R E G U L U S

THE NEWSLETTER OF THE

ROYAL ASTRONOMICAL SOCIETY OF CANADA - KINGSTON CENTRE

JANUARY, FEBRUARY 1985

DAVID'S COMET - THIS SEASON'S CENTRE OF ATTRACTION

Throughout this winter season, Comet Levy-Rudenko (whose discovery was reported in our last newsletter) has become one of the main topics on the minds and in the conversations of amateur astronomers. Indeed, this nebulous but brightening object has also been one of the most interesting sights in the eyepieces of their telescopes as it moved almost due north through Lyra, Hercules, and Draco to a point less than fifteen degrees from the pole. This first comet to bear the name of our Vice-president has been widely reported in recent periodicals and at our centre meetings the most interesting observing reports have featured descriptions of our sightings of "David's Comet." In giving considerable coverage to the discovery and appearance of the comet, the January issue of Sky and Telescope carried two stories. On page 66, an article "Discovering Comet Levy-Rudenko" speaks of "an avid observer... who looks upon his discovery not as 917 hours of lost time, but as a by-product of enjoying the heavens," and it mentions (as did the article in our last newsletter) that David also independently discovered Comet Hartley-IRAS in November, 1983. On page 88, there is an ephemeris for the comet and mention of the date of the discovery "by David Levy in Arizona and Michael Rudenko in Massachusets on November 14th and 15th (U.T.) respectively." There is also a reminder for observers that the comet will pass through the head of Draco for a rendezvous with the star Kochab on February 6th.

A special issue of the publication, Tonight's Asteroids was produced— the Comet Levy-Rudenko Special Edition. The opening paragraph of the 6-page publication mentions the discovery made by David, "a well-known amateur astronomer and variable star observer (who) writes a regular column on variable stars for the magazine "Deep Sky". The path of the comet is shown on four maps from the Vehrenberg Photographic Star Atlas.

The article by Terence Dickinson in the Toronto Star of December 22nd, entitled "Where Amateurs Score" tells of how the dedicated comet-hunting of Ottawa's Rolf Meier and our centre's David Levy has brought recognition to Canadian amateur astronomy. To quote from the article, "A comet discovery is probably the most prestigous find an amateur astronomer can make and represents an important contribution to science because the sooner these objects are located the longer they can be studied."

From the ephemeris for the comet compiled by Jim Scotti, another one of our members, Mark Sorensen, has produced a sky map showing the path of the comet from the time of its discovery until mid-May of 1985 when it will have become too faint to be seen in amateur telescopes. A copy of this map along with an ephemeris for the comet at 5-day intervals from the time of its discovery until mid-May are provided as inserts in this newsletter. We trust that you will be able to make good use of them.

CORRESPONDENCE FROM ANOTHER MEMBER IN ARIZONA

Shortly after the discovery of "David's Comet", I was pleased to receive a letter and an article from another of our good friends in Arizona and to read his thoughts on the occasion of the important event. I refer to the letter and article below from Jim Scotti, whom I had the pleasure of meeting a few years ago.

Lunar & Planetary Lab
University of Arizona
Tucson, AZ 85721
November 20, 1984

Dear Leo, and R.A.S.C.-Kingston Centre Members:

Enclosed are my dues for 1985 in the amount of $28.00 US currency. Please let me know if this is insufficient to cover my dues. (Editor's note: More than sufficient! Thank you very much, Jim. Leo)

Also enclosed is a short piece that I wrote a few days after David Levy's discovery of Comet Levy-Rudenko. You might want to pass it along to the National Newsletter as well.

I will also include an ephemeris for Comet Levy-Rudenko for those observers interested in following it through the night sky. It should be visible through about March when it fades beyond magnitude 12 or so. The ephemeris is based on orbital elements provided by Brian Marsden on November 26, 1984. The magnitude estimates are likely to be off by as much as 1 magnitude towards the end of the ephemeris.

Incidentally, I have recently joined David as an assistant recorder for both the Comets and the Meteors sections of the A.L.P.O. I will be involved mostly with data reduction and orbital computation.

I noticed in the September/October edition of Regulus that Murray Anderson will be speaking on "Planetary Trajectories & Rocket Equations". Since I am unable to attend, I would be interested in learning, perhaps second hand, what he has to say. I have become very interested lately in Astro-dynamics, including trajectories of solar system bodies, multiple star systems, and interplanetary spacecraft. My curiosity has led me to write some computer programs which simulate the motion of any number of bodies in a system. The results are quite fascinating and most entertaining.

Astronomically,

Jim Scotti

Finally!

My good friend David (David Levy, that is) finally did it! I was relaxing at home on the night of Tuesday, November 13, 1984. It was nearly 9:30 PM (MST); so I was beginning to

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think about getting to bed. Suddenly the phone went off (not quite like a siren, but when your 5-month-old daughter has just fallen asleep, you really try to get it before the second ring!). My wife beat me to the phone (she gets more practice than I during the daytime while I'm at work). "Hellooooo Daaaaavid" answered my first question. Since David, the English Major, had incorrectly edited a paper I was working on earlier that day, my second question had to wait while I poked a little fun at David's grammar (he had connected two sentences which already had too many "and's by adding another one—tisk, tisk). Before I asked him what he wanted (my second question), he asked:

"Did you see any telegrams on new comets today?"

"No, David. Why? Did you find a comet?"

"Yep."

And the rest is history, as they say.

It wasn't until the following day that I finally got all the details of his discovery. He had to get off the phone so that he could call other potential observers. David found his comet in Aquila about 8PM MST (3 Hrs UT on November 14). It was at magnitude 8.5. He was in his 917th hour of comet hunting, having previously found nothing with his name on it, but there were several close calls. One such close call came last November. David independently found Comet Hartley-IRAS ("Almost Levy") while it was at magnitude 12.

Less than 24 hours after David's discovery, Rolf Meier in Canada had confirmed David's comet, and another amateur, Mike Rudenko, in Amherst, Massachusetts, independently discovered it after 250 hours of comet hunting. Shortly thereafter, the comet finally received its official designation: Comet Levy-Rudenko (1984t)."

James V. Scotti.

OUR NEW EXECUTIVE

At our Annual Meeting which was held on November 23rd, 1984, the following Executive Officers were elected for 1985:

Honorary President:	Dr. A. V. Douglas
Past President:	Martyn McConnell
President:	David Stokes
Vice-president:	David Levy
Secretary:	Sue Sorensen
Treasurer:	Martyn McConnell
Librarian:	David Stokes
Newsletter Editor:	Leo Enright
National Council Rep.:	Terry Hicks
Alternate Rep's:	Hein VanAsperen & Martyn McConnell

In addition, Mark and Sue Sorensen are continuing to assist in the production of the newsletter.

All our members extend a warm vote of thanks to Martyn who was a very active president in 1984, and we offer a hearty welcome to David Stokes, who

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will be our president during 1985. David is known as an active observer, but much more so, especially in the last few years, as a "computer-astronomer". He has developed computer programs to solve numerous problems and to print our many kinds of astronomical data. After our last centre meeting, for instance, David amazed your editor and some other members by showing us the computer program he had developed to convert the Greenwich times of Moonrise and Moonset given in the Observer's Handbook into the times of Moonrise and Moonset for each day of the year at our latitude and longitude. In addition, he has worked on numerous other programs involving the motion of the moon— a topic which is extremely complicated because it involves so many variables. The other member of the "David and David" team needs no introduction to any amateur astronomer on this continent; our Vice-President, David Levy, is known for his comet discovery and for many other contributions to this centre and to astronomy in general.

We also extend a "Thank you!" to John Hansen who was our treasurer for the past several years and we say "Welcome!" to Hein VanAsperen whose name appears on the list of Executive Officers for the first time.
The occasion of the Annual Meeting is often one for both looking back over the past year and looking forward to the next one. As we do so, we can be as equally satisfied with what happened in 1984 as we should be encouraged for the events anticipated in 1985. Important accomplishments in the past year include our representation at the General Assembly in Hamilton and our very successful involvement in Astronomy Day and its Star Night in May as well as many individual accomplishments. The 1984 annual reports given by the members of the executive at the Annual Meeting, all well prepared and carefully written, showed a serious committment to serving the interests of the Kingston Centre. Under the capable leadership of those who have generously offered to serve on our Executive Council for 1985, we can have every reason to expect that dedication to the Centre as a whole will continue and 1985 will be a very good year for astronomers in the Kingston area.

CORRESPONDENCE FROM OUR OBSERVER IN MARYLAND

Recently I received two letters from Mr. Gus Johnson, our observer in Maryland; one of them was accompanied by a beautiful Christmas card and two more file-cards of his observations of deep-sky objects in the constellation Cygnus. The following are parts of both of those letters. I am delighted that he is able to add some important information to the ongoing discussion about how faint an object can be seen with a 6" telescope, and I know that Warren Morrison will be interested in this information.

RD 2 Box 67
Swanton, MD 21561
December 12, 1984

Dear Mr. Enright and Kingston RASC Members:

Best wishes for the season and coming year!

Western Maryland is now getting a touch of coming winter. At least ten inches of snow have fallen so far and the lake showed ice in the inlets early. Last Sunday (Dec. 9th) even had ice out on the main body of the lake. Cold nights have been common and are likely the cause. While Nov. proved a rather good month for observing, December has been cloudy, except for the first night, which

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had unexpectedly good seeing permitting me to again elongate the companion of Gamma Andromedae with my 6-in, at 169x (0.6") and the same for a new one for me: 36 Andromedae at 0.8" also with 169x. At 220x I suspected seeing a bit of the rill running down the Lunar Alpine Valley, but near the southern wall, later confirmed when I read about it in Wilkins and Moore's THE MOON, but then I recalled that I might have a photo from the Orbiter, which shows the rill more centrally. It was mildly thrilling to think, for a while anyway, that I had made a rare observation.

I read with interest in the September-October issue of "Regulus" about Warren Morrison's Pluto observation with a 6-in, refractor at 111x. I was wondering if this is one of the Christenson refractors of either flourite or with 3-element objective for I would expect an f/5 objective of 2 ordinary elements to abound with chromatic aberration at 111x. My experience with the Lumicon 80mm "Super Finder" of f/4.8 was that it barely had chromatic aberration under control at its usual low power. At 35x the image color was almost intolerable. But some lens designs are better than others though using the usual len materials.

How faint can a 6-in, see? I don't put much stock in the various published formulae. Basically, all things being equal, I would say that twice the aperture sees four times fainter. Beyond that it is dependent upon the observer's skill and the clarity and steadiness of the sky. With 118x, my 6-in. f/7.8 reflector has seen stars of mag. 14.1 to 14.4 a number of times and once averted vision showed an unresolved elongation of a 14.5 - 14.8 pair near SS Aurigae. The AAVSO charts are sometimes incorrect and the observer is made suspicious. Some years ago with my 6-in. I saw in the field of AH HER stars of 14.2 and 14.6 at 118x with a quarter moon in the sky! The chart had to be in error. This was a "Prelininary Chart" and such are especially subject to correction. I have read of observers like Tom Cragg seeing to mag. 15 with a 6-in, refractor at Mt. Wilson and Luigi Jacchia did the same and saw Pluto with a 6-in. In STARLIGHT NIGHTS Leslie Peltier tells of having occasionally seen to mag. 15 with his 6-in. f/8 refractor. Lowland astronomers going to very high mountains may find the stars not as bright as expected, due to the rarified air. It would be interesting to see how faint a 6-in, can see from one of the Hawaian observatories when using an oxygen mask.

You may cross out the item under #2 on p. 6 of the "Regulus" September-October issue about the suspected supernova in NGC 7606 AQR. My observations of a faint star near the galaxy and those of a friend with a 12½-in, suggested strange behaviour in the star. But it turns out that my friend had my sketch upside down. There is a bright star both N and S of the galaxy; so this was an understandable (and forgivable) error. The star really seems to be very red and as such may well show some variability, but it is so faint that it just can barely be monitored with my 8-in, on the clearer nights. I have seen it with my 6-in. Of course, I can't see the redness, but the PALOMAR SKY SURVEY indicates such.

