BUFFALO ASTRONOMICAL ASSOCIATION INC.
BUFFALO MUSEUM OF SCIENCE
HUMBOLDT PARKWAY
BUFFALO NEW YORK 14211

the Spectrum

Editor:
Lawrence M. Carlino

JANUARY - FEBRUARY 1978

JANUARY MEETING: The January 13, 1978, meeting of the BAA will be held in the New Science Building Auditorium of the State University College at Buffalo (Buffalo State) beginning at 8:00 p.m. Speakers will be Dr. Jack Mack, Mr. Paul Schenk and Walt Whyman. Dr. Mack will discuss the possibility of Martian glaciers. Mr. Schenk will give excerpts from his recent paper on lunar crater ejecta. Walt Whyman will surprise us with one of his short talks on astronomical phenomena.

FEBRUARY MEETING: The February 10, 1978, meeting is tentatively scheduled to be held at the Buffalo Museum of Science beginning at 8:00 p.m. The rationale behind holding this meeting at the Museum is two-fold: It will provide us with an opportunity to view the Museum's newly renovated facilities, and it will enable us to peruse the BAA exhibit of members' astronomical photographs, drawings, and paintings. Any possible change in the location of this meeting will be announced at the January gathering. February's featured speaker will be Phil Cizdziel, who will report on his recent research in astronomy. An astronomy-related film of general interest will also be shown.

* * *

FOR SALE: 5-inch, F/4 richest field telescope on an altazimuth mounting as its main instrument, with an outside auxiliary pier which supports a 3.3 inch, F/12, equatorially mounted reflector. The telescope is now located at the Beaver Meadow Observatory. For further information, contact Mrs. Sheldon Black, Sprucelands, Java Center, New York 14082.

* * *

SPY and TELL

Bob Mayer has spent quite some time serving on the Grand Jury***

The Lindbergs' travelogue on Iceland was heard by a large, appreciative audience at the Lancaster Public Library***

Darwin Christy has purchased a 25 gallon kