NATIONAL NEWSLETTER

June, 1978

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Comet Meier, 1978f, discovered visually by Rolf Meier of the Ottawa Centre on April 26, 1978. Comet was about 10th magnitude and moving through the constellation Lynx. Photo taken on April 27th with 40-cm. telescope of the Indian River Observatory. *Photo by Rolf Meier.*

NATIONAL NEWSLETTER

June, 1978

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Editorial

by Ian McGregor
Assistant Editor

It is not very often that one of the assistant editors has an opportunity to add his own five cents worth to the contents of the *NEWSLETTER*. However for this issue Franklyn was not available to handle the production and he asked Ralph Chou and myself to put it together. Ralph in the meantime has disappeared into northern Ontario to work as part of a travelling medical clinic visiting small towns for the summer and so the editorial column is all mine!

Our most exciting news is the new Comet Meier which was discovered by an active Canadian amateur and is the first comet discovered by a Canadian in Canada. Congratulations Rolf, you not only have a new comet but also made the deadline for this issue!

Although Franklyn would probably not mention it himself, an article of his was recently printed in the Journal of the British Astronomical Association for February 1978. Titled "Instructive Three-Dimensional Models of Cometary Orbits from Simple Materials", he must have been preparing for the new comet. With Franklyn's article and future IAU Circulars on Comet Meier, we can now make a model of the orbit of our new Canadian comet.

My principal responsibility with the *NEWSLETTER* is to handle final details of production before each issue is printed by the University of Toronto Press. For several years now Jan Davidse has been our contact at the U. of T. Press and has brought his energy, enthusiasm, ideas, and I am sure, much patience to the production of a high quality and attractive publication. Jan has now moved on to other duties and effective with this issue our new Press Liaison is Mr. Al Weir. Thank you Jan for all your efforts on behalf of the *NEWSLETTER* and Al, welcome to our staff.

We are always looking for material which would be of interest to our members across Canada. Whether short or long in length, technical or general, serious or humorous, written or photographic in nature, all are appreciated.

I think that rounds it up for this Editorial. We hope you enjoy this issue – your comments are appreciated. Good observing!

Comet Meier 1978f – Another Ottawa First

by Doug Welch
Ottawa Centre

Rolf Meier, one of the most active observers in Canada, discovered his own comet on the night of April 26, 1978 while comet hunting. Rolf came upon an unidentifiable fuzzy patch at about 9 pm while sweeping through the northern region of the constellation Lynx with the Ottawa Centre's 40-cm. reflector at the Indian River Observatory. The comet was 10th magnitude at the time of discovery. Rolf phoned Brian Marsden at the Smithsonian Astrophysical Observatory at 10:30 pm that night and received confirmation of the discovery the next day. The comet, 1978f, was found after about 50 hours of comet hunting. Rolf uses the 40-cm. for all his comet hunting, as its great light-gathering power and wide field (1.25 degrees) makes it especially suitable for finding faint comets. (*Ed*. Early orbit calculations indicate perihelion in November 1978 but observing conditions will not be favourable for northern observers.)

Gold Medal Recipient for 1977

The Society's Gold Medal for 1977 was presented by the President, Dr. Alan Batten to Mr. Michael M. de Robertis at an informal Executive Meeting and dinner on April 29th, 1978. Michael has been a member of the Toronto Centre since 1970. In his final year at the University of Toronto for a degree of Bachelor of Arts he obtained Grade A standing overall and the highest marks in his Astronomy courses. This presentation had been postponed from 1977 due to unavoidable delays in striking the Gold Medal.

Our Congratulations go to Michael in receiving this award.

Are There Only Three of These in Canada?

by Dr. J.E. Kennedy
University of Saskatchewan, Saskatoon, Saskatchewan

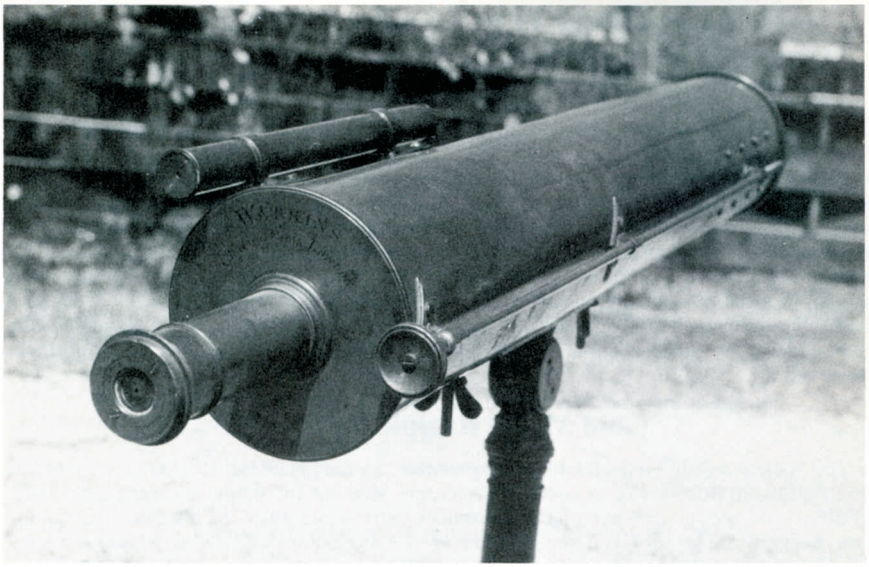
Since an accurate inventory of astronomical instruments is difficult to compile or to maintain, the answer to the question "How many reflecting telescopes of the Gregorian design are there in Canada?", is "possibly three."

Newton's experiments on the refraction of light led him to conclude incorrectly that the colour defect in a single lens telescope could not be improved by combining it with a second lens to form the achromatic objective of modern refractors. Attention was thus turned to reflecting telescopes using concave mirrors as a means of overcoming this problem. In a single decade, between 1663 and 1672, Gregory, Newton and Cassegrain proposed the separate telescopes bearing their names, each utilizing two mirrors.

The Gregorian telescope consists of a large concave mirror, a small concave mirror, and an eyepiece. The large mirror has a circular hole cut through its centre. But the residual aberration due to the combination of two concave mirrors is much greater in the Gregorian than in the Cassegrain design where the aberration of the large concave mirror is partially corrected by that of the small convex mirror.

There is little evidence that the science of astronomy has ever been advanced through observations made with Gregorian telescopes. Gregory had difficulty in getting his design executed and it was nearly the middle of the 18th century before the famous James Short brought the telescope to an effective state through his excellent workmanship. Sir William Herschel gave up in his attempt to bring the mirrors of his Gregorian telescope into proper adjustment. Hence, perhaps instruments of this design should have gone directly from the maker to the museum for display purposes, rather than waiting for such dispositions to take place some two hundred years later.

Three known Gregorians in Canada are located in (i) the Archives of the Harriet Irving



One of the three known Gregorian telescopes in Canada. *Photo by John Scatljff*

Library at the University of New Brunswick, Fredericton, (ii) the private collection of Dr. John Scatliff, a long-time member and supporter of the Winnipeg Centre of the R.A.S.C. and (iii) in the astronomy display at the University of Saskatchewan Observatory, Saskatoon. The latter two of these instruments were manufactured by Francis Watkins, a leading instrument maker of London, England, while the first bears no indication of the name of the manufacturer. Other examples of Gregorian telescopes may well be located in museums and private collections across Canada.

* If any of these telescopes are known to you, would you please communicate with me on this matter, providing a few details about the instrument, its location, size and manufacturer. Receipt of such information will be appreciated.

Astrophotography: A Personal Approach
Part I

by Alan Dyer
Edmonton Centre, Queen Elizabeth Planetarium

Expertise in astrophotography, as in any other discipline, demands a knowledge of basics. In this case, these are some of the basics:

1. knowledge of film types and knowing when to apply the right film to a certain photographic situation.
2. knowledge of telescope idiosyncracies and the relative merits of various optical systems.
3. familiarity with camera operation
4. knowing how to attach the camera to the telescope in each of the astrophotographic modes (afocal, prime focus, projection, piggyback) *and* knowing what technique to use for what subject.
5. familiarity with f/ratios, focal lengths, magnification factors and exposure times, film

speeds *and* being able to manipulate these factors for the best photographic result, a result that is inevitably a trade-off between various conflicting criteria.

6. knowledge of what evil gremlins await you, determined to ruin your pictures. These include things like focus and exposure problems, seeing conditions, wind, vibration, dewing (or frosting!), aurora, equipment failure, etc., etc., etc.
7. experience with film developing and printing, at least in B&W.

However, a theoretical knowledge of basics is not enough. One also needs a practical, working knowledge. Not until you actually start *doing* astrophotography do you really begin to learn. You can read all you like (and it does help) but you will inevitably make mistakes, and the best you can do is learn from them. Believe me, when you've taken a beautifully guided 20-minute exposure of the Milky Way only to find that the shutter was set at 1/l000s, it is a mistake you'll never make again. And while all the theories, exposure data, numbers and formulae may help get you into the ball-park, there is always a certain amount of trial-and-error once you're there. It's an art, just like any other aspect of photography.

Having said all that, I should now say that this article is not about to deal with basics. I'm not going to tell you how to do astrophotography step-by-step. There are books and several years worth of excellent articles in "Astronomy" and "Sky and Telescope" magazines that can do that for you. What I am going to outline is some of my own personal approaches to the art of astrophotography, techniques that I believe will improve anyone's chances of getting good results with a minimum of toil.

We've already passed by one of those personal biases — the belief in the "hands-on" experience as being the only way to learn. So let's continue from there. Say you're just starting out. What should you keep in mind as you begin to tackle astrophotography?

First, we'll assume you're serious about pursuing astrophotography. By that I mean that you're certain that it's going to be a pastime that will keep your interest for several years. If you are going to start off on the right foot, then you should purchase the best equipment you can, in both cameras and telescopes. That way you accomplish three things:

1. You assure yourself of better *potential* results, results that may not be realized now but will

Photo of Comet Meier taken May 10 by Jack Newton of the Toronto Centre using his 32-cm. f4.6 reflector and a 20 minute exposure. A short tail nine minutes long is just visible.

be several months or years from now. You can grow with your system and, if well selected, your system can grow with you, with a minimum of obsolescence.

2. You reduce technical frustrations. Cheap equipment, or even expensive but ill-suited equipment, in other words anything that forces unnecessary compromises, will only cause more pain than the money saved is worth. That may be hard to believe now, but when the temperature is –10° and you've just ruined a 30-minute exposure due to some piece of equipment not performing up to snuff, you're going to be ready to toss that item in the nearest receptacle. Of course, equipment malfunctions can always happen, but you can at least minimize the possibility.
3. By getting top-quality equipment you are prevented from being able to blame the equipment for any poor results. The excuse usually reads something like this: "If only I had a Brand-X-omat camera or an Acmetron 8 telescope, I could have got much better pictures!" If you find yourself saying something to this effect, then buy the *right* equipment, be done with it, and quit complaining! That way you'll have nothing to blame for poor pictures but yourself, or good old mother nature who always manages to impose some restrictions which we can do nothing about.

Unfortunately, buying the right equipment often accomplishes one other thing – it reduces your bank account more than you'd like! In this regard, you simply have to ask yourself what those pictures you hope to obtain are worth to you. Just keep in mind that the "right" equipment doesn't necessarily mean the most expensive. It means the equipment that is best suited for the rather specialized task of astrophotography. For example, in cameras look for models with interchangeable viewscreens and finders, with mirror lock-up, and ease of handling.