Clear skies,

Gus

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Dear Mr. Enright:

The weather has been amazing hereabouts. The lake's ice and snow have melted and it is so warm outside today that I almost don't need any coat! Although often warm by days the nights tend to be cool, and CLOUDY. So, observation has fared less well, but I have experienced worse.

The Pittsburgh, PA, astronomers had their monthly meeting and Christmas party at Allegheny Observatory on Dec. 14th. It was a rich meeting, with music, art and poetry. Slides were shown of a colorful and bright aurora seen right at the observatory with the city lights around, that occured on Nov. 29th.

Familiar constellations can often reveal something previously not suspected. When browsing through the CELESTIAL HANDBOOK I was surprised to note the photo of a large galactic cluster in Lyra. I looked for it using my short 5-in, and think I saw it, a very dim, large glow. The few stars may have been foreground objects, its cluster is NGC 6791. I don't see it in the Webb Society HANDBOOK #3. The sky never need become uninteresting for lack of "new" sights.

FOR YOUR COMPENDIUM OF ESOTERIC FACTS

There are several remarkable coincidences between the first comet to bear the name of our Vice-President, David Levy, and the first of the dozen comets to bear the name of his late hero and friend, Leslie Peltier. In the first place, both comets were discovered on the evening of November 13-14th (the one was in 1984; the other was in 1925). Secondly, both were discovered relatively high in the western sky (high for comet-hunting) after the comet-hunter had been sweeping in that area for a time. Thirdly, on both occasions the planets Jupiter and Venus formed a striking pair in the south-western sky. (I am sure an astrologer would also say that the stars were aligned the same. How could they not be at the same time of night on the same day of the year?)

Unusual coincidences, indeed! Let us remind David that Mr. Peltier went on to discover many more comets after his first one of November 13, 1925.

REPORTS AND OTHER ITEMS

1. Observing reports for December? Let's be serious! Did anyone observe anything except clouds? My observing log contains five entries and two of them were solar observations. In addition, I did see a few members of the Geminid Meteor Shower on the night of Decerter 13-14th.

   Several very clear but very cold nights in early January gave us a good chance to observe Comet Levy-Rudenko in both the evening and morning sky. I also saw about forty to fifty Quadrantid Meteors and was able to photograph several of them in the early morning of January 3rd; the shower this year was very strong producing at least one bright meteor per minute. A very interesting shower! I also observed Mercury in the morning sky on January 4th and saw an aurora on January 8th.

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2. Attention: All Observers In The Kingston Area: Because of the fact that only one of the last six planned observing sessions (scheduled to be held after our regular meetings) was a successful one because of bad weather, a new system of organizing observing sessions will be tried over the next few months. About five or six nights preceding or at the time of the New Moon in the next few months will be set aside as dates for an observing session which will take place on the first clear night during the dates listed. They are (1) March 18-21, (2) April 15-20th, and (3) May 13-19th. The leaders in these observing sessions will be Martyn Mcconnell, Larry Manuel, and Mark Sorensen. The place will be the Fort Henry Parking lot, where our observing session took place last year, though the leaders are willing to consider other observing sites and to travel to a more distant location if arrangements can be made. If any observers have questions about these sessions or wish to check about the weather on the date of one of the events, they should phone Martyn (352-7565).

3. A sixth-magnitude nova has been reported in the constellation Vulpecula. Its 1950 coordinates are: R.A. - $20^h\ 27^m$; Dec.+27°.8. It is located slightly west of the open cluster NGC 6940. A few of our members have seen it already.

4. We thank the following members for their greeting cards sent during the holiday season: Warren Morrison, Gus Johnson, Paul Brown, and David Levy. We also received a letter from Angelika Hackett telling us that she and Bob were about to leave for the south for a brief holiday.

5. Here is another reminder that it is not too early to start plans for your contributions to Astronomy Day on April 27th and your entries in either the exhibits or the papers sessions at the General Assembly this year. The G. A. will be in Edmonton from June 28 to July 2, 1985. Let us try to have a good representation from our centre.

