

STARDUST

A monthly publication of

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

Edmonton Center

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STARDUST

Meeting: 8:00 p.m. December 8, V107 Math-Physics bldg. U. of A.

Speaker: Mr. Julian Kiniski

Subject: Observing Conditions and the Earth's Atmosphere.

Editor's Message

I have so many announcements, thanks, and congratulations to hand out this month - I only hope I can remember them all.

My first words of commendation go to Mr. Brian Martin of Penhold who walked off with the annual Astrophotography trophy at the faculty club banquet. Mr. Martin's excellent photograph of the moon, taken through his 4-1/4" reflector, was superb in its resolution and he was certainly well deserving of the prize. I would like to express the thanks and appreciation of the society to McBain Cameras for again providing us with the trophy. Congratulations are also due to Brian Dowling and George Haeckel who shared the annual observing prize.

Heartiest congratulations are extended to Mr. Bob Broughton who was invited by NASA's administrator Dr. Thomas Paine, to attend the epic launching of Apollo 12. Mr. Broughton operates the only weather satellite picture receiving station in western Canada in his home south of Edmonton. RASC members may recall the extremely interesting lecture given by Mr. Broughton a few years ago in which he showed samples of the excellent photographs he was receiving on his equipment. Mr. Broughton is a licensed pilot and was awarded the Order of a Member of the British Empire for his work in the development of radar during the 2nd World War.

I would like to take this opportunity to thank Graham Rowe for designing a cover for "Stardust". This cover should hopefully appear on the following and subsequent issues of "Stardust".

I would also like to thank Marge Smith for providing refreshments and cookies at all our monthly meetings. Marge has provided our center with this service for as long as I can remember, and I'm certain that each and every member appreciates the fine work she has done.

The secretary has asked me to mention that any members who presently have library books checked out, should return the books to Mr. Bruner at the Planetarium as soon as possible. This is necessary to enable an inventory to be taken.

The observer's meeting at the Planetarium on December the 19th will include a movie entitled "The Mystery of Stonehenge". From what I have heard, this movie is extremely interesting and includes research as fascinating as any you might find in a Sherlock Holmes novel.

How does the Earth's Atmosphere affect observation of celestial objects ? The answer to this question awaits those members who attend the December 8th meeting at 8:00 p.m. in room V107 at the University's math-physics building. Mr. Julian Kiniski, a meteorologist, will explain why observing conditions fluctuate and vary

from one evening to the next. Those observers who are frustrated when attempting to grope through the earth's layer of pea soup in an effort to discern minute planetary detail, should attend this interesting lecture.

The pollution Editorial in last month's "Stardust" sparked a high degree of controversy, with comments ranging from highly favorable to highly unfavorable. I was greatly pleased to find that many members had read the article and even though it received some criticism it was encouraging to know that people were at least thinking about the problem. Many members felt that an article on pollution had no place in an Astronomical publication. To these members I would like to pose the following question:

Is it possible that air pollution has affected or will affect sometime in the future, ASTRONOMICAL OBSERVING CONDITIONS on a world-wide scale ?

I personally feel that pollution should be a matter of deep concern to zoologists, ornithologists, ichthyologists, medical doctors, astronomers and all other scientists and citizens who feel a sense of responsibility toward the planet they inhabit.

If any members at any time have comments for or against any articles or editorials which appear in "Stardust", please submit them to the editor, and they will be published in the next issue.

In closing, I would like to expose an interesting fact uncovered by Dennis Moore, George Haeckel, Richard Newman, Paul Deans and several ex-Edmonton observers. Observations of Jupiter sent to the Planetary Section National Co-ordinator, Ken Chilton by the mentioned observers has revealed that an interesting relationship might exist between the South Equatorial Belt of Jupiter and the Jovian satellite, Callisto. In bulletin no. 11, Ken mentions that certain submitted drawings of Jupiter show a very dark S.E.G. In elaborating further, the co-ordinator points out:

"It was amazing to discover that the Belt varied with a period of 16 days. This is very nearly the orbital period of Callisto (16 days, 16 hrs., 32 minutes) given in the "OBSERVER'S HANDBOOK!".