However, let's move on to the second major point I want to make, because the preceding few paragraphs may give some people the impression that in order to get started you immediately have to buy a fully-equipped $2000 telescope, a $1000 camera with umpteen lenses and goodness-knows-what-else! This is just not so.

To do some excellent astrophotography all you need is a good camera, a tripod, a cable release, and of course, some film. Some of my favorite shots and some of the most spectacular photographs that I've seen from other people have been taken in just such a manner. This includes pictures of aurora, star trails, conjunctions, twilight phenomena, meteors, eclipses, haloes, rainbows, clouds, sunsets and sunrises. So if you have access to the equipment I've just mentioned, then there's nothing to stop you — start doing astrophotography!

(*Ed*. Part II in the August *NEWSLETTER* will continue Alan's discussion of astrophotography as it relates to telescopes.)

Centres Français

par Damien Lemay, Regional Editor
Centre d'Astronomie de Montréal

Une nouvelle rencontre avec le public avait lieu au Carrefour Laval, du 22 au 24 février 1978. Même si ce centre d'achat est situé à l'extérieur de la ville de Montréal, ce fut un succès.

Une autre rencontre similaire aura lieu à Brossard à la fin de mai; et le 10 juin à l'invitation de la ville de Montréal, la SAM participera à l'ouverture officielle du Parc Quai Victoria. On y fera alors une soirée populaire d'observation.

Il y a réunion tous les mardi, à la salle Léon Provencher, Jardin Botanique (adjacent au Stade Olympique). Après la conférence, suivent habituellement des observations effectuées avec quelques instruments apportés par des membres. Cependant, en hiver, cette activité devient presque nulle à cause du froid.

Aussi, après la conférence, le magasin de la société est ouvert. On peut s'y procurer nombre de livres, diapositives, posters et équipement astronomique, tel que "kit" pour polir des miroirs, miroirs déjà complétés, ou encore des équatoriales bien solides, fabriquées par des membres de la SAM. On peut obtenir le catalogue de la société en faisant la demande à 3860 est, Rachel no 1, Montréal H1X 1Y9.

L'atelier de polissage de miroir fonctionne rondement, au mois d'avril, une quinzaine

d'amateurs étaient au rendez-vous du lundi soir pour travailler sur leur miroir. A cette occasion, le magasin est également ouvert.

Une fois complété, on peut y faire aluminiser son miroir sur place, au coût de $2.25 par pouce de diamètre, plus taxe.

Centre de Québec

Le centre de Québec est en bonne santé, en date du 22 février 1978, on y comptait 113 membres plus 34 abonnés au bulletin mensuel.

L'Assemblée Générale Annuelle se tiendra le 7 juin, à l'endroit habituel, c'est-à-dire à la salle 3880 du Pavillon Vachon, Université Laval.

A Close Encounter of the First Kind . . . To a Non-Observer

by Doug Welch
Ottawa/Toronto Centre

On the whole, amateur astronomers tend to be very skeptical about "UFO" sightings. There is an excellent reason for this — most amateurs are out every clear night of the year, for years on end, and they never see anything that they cannot explain in simple terms. This is because the amateur has a superior knowledge of the sky, phenomena that occur in the sky, and the various tricks the atmosphere can play. In fact, I'm sure that if an amateur were called upon to relate all of the extraordinary (but natural) phenomena that he had witnessed a good many unexplained sightings of objects by the public would suddenly become explained. I have an example of just such a sighting – and the "phenomena" that caused it.

On the evening of March 10, 1978, I was out observing with three other Centre members at the Toronto Centre's observing site, Stellaridge. The beginning of the evening had been quite clear, but now, about 11 pm, a layer of thin, low cloud had spread over most of the sky. I was concentrating on finding some bright galaxies with my Celestron-8 between complaints about sky conditions. During the few minutes preceding the event, everyone had noted the approach of a plane from the north. The various guises that a plane-in-the night takes on are well-known to the amateur, but without fail, cause alarm to a non-observer. As I looked down into the eyepiece, the other observers yelled at me to look up. What we saw was a roughly circular patch of light on the clouds, travelling at low speed, which suddenly accelerated, elongated, and disappeared.

These events are depicted in the accompanying diagrams.

In Fig. 1, the plane's lights are seen, not different from any other plane-in-the-night. In Fig. 2, the approach lights are on as the plane starts its descent. The angle of descent causes the approach lights to illuminate a small circular patch on the cloud layer. In Fig. 3, the plane is levelling off to a lower altitude. As it levels off, the illuminated patch elongates into a thin ellipse and accelerates quickly as the cone of light from the plane becomes tangential to the cloud layer. Then the light patch disappeared.

The plane itself passed by a minute later followed by the sound of its engines. A precautionary check through the scope confirmed that it was a plane, as expected!