6. Here are a few objects well worth observing over the next few weeks.
   (1) Comet Levy-Rudenko will move further north becoming a circumpolar object to be observed all night and on the night of February 6th-7th easily seen in the same telescopic field as the bright star Kochab.
   (2) Venus and Mars are drawing nearer to each other over the next month. You will observe that Venus, as usual during the latter part of the period of its eastern elongation, rapidly becomes very bright. In fact, during the next month it may be possible to observe Venus during the daytime. Try it! Observe also that its phase changes rapidly from "first quarter" to a slender crescent.
   (3) During the next month and a half, we have the best time of the whole year for seeing the Zodiacal Light in the west-north-western sky about an hour after sunset. Don't forget to look for it every clear night in February.

7. This is our calendar of upcoming meetings and the list of topics suggested for the presentations at the meetings:
   January 25, 1985 - 1) Hein VanAsperen: Determining Sunspot Latitudes.
   2) Murray Anderson: Completion of the table of Rocket Equations.

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February 8	Jocelyn Baily: Rocket Designs.
February 22	Martyn McConnell: SETI
March 8	Dr. Chou: A topic of his choosing, perhaps on Stellar Evolution
March 22	Leo Enright: A surprise topic
April 12	TO BE ANNOUNCED
April 26	TO BE ANNOUNCED
May 10	Peter Jedicke: The Planned Space Station (the annual Kingston-London Centre Exchange)
May 24	TO BE ANNOUNCED

The meetings begin at 8:00 p.m. and are in Room 222 in Ellis Hall on University Avenue in Kingston.

8. Our address is:

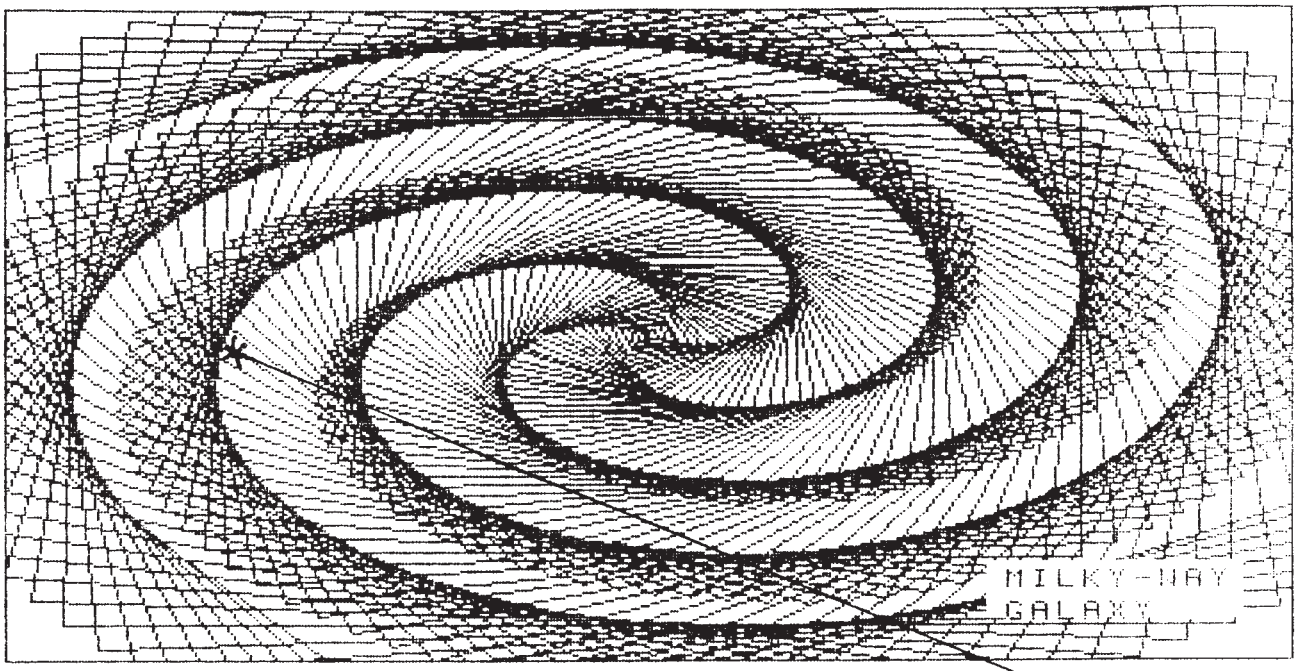
R.A.S.C. - Kingston Centre
P.O. Box 1793
Kingston, Ontario
K7L 5J6

We are happy to hear from our readers at any time.