Mr. Chilton is certainly justified in suggesting that further research follow the discovery of this oddity. As a final note: Who says that useful astronomical research is beyond the reach of amateurs ? !!!

P.S: A very Merry Christmas and Happy New Year to all "Stardust" readers.

President's Message

I was very pleased with the turnout to our Annual Banquet at the Faculty Club and the excellent talk by our National President Prof. J.E. Kennedy.

The McBains Camera trophy in the photography contest for the past year was won by Brian Martin with his excellent photo of the moon and our congratulations go out to him.

The Pres. contest was won by Brian Dowling and George Haeckel. As neither entry had completed the contest fully I decided to split the \$10.00 between them. We congratulate both on entries well done and it is hoped that next year we will have a greater number of entries in both contests.

The problem of having a mirror aluminized can be quite readily solved if you inquire with myself or any member of your executive. Under no circumstances should you send your mirror to be aluminized unless you have found out the quality of work done by any Co. doing this type of work. I would suggest that if you are sending your mirror away for corrections or otherwise that you drop a letter to the local Centre in the area you are sending your mirror. There is no need to go through the experience that Mr. Donnelly of the Montreal Centre did and I will report fully on this at the next meeting.

I would like to congratulate the Director of the Planetarium Mr. Cable and his staff on a job well done in their show Journey to the Moon.

Merry Christmas to all of you and all the best in 1970.

Angus D. Smith - President

A Word from the Secretary:

The annual banquet is over and as far as I am concerned I would like to be able to look forward to another one just like it. We enjoyed it very much and so did everyone else, judging by the remarks I have heard. Thanks to Dr. Cumming, who made all the arrangements with the Faculty Club, this wonderful evening was possible. You've got yourselves a job for next year, George. The fact that our honoured guest, National President Kennedy, was just getting over a serious illness should be pointed out. We surely appreciate it very much that Professor Kennedy has made the effort to be with us for this occasion, despite the considerable discomfort to himself. His talk on the Solar Eclipse Expeditions in Canada was excellent and his well known dry humor came through on several occasions. The film on the Solar Eclipse air chase of 1954 in which Mr. Kennedy took part was liked by all. The turnout for the dinner exceeded all expectations and I understand that the chef in the back was getting nervous about not being able to feed all the hungry mouths. However, as it turned out, there was enough to eat for everyone and some still left over. The fact that we were allowed to use the club lounge and bar facilities was appreciated by a good many. We understand that some of them stayed until quite late: so, there is something to look forward to next year.

The treasurer, Mr. Veilleux is telling us that many members have renewed their memberships already and prospects of a larger membership for the coming term are very good. I would like to mention once again that membership renewals should be made before the end of 1969. The treasurer is required to make quarterly reports to the head office in Toronto. This includes the list of payed up members for that period. According to this the mailing list for all publications of the Society is made up. In other words if you have not paid your dues in this first

quarter of the term your name may be removed from the mailing list until such time as the next report is handed in. This in turn may deprive you of several issues of the Astronomical Journal and other information which is mailed directly from head office to individual members.

This brings to my mind another matter which I think should be brought to everyone's attention at this time.

We have noticed that a number of members have chosen not to pay the fee \$1.00 which goes towards the production of our newsletter 'Star Dust'. It was never intended that this small amount would cover the whole cost of the publication; and if you remember the Treasurer's report, which was read at the annual meeting in October you will recall the statement that "Star Dust" was the main money loser during the last term. Right after Mr. Veilleux had made his financial report, President Smith announced that the centre had been offered a very good Gestetner Copier for the price of \$35.00. This, the President said, should cut down the expenses of "Star Dust" very considerably. The issue very easily passed the vote and no one questioned the action. It is extremely difficult to run the centre and keep in touch with the membership without a means of communication. While it is true that some issues are being sent out complimentary, they are restricted to the news media and to other centres across the country. It cannot easily be justified that only a part of the membership should carry the cost of the newsletter while others receive it free. I would therefore like to ask those members who thought that the "Star Dust" was optional to reconsider the matter carefully.

As this is the last issue in 1969, I would like to wish all our members and friends, locally and abroad, a Merry Christmas and a Happy New Year.

Ralph Haeckel - Secretary.