One will note that the observational aspects of the event bear many resemblances to reports of "UFO's":

1) circular patch of light
2) sudden, extreme acceleration
3) elongation during flight
4) disappearance
5) no sound (from the light patch!)
6) large apparent size

While the relative occurence of each of these six points in UFO reports is unknown to me, I

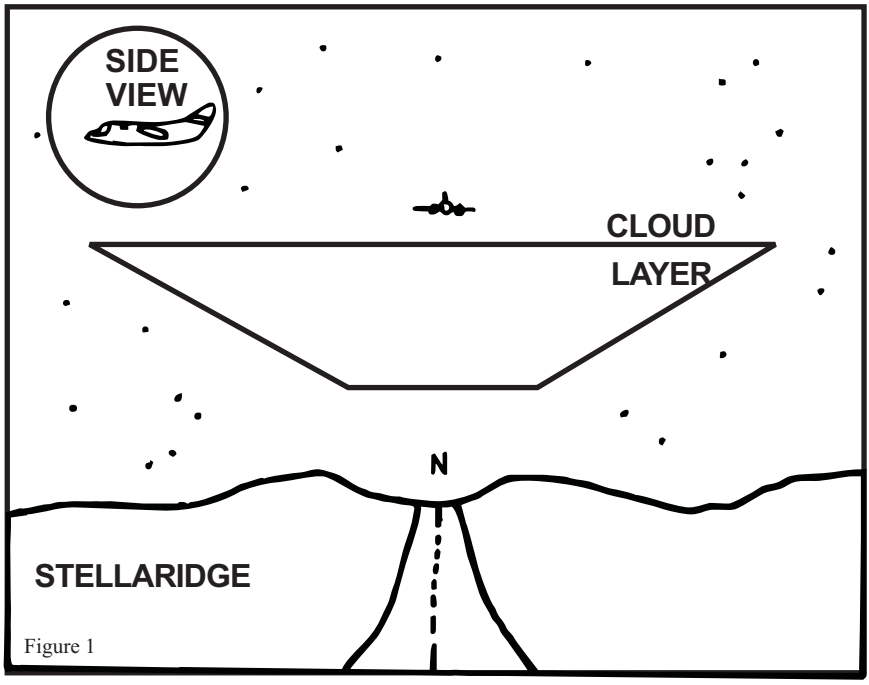


Figure 1

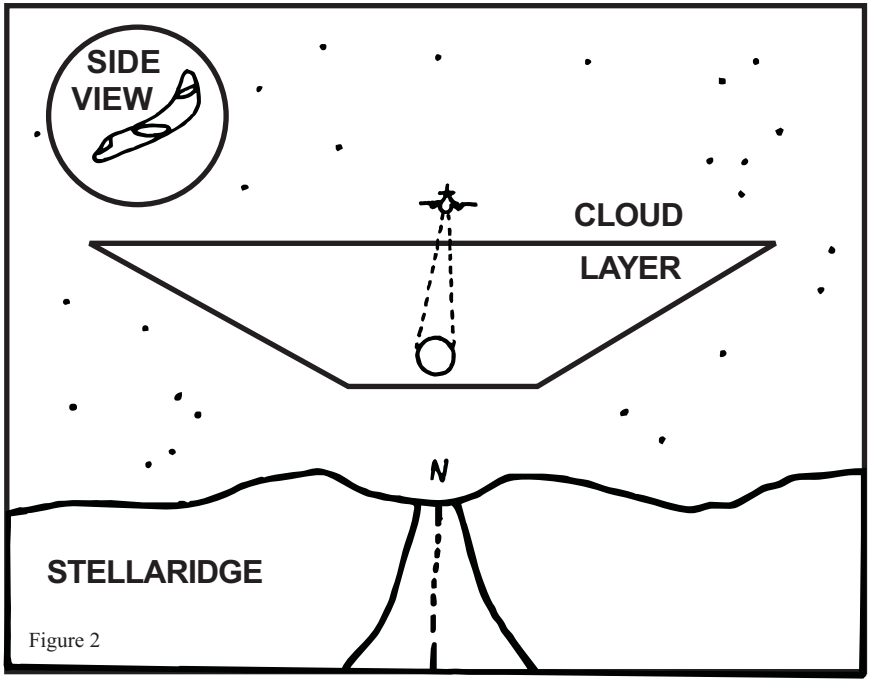


Figure 2

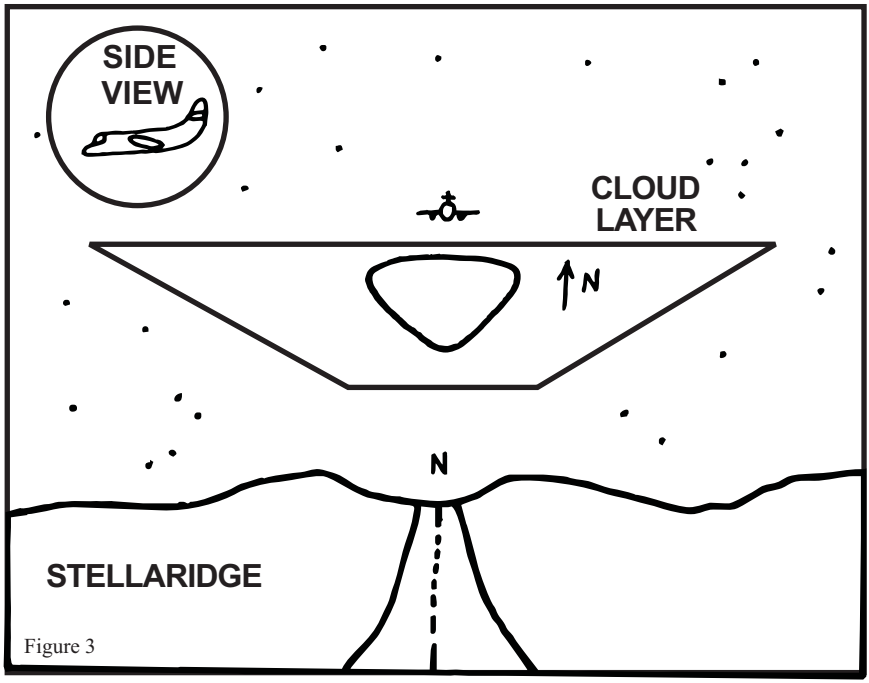


Figure 3

am sure that they all occur with considerable frequency, although not necessarily all together. The sequence of events was quite exciting even though it was easily explained in simple terms. It is quite likely that other amateurs have had even more remarkable sightings. I would be most interested to receive your reports of such observations. Perhaps if enough amateurs cooperated, much of the confusion about "UFO's" can be sorted out. My address is 35 Mohawk Crescent, Ottawa, Ontario K2H 7G7.