Clear skies,

Good observing.

Leo Enright



THE RASC'S KINGSTON CENTRE IS HERE!

REGULUS

Ephemeris for Comet Levy-Rudenko (1984t)

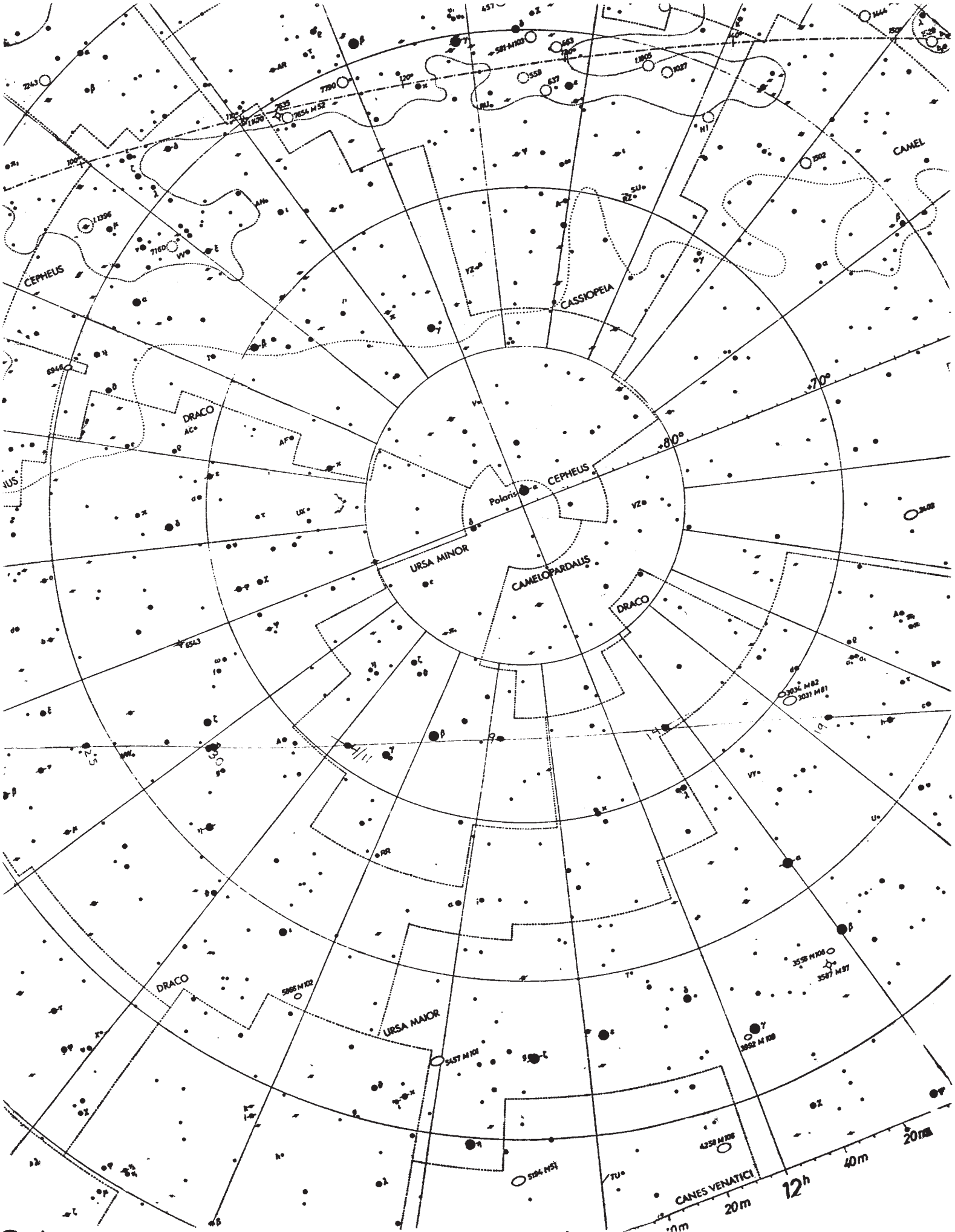
The following ephemeris if for 0hrs UT on the date indicated. The magnitude ephemeris should be treated as approximate an dused only as a guide in locating the comet. The elements were provided by the IAU Central Bureau. and by David Tholen. Ephemeris compiled by Jim Scotti (602) 621-2717 (Δ=Earth-Comet distance, r=Sun-Comet distance, T-Time of perihelion passage, q=perihelion distance, =argument of perihelion, Ω=longitude of the Ascending node, i-inclination - All distances are in AU, all angles are in degrees).