Observing Notes - by Paul Deans

- Mercury Visible as an evening star in the southwest for the last 10 days of the month with its greatest eastern elongation of 20° on the 27th.
 - Venus By mid-month, rises about 3/4 of an hour before the sun and stands only about 6° above the south eastern horizon.
 - Mars..... Low in the south at sunset and sets 5 hours later.
 - Jupiter Rises about 3 hours after midnight at midmonth.
 - Saturn Well up in east at sunset and sets well after midnight.
- Neptune and Uranus are in unfavorable viewing positions.

METEOR SHOWERS VISIBLE IN DECEMBER

Geminids due on the 13 of December with an average hourly rate of 50.
The moon will be at its First Quarter.

Ursids due on the 22 of December with hourly rate of 15.

Occultations: 1. Pleiades on December 20 from about 5:15 p.m. to 7:30 p.m.
(Taurus, a 3.0 magnitude; star disappears at 6:36 p.m. and reappears at 7:28 p.m.).

2. Regulus (1.3 Mag.) due on 28 of December disappears at 6:57 a.m. and reappears at 8:03 a.m.

Winter solstice occurs on December 21 at 5:44 p.m.

OBSERVERS GROUP ANNOUNCEMENT

The Observers group is now subscribing to "Sky and Telescope" magazine as a condition of membership. The cost is \$5.00 per person and further information may be obtained from the Secretary.

MOONFLIGHT FOR SOILS AND ROCKS

Once Neil Armstrong and Edwin Aldrin had scooped, bagged, and boxed 69 lbs. of lunar soil and rock and, with Michael Collins, rocketed the samples back to Earth, space-research no longer was solely a matter of Saturn boosters, lunar modules, and splashdowns. Suddenly there was talk of boitite, phenocryst, "purple" rocks, cohesive soils, and vesicular appearance.

From 240,000 miles in space, Neil Armstrong was saying:

"I noticed in the soft spot where we had foot prints nearly an inch deep that the soil is very cohesive, and it will retain a slope of probably 70° ..."

On earth a few days later, after the first analyses of the lunar soil samples showed numerous glassy particles and a high percentage of titanium oxide: Dr. Harold C. Urey of the University of California, long preeminent in the theoretical study of the moon and a proponent of the "cold moon" theory, said that the samples might make him revise his theory that the moon is inert.

Within just eight days after the moon-walk, scientists working with the lunar samples at the Lunar Research Laboratory (NASA Manned Spacecraft Center, Houston, Texas) made the first general report of their findings:

Moon soil is quite different from Earth Soil.

Organic content of lunar soil is quite low - so low that sustaining any form of life there would be difficult.

Although much of the rock is igneous, as on earth, it contains high percentages of titanium oxide, a rarity on Earth. (This finding was anticipated by the prior research of Dr. Anthony Turkevich, University of Chicago chemistry professor, who used three of the unmanned Surveyor spacecraft to make automated identifications of moon surface materials).

Many tiny pieces of variegated brown yellow spherical, elliptical, and angular glass are scattered through the moon dust making up about one-fourth to one-third of the total volume. It probably is this glass that gives the moon soil the feeling described as "slippery" by the astronauts. Referring to these beads, Dr. Paul Cast, Columbia University, said:

"There is something going on on the moon far different than on the earth".

*Note: The foregoing abridged article was reprinted from The Testing World No. 23 published by Soiltest Inc. and used by kind permission.

Recommended Reading

The Exploration Of The Moon, by Wilmot Hess et al
- Scientific American, October 1969.

Man On The Moon, published by GALINA, INC., 8609
Northwest Plaza Dr. Dallas, Texas 75225 (price: \$1.35)
- The above book is currently available from newsstands.

Earth Photographs from Gemini VI and XII, 1968
- Available from Superintendent of Documents U.S. Govt.
Printing Office, Washington D.C. 20402 (Price: \$8.00 in
U.S. Currency).

Surveyor III A Preliminary Report, N.A.S.A. SP-146
- Available from the Clearinghouse for Federal Scientific
and Technical Information, Springfield, Virginia 22151
(Price: \$3.00 in U.S. currency).

Beyond The Solar System, by Willy Ley with paintings by
Chesley Bonestell; published by The Macmillan Co. of Canada.