R.A.S.C. "East"

by Barry Matthews, Eastern Regional Editor,
and Ian McGregor

The "East" designation of my responsibility may have been the handwriting on the wall. By the time that you read this I just might be a little further east than Ottawa. There is a possibility that your Eastern Regional Editor will be in Saudi Arabia for one year.

For the last couple of months the Centres have been rather quiet. I have received most of the Centres' newsletters and would like to remind the local editors to send articles directly to me instead of waiting for me to pick them out of their newsletters. The reason is that the articles are just missing the due date for inclusion in the current *NEWSLETTER*.

Ottawa Centre: The past few months have seen the first winter and spring operation of the Centre's new observing site (Indian River Observatory), the commissioning of the largest amateur radio telescope in Canada, and a number of public star nights. A very successful display utilizing some of Professor Kennedy's personal collection of astronomically-related books was also set up. Ken Tapping, the resident radio astronomer, has successfully measured the Moon's surface temperature and Rolf Meier has now a much publicized comet to his credit.

Hamilton Centre: The Centre's annual picnic is planned for June 10 or 11. John Hudak is organizing a solar observing section and is working on a solar radio telescope. With solar activity now building up it is a good time to start this activity. Bob Lang is organizing a weekend campout and tour of the Lake Traverse Radio Observatory in Algonquin Park for July 21–23. It is open to members of other Centres. Write to R. Lang, 832 Roxborough Avenue, Hamilton, Ontario L8H 1T3 for further information.

Toronto Centre: Now that the David Dunlap Observatory is open on Saturday nights from April to September to the general public members of the Observers Group are taking their telescopes out to the Observatory for public demonstrations. In May the Toronto Centre and McLaughlin Planetarium organized an Astronomy Club Day for local school science and astronomy clubs. The Centre's 32-cm. reflector will soon join the 25-cm. at the Stellaridge observing site. The Centre's recent "Sky Brightness" program was featured in the February issue of "*Sky and Telescope*". Several members participated in the May 3rd "Sun Day" activities at Harbourfront by setting up telescopes for solar observation. And finally during the summer months until August 31st all mail for the Secretary of the Toronto Centre should be sent to Mr. John Perkins, 556 Millwood Road, Toronto, Ontario M4S 1K5.

London Centre: Members of the Centre had a successful visit in March to the Abrams Planetarium in East Lansing, Michigan and toured the observatory of Michigan State University with its 61-cm. reflector.

And one final note. The annual Stellafane convention in Springfield, Vermont is being held on August 5th. This year there will be more Canadian content and Jack Newton of the Toronto Centre will be organizing the afternoon tent talks. For details write Dennis de Cicco, 94 Pierce Road, Waterdown, Mass. 02172.

Amateur Radio Astronomy
Part III

by Ken Tapping
Ottawa Centre

Amateur Projects

Amateur radio astronomers are unlikely to produce original research or discoveries in the field, but can nevertheless get a large amount of satisfaction from this hobby. At the present level of electronics development, the only variable source within the reach of small instruments is the sun. Pulsars and quasars need larger antenna systems than will go into the average back yard. The meter wavelength emissions from the sun are complex, changing in intensity over timescales of seconds to hours. Some projects which may be carried out using small readiometers are briefly outlined below. The list is by no means complete, but may be used as a rough definition of objectives when one is entering the field.

The Sun

The radio emission from the sun consists of various components, the relative importance of which changes with the wavelength of observation. Firstly, there is the basic so-called "Thermal Component" which is due simply to the sun being a hot body. This radiation is relatively weak at meter wavelengths, requiring a fairly sensitive instrument for its detection. At wavelengths in the centimeter region it is much stronger and at wavelengths shorter than a centimeter or so is the predominant component. The second component is the so-called slowly varying component. This radiation is a fairly steady emission produced in the regions of enhanced magnetic field and electron density over sunspots and other active centres. Consequently, the intensity of this radiation is related to the number and size of the active regions present on the visible sun at any particular time. Therefore this component of the radio emission is a good indicator of the general level of solar activity, and shows the 27 day solar rotation and the 11 year solar cycle. This radiation is at its strongest compared with the other components at wavelengths in the region of 10 cm.

The third component is the one which is probably most relevant to the amateur radio astronomer with a small radiometer. This is the "rapidly varying component". This radiation