Parabolic Elements:

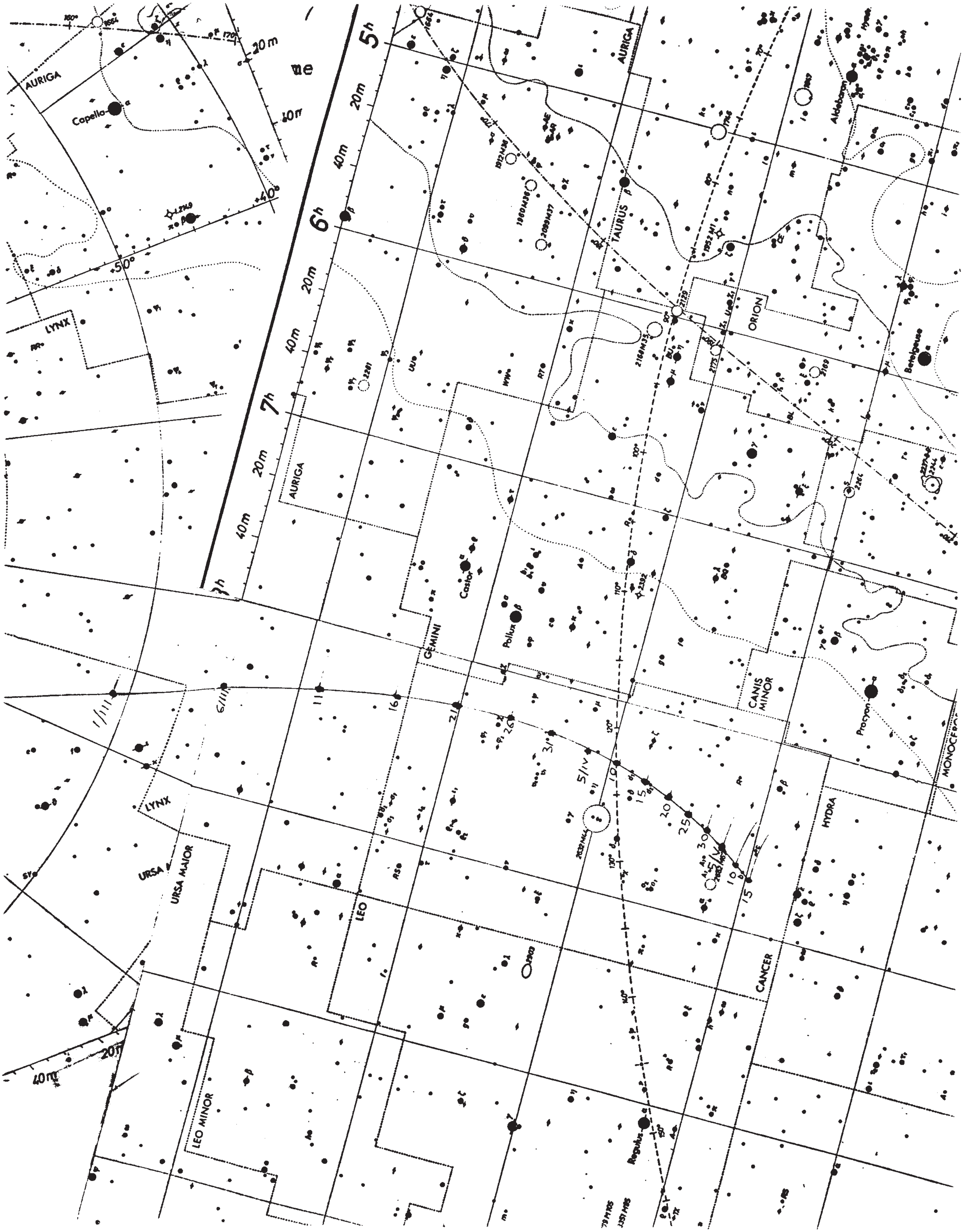
T = 1984 Dec 14.307 ω = 82.95083
Ω = 330.38747 1950.0
q = 0.9162483 AU i = 65.54611