The Testing World No. 23 published by Soiltest Inc.,
2205 Lee St., Evanston Illinois 60202 U.S.A.

Man's Conquest Of Space, by William Shelton; published by
The National Geographic Society, Washington, D.C. 20036
(Price: \$4.25 plus postage - U.S. currency).

Also Recommended:

21 View Master Stereo Pictures of Apollo Moon Landing
- Available from local Dept. Stores.

Late News Flashes :

Seismic readings from Intrepid's crash into the Lunar surface were quite unusual. The poor Moon was so disturbed, it apparently took 30 minutes for the old girl to stop shaking.

The Apollo 12 Astronauts reported finding the scorch marks from the lightning that clobbered them.

Moon soil is apparently useful for growing plants. At the moment though, it is rather expensive. After it has been thoroughly analysed, perhaps it can be synthesized and sold relatively cheaply.

OBSERVERS GROUP MEETINGS - Dennis Moore

At the past several meetings of the Observers Group, the attendance has been getting a little lower, but only slightly. Mr. M. Dostal has taken in hand the task of explaining astronomical terms to members at these meetings, enlightening some as to the different aspects and technicalities of astronomy. His talks are a regular feature at our meetings. Also becoming a regular feature are the interesting talks on the American space program by Mr. Jim Clevette. Jim has delivered talks on the Mercury space flights and most recently, the Apollo program. Aslo, he has been able to acquire films of the space flights for the meetings.

SUNSPOT ACTIVITY - Dennis Moore

On October 26, I recorded a new high in sunspot activity for this year. A total of 107 spots was found. 77 of these spots were contained in a gigantic group not far from the center of the sun. If anyone took a glance at the sun around October 26, this group probably may have been seen because of its huge dimensions. For the first half of November, I have made only two observations. On Nov. 2nd there were 13 spots and on Nov. 14th there were 14 spots.

APOLLO 12

Now that Apollo 12 has left lunar orbit let us examine the flight itself.

This flight is probably the most dangerous one of all the Apollo flights. On the way to the moon they planned to fire the SPS engine and force themselves into a wider track. If they did not fire the SPS behind the moon they would have, like all other Apollo flights just gone around the moon and shot home only this time they would have missed the earth's gravity and gone shooting by, going into solar orbit.

The astronauts did of course fire the SPS behind the moon and went into an orbit of 69 miles by 194 miles. After performing this task the next problem was the landing. The landing area for Apollo 12 was the Ocean of Storms. It can be divided into an area called the Snowman and further subdivided into a smaller area called Pete's Parking Lot. The area was picked for a number of reasons. The main one was that the Apollo 11 rocks from the Sea of Tranquility are estimated to be 4 billion years old and they wanted to see if the rocks in the area of the Sea of

storms were the same age. The two most other important reasons are they wanted to see if the astronauts can land in a rough area and 2) what had happened to the surveyor craft which had landed in the area in 1967.

Their first walk on the moon achieved some first for the American exploration of the moon. After 45 minutes of television pictures they accidentally pointed the camera into the sun and it stopped functioning. Thus, there was no TV on this flight. The rest of the mission was a success in terms of the experiments. The astronauts set up experiments, e.g. magnetometer to measure the magnetic spheres, a lunar ionosphere detector to study electrical charged particles, and they also have an atmosphere detector to study the temperature and density. On Apollo 11 they had a solar wind experiment and the passive seismic detector. They connected these instruments into a small nuclear powered generator which is expected to power the experiments for a year. They then returned to the Intrepid for 15 hours. After resting they again returned outside to explore a crater and the surrounding area for a 1/2 mile.

They launched into lunar orbit with over 80 lbs of samples and other material. The rest of the flight is expected to go smoothly like all other Apollo flights.

After they have been cleared by the scientists at the LRL it is expected that it will be dropped and that future astronauts will not have to go through the rigors of the place.

The flight has proven that man can land anywhere on the moon. As a result of this flight the go ahead has been given for lucky Apollo 13 with Jim Lovell, and his crew of rookies, Thomas Mattingly, and Fred Haise. They will land in the area of the highlands of Fra Mauro.

Jim Clevette