.

When a massive star undergoes Core Collapse and becomes a Supernova, the stellar core becomes so dense that it takes several hours for the light to escape! But Neutrinos are so unstoppable that they begin their exodus from the star's core immediately! Then they just as easily penetrate two kilometers of Canadian Shield Rock to reach the detectors at SNOLAB, hours before the the star's eventual brightness surge can be seen.

Snolab also has several very sensitive experiments running to tell us more about the mysterious "dark matter" that permiates the Universe!



(Left, 74 - SNOLAB Photo: The Original Neutrino Detector in its Underground Vault. Note the two people below the Sphere. Each "white dot" is a very sensitive photomultiplier Tube. For more details see snolab.ca

(Right, 73 SNOLAB Photo:

SNO+

Sphere filled with Liquid Scintil-lator