UT DATE	α (1950) h	m	δ (1950) °	′	m	r	Δ
1984 Nov 11	18	49.1	+08	02			
1984 Nov 16	18	46.9	+10	43	9.5	1.045	1.147
1984 Nov 21	18	45.0	+13	24			
1984 Nov 26	18	43.1	+16	04	9.2	0.973	1.153
1984 Dec 1	18	41.0	+18	44			
1984 Dec 6	18	38.8	+21	25	9.0	0.928	1.133
1984 Dec 11	18	36.2	+24	08			
1984 Dec 16	18	33.3	+26	54	8.8	0.917	1.086
1984 Dec 21	18	30.0	+29	45			
1984 Dec 26	18	26.1	+32	43	8.8	0.940	1.013
1984 Dec 31	18	21.6	+35	54			
1985 Jan 5	18	16.2	+39	21	8.8	0.995	0.919
1985 Jan 10	18	09.5	+43	12			
1985 Jan 15	18	00.7	+47	35	8.8	1.074	0.814
1985 Jan 20	17	48.2	+52	38			
1985 Jan 25	17	29.1	+58	26	9.0	1.173	0.713
1985 Jan 30	16	56.4	+64	52			
1985 Feb 4	15	52.9	+71	18	9.1	1.283	0.641
1985 Feb 9	13	48.2	+75	21			
1985 Feb 14	11	16.5	+73	24	9.5	1.401	0.628
1985 Feb 19	09	46.3	+66	41			
1985 Feb 24	09	02.7	+58	44	10.0	1.524	0.696
1985 Mar 1	08	40.1	+51	10			
1985 Mar 6	08	27.6	+44	31	10.8	1.649	0.837
1985 Mar 11	08	20.5	+38	52			
1985 Mar 16	08	16.7	+34	08	11.6	1.776	1.029
1985 Mar 21	08	15.0	+30	10			
1985 Mar 26	08	14.8	+26	50	12.3	1.903	1.254
1985 Mar 31	08	15.6	+24	00			
1985 Apr 5	08	17.3	+21	34	13.0	2.030	1.498
1985 Apr 10	08	19.5	+19	28			
1985 Apr 15	08	22.2	+17	37	13.6	2.156	1.755
1985 Apr 20	08	25.3	+15	59			
1985 Apr 25	08	28.8	+14	31	14.1	2.281	2.018
1985 Apr 30	08	32.4	+13	11			
1985 May 5	08	36.3	+11	57	14.6	2.405	2.283
1985 May 10	08	40.3	+10	49			
1985 May 15	08	44.5	+09	45	15.1	2.528	2.548


20m
40m
CYGNUS
LACERTA
VULPECULA
DELPHINUS
AQUILA
SAGITTA
LYRA
HERCULES
SCUTUM
OPHIUCHUS
CORONA BOREALIS
BOO
Deneb
Vega
Altair



Ephemeris for Comet Levy-Rudenko (1984t)


AURIGA
Capella
LYNX
+40°
+50°
20m
40m
5h
6h
7h
TAURUS
ORION
Aldebaran
Betelgeuse
GEMINI
Castor
Pollux
CANIS MINOR
Procyon
HYDRA
CANCER
LEO
LEO MINOR
URSA MAIOR
Regulus
1/III
6/III
31/III
5/IV
5/V