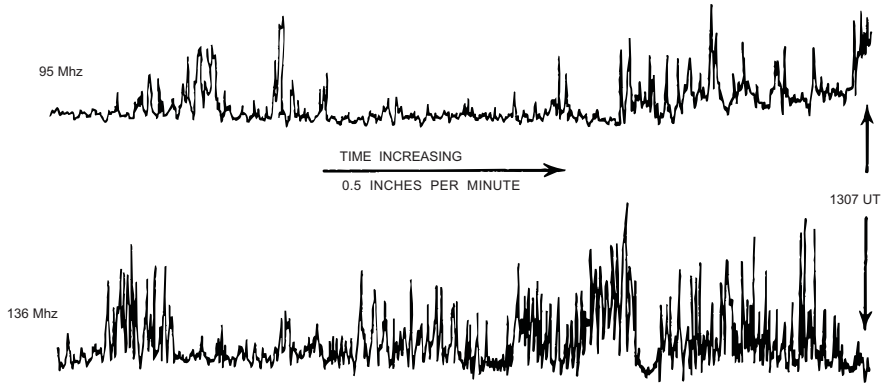


FIG. 8—Observations of a developing noise storm. [R. Ham] 4.3.72

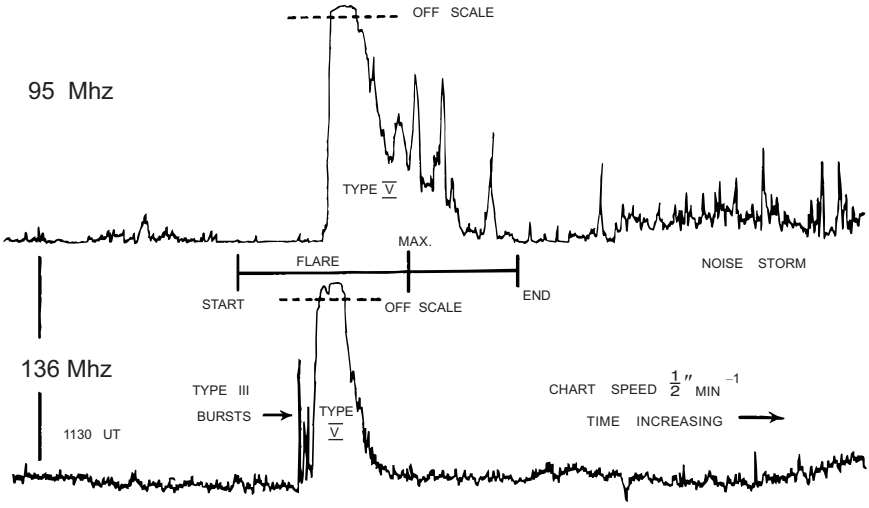


FIG. 9—Meter wavelength radio emissions associated with a solar flare. [Ron Ham] 5.3.72.

is produced by a variety of different events and processes in the solar corona and is too complex to discuss here in more than a very superficial fashion.

It is possible roughly to divide the component into two categories: emission associated with flare activity and those which are not necessarily so. The most important of the latter is the noise storm. This event, which has yet to be explained, consists of a raggedly varying background radiation lasting hours to days, upon which are superimposed intense bursts of a second or so duration. A typical record of a noise storm is shown in Figure 8. This recording was obtained by R. Ham, a British amateur, using very simple receivers and small antennas. Two receivers were used, at frequencies of 95MHz (wavelength about 3m) and 136 Mhz (wavelength of 2.2m). The receiver outputs were recorded on the same chart, using a two-pen chart recorder. Noise storms are most evident at wavelengths longer than 1.5 meters or so. In addition to noise storms, radio bursts occur occasionally, both singly or in groups of up to a dozen. Typically these bursts have durations of less than a few seconds.

The radio emissions associated with flares are complex. Figure 9 shows some records of

flare associated emissions. There are a number of types of radio event associated with flares. Groups of short intense "spikes" are produced at the time of the flare. This may be followed by a strong structureless signal lasting a minute or so. Following this event there might be a raggedly varying intense burst lasting a few minutes. When this burst ends the background intensity rises by a large quantity and may persist, varying slowly and lasting for hours to days. It may then finally decay into a noise storm – as described above.

Solar radio emissions can reach very great intensities, sometimes enough to degrade V.H.F. communications. However, events of that strength are quite rare. A simple total power radiometer with a small yagi antenna with a beamwidth of about 30°, when operated in the wavelength range already mentioned, should record at least one event a week on average at solar minimum and many per day at solar maximum. Any of the practical arrangements described later in this article will be sufficiently sensitive to receive some of the solar emissions. The more elaborate radiometers described will easily receive the minimum level or quiet sun. This is the lowest level the sun reaches and such a system will always be able to measure the solar radio emission. With a reasonably stable receiver the quiet sun may be reached by radiometers with very simple antennas – e.g. dipoles and reflectors.

The Galaxy

At meter wavelengths the radiation from the galaxy is very strong and is measurable using quite modest systems. The radiation intensity is highest along the path of the Milky Way; that is, in the galactic plane, with a maximum lying in the direction of the centre of the galaxy, which lies in the direction of Sagittarius.

The galactic continuum may be mapped by amateur systems. The greater the resolution, the better, but beamwidths of 30° or less are quite usable. It will be found that the map varies as the observing wavelength is changed.

The easiest way to carry out this project is to direct the antenna at the meridian, at the required declinations, and use the rotation of the earth to move the sky through the antenna beam.

Discrete Sources

In addition to the galactic continuum radiation and the solar emissions, there are a number of other discrete sources which are attainable by amateur-sized equipments. The main sources are:–

Source	*Identification*
Cygnus A	Peculiar Galaxy
Cassiopeia A	Supernova Remnant
Taurus A	Supernova Remnant
Virgo A	Peculiar Galaxy
Orion A	H II region
Jupiter	Discussed separately.

The sources above all subtend angles of minutes of arc or smaller; it is therefore unlikely that amateur installations can be used to study source structure. On the other hand, position measurements and determinations of source flux density are possible. Studies of ionospheric scintillation can also be carried out. Some observations of discrete sources are shown in Figure 10.

Jupiter

Jupiter radiates a significant signal in the 20–40 MHz region (wavelengths 15m to 7.5m). These emissions resemble terrestrial atmospherics and are receivable using shortwave receivers with simple long wire antennas.

Editor's Note: This series, which began in the February issue of the *NATIONAL NEWSLETTER* will continue in subsequent issues. Copies of the back issues should be available on loan from the RASC Library.

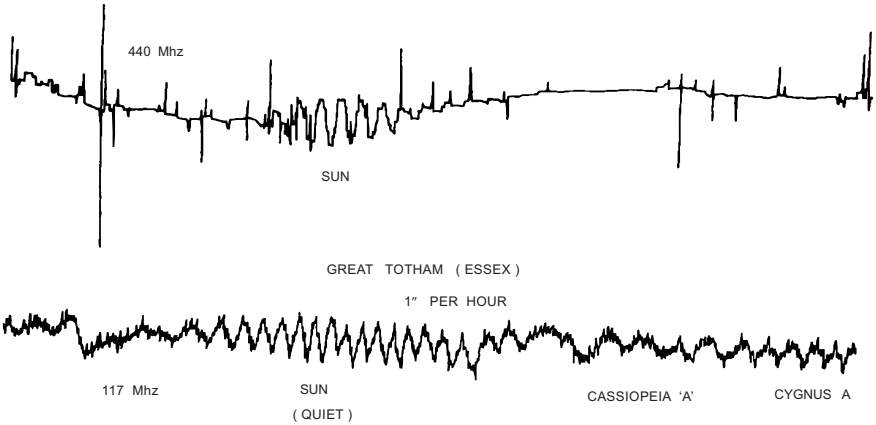


FIG. 10—Observations of discrete sources at 117MHZ and 440MHZ made using phase switched interferometers on July 7, 1975. Antennas were pairs of dipoles and reflectors. [30.7.75]

Abolish Duty on Telescopes, Please!

At the September meeting of National Council, National Treasurer Peter Broughton reported that Revenue Canada had advised the Society that telescopes imported by individuals are subject to the following import taxes:

Telescopes imported from preferential commonwealth countries – 2½%
Telescopes imported from other countries (including the U.S. and Germany) – 15%
plus
Federal Sales Tax – 12% (on the value of the telescope + duty as shown above)
plus
Provincial Sales Tax if applicable (on the value of the telescope + duty + F.S.T.)

As a result, your Council unanimously adopted the following motion: "That the Society approach the Minister in charge of Revenue Canada with the proposal to remove the import duty on telescopes imported for astronomical study and research".

It was also suggested that the individual Centres and individual members should be urged to write the Minister and their Member of Parliament asking that the duty be lifted. If a large enough number write the government, it is possible that the present situation may be reviewed and even changed. However, it should be noted that form letters should not be sent.

Telescopes imported by the Society or one of its Centres may already be exempt under certain circumstances, including that the telescope will remain the property of the Society or one of its Centres, and not subsequently become the property of any individual. For further information, contact Revenue Canada and refer to Section 696-05-1 of the Tariff rulings.

Reprinted from *NATIONAL NEWSLETTER* **L63**, Dec. 1977

General Assembly of the I.U.A.A.

The Fourth General Assembly of the International Union of Amateur Astronomers will be held from Monday August 14 to Saturday August 19, 1978 in Dublin, Ireland. The event is being hosted by the Dublin Centre of the Irish Astronomical Society.

For information on the programme, registration, and accommodation, please contact Mr. Ciaran Kilbride, 26 Cedarwood Park, Ballymun, Dublin 11, Ireland.

Review: "The I.A.U. and Its Triennial Congresses: A Talk by Dr A. Vibert Douglas"

by David H. Levy
Kingston Centre

Once in a very long while someone delights the members of an RASC centre with a talk of such exceptional quality that leaves one in a deeply-moved, semi-transcendent state. Such was the feeling I had after hearing Dr. Douglas share her vast personal experience of astronomical history and the I.A.U.

The opening sentence of her splendid talk set its tone – that on January 14, 1926 she gave her first address to a centre of the RASC, and that fifty-two years later she is "still at it". Her latest talk before the Kingston Centre on February 21, 1978 was titled "The I.A.U. and its Triennial Congresses" and she began by describing the 1918 organizational meeting in Brussels. Thirty commissions were set up, Commission 1 being called "Relativity" since "that was such an exciting thing in those days". At the time she was working at Cambridge on absorption spectra and managed to talk with Dr. Alfred Fowler of the University of London – "an outstanding spectroscopist" – about her studies. Unfortunately the good scientist spoke with a pronounced slur and he told Dr. Douglas that they were investigating a new line called "C8". "I was absolutely mystified – I had no idea what C8 was" – and it was only later that she finally realized that he had really said "CH". She recounted also how she had met Albert Einstein a year before his death and had asked him who he thought were the world's greatest intellects. "His answer, straightaway, was 'H.A. Lorentz'. Anyone else? 'If I had met Willard Gibbs I might have included him, but I have never met him.'"

These recollections include an exciting but disappointing trip to Magog to see the 1932 total solar eclipse during which "we stood under a cloud". This personal reminiscence was particularly interesting for me as I had examined part of the Montreal Centre's extensive file on that expedition.

As a projected I.A.U. assembly at Copenhagen was cancelled due to the outbreak of the Second World War, the next full assembly was in Zurich, and Dr Douglas "attended this meeting and every one since then". An exciting aspect of this meeting was the formation of a new commission for radio astronomy. This happened surprisingly late as "the whole of the thirties had gone by without any real advancement in this field". The vast improvement was really a result of the necessities of war. At the same meeting Dr. B. Lyot displayed a miniature model of the new coronograph he had just invented.

The Zurich conference was beset by the beginnings of a political problem involving the delegation of the U.S.S.R. Apparently they had not responded to any of the I.A.U. requests for information so that when their delegation of 80 showed up on the second day of the congress, it took the delegation by surprise. Then during the soup course of the banquet, the entire delegation stood up and stormed out of the hall. It took a few minutes for the perturbed organizers to understand that the problem was their own failure to include the flag of the U.S.S.R. One was hastily put up and tho delegates re-entered. The problem recurred at the next Congress at Rome in 1952. This time the Soviets refused to lecture in either of the two official languages of the Congress. Dr. Douglas recalls a conversation she had at the time with Harlow Shapley who confided that he had asked a member of the Soviet delegation why they insisted in presenting papers in a language no one else could understand. He replied, "Dr. Shapley, do you not wish to learn Russian?" Shapley's retort – "Oh, not at my age!"

Dr. Douglas recalled a second dispute at the Rome meeting but this one was of a proper scientific nature between Gerald Kuiper and Fred Hoyle on the origin of the planets. She was also able to meet Garibaldi's granddaughter. (*Ed*. Garibaldi was a famous 19th century Italian patriot.)

At the 1961 Congress at Berkeley, California, Jan Oort, "the only person who had attended every I.A.U. meeting since the beginning," was finally made President. "He is always friendly and approachable, and can always add something of value to a discussion." (*Ed*. Dr. Oort is an Honorary Member of the R.A.S.C.)

It was the 1964 Hamburg Congress that bristled with excitement over the first newly discovered quasars. By the following meeting in 1967 one hundred quasars were known. Dr. Douglas recalled Carl Sagan's "remarkable paper" on Mars at the 15th Congress in Sydney – and another Sagan paper on Mars – equally remarkable – at the 16th Congress in Grenoble, France. During this meeting she joined a group that visited the Pic du Midi Observatory where Lyot had invented his coronograph many years before.

During Dr. Douglas' presentation one had the sense of a presence of history. We were given a sensitive account of a procession of major astronomical discoveries of the twentieth century, observed, studied, and remembered as friends by a prominent astronomer who had witnessed the birth and evolution of each of them. Her talk ended, not with an ending but with a new beginning: "The 17th I.A.U. will meet in Montreal in August of 1979. It will be my twelfth. I hope it will be your first."

The Frustrated Amateur

by Dora Russell
St. John's Centre

What is the difference between a star and a planet?

This is perhaps one of the most common questions asked. An innocent question. A question that seems very easy to answer – until you march unsuspectingly into the trap.

The conversation between the beginner and the advanced amateur might go something like this:

MRS X (her gaze fixed rapturously on the sky): How quite fascinating the stars must be! How I wish Joe would take an interest in the sky instead of talking all the time about plumbing fixtures.

D.R.: Plumbers make pots of money. I wish I could be a plumber. If Joe's head were in the stars, his feet wouldn't be among the pipes.

MRS X: Just the same, I wish ... oh, look at that big bright star. The reddish one. I suppose you know exactly how many miles away it is?

D.R. (following the direction of the pointed finger): That one. Oh, that's not a star. That's a planet. It's Mars.

MRS X (innocently): Why, is there any difference?

D.R.: A star is a huge ball of highly heated gas. The sun is a star. On the other hand, a planet is a small cold body like the earth, and receives its light from the sun.

MRS X: What makes it so bright?

D.R.: It's very near. Only 141 million miles. Whereas the nearest star is, in terms of light years ... well, the nearest star is a long way off.

MRS X: Where is this nearest star?

D.R.: You can't see it from here.

MRS X: Well, can't we get up somewhere higher? Climb a hill or somehting?

D.R.: Oh no, you can't see it in our sky. It's below the celestial equator ... I mean, it's got too big a south declination ... oh well, anyhow, this planet you see is infinitely smaller than a star.

MRS X: You mean that all the stars are bigger than that red one, Mars?

D.R.: Yes ... yes ... well, not exactly. Some stars are no bigger than a planet. Others are so huge that they are called supergiants.

MRS X: Did I tell you that Johnny took part in "Jack and the Beanstalk" in school last year? He's such a big boy for his age! I'm not surprised they picked him for the giant. Do you known what size shoes that boy wears?

D.R. (firmly heading off the flow of words with a flow of her own): It's just a term, of course. Now, the star Antares, if you put it where the sun is ...

MRS X (equally firm): I don't see all that difference in stars and planets. If a star can be the size of a planet, why can't they both be the same thing?

D.R. (just a trifle wearily): Because a planet shines by light reflected from the sun, whereas a star shines by its own light.
MRS X: Well then, how does Mars get its light?
D.R.: Like I said, reflected from the sun.
MRS X: But what if the sun's light went out suddenly?
D.R.: There'd be no Mars, nor any other planet. Not to see, that is.
MRS X: So then, if its light went out, there'd be no planet?
D.R.: Well, it would still be there, you know.
MRS X: But you said a planet has to be a body that shines by reflected light.
D.R.: Yes, but the dark body would still be there. Don't you see, the planets are actually invisible bodies revolving around the sun, and they have a mass ... no. I mean, take the star 61 Cygnus. It's known to have ... don't you find it a little chilly out here? Let's go in and have a cup of tea.

The Armchair Astronomer

by K.J. O'Brien
St. John's Centre

There you are, in front of the fire, brushing up on things celestial. So much to learn, isn't there! No matter, knowledge is its own reward, or so they say, even if you never have a comet named after you. And you add another log to the fire...

So nice to have friends in astronomy who show the same keen interest as you; profound discussion on theories and observations abound as you leave the layman behind in a cloud of utter amazement; nice to be different from the rest, isn't it. You smile to yourself, deep in thought, as the flames dance on.

You started off knowing nothing. Now you know so much more. Yet you still known nothing, though you haven't lost that magnificent appreciation for the beauty and mystery which first kindled your love of the stars. Too bad everyone can't feel the same way you do.

You grunt in disapproval, the thought of that fellow, yesterday! He said, "So you're an astronomer? What did you think of the horoscope in today's paper?" Oh how you detest the ignorant; they don't ever understand the difference. You said with an aristocratic air, "Astronomers use telescopes not horoscopes." As you parted you knew that he would never understand, never see the light. The fire grows smaller ...

It'll soon be midnight; time for bed. Maybe you'll set up the scope for a quick glance at Jupiter. In a moment, overcome by comfortable thoughts, you say "it's too cold, too late, perhaps tomorrow night" ...

Later, under the covers you drift away to dream of the stars and galaxies, space ships and other worlds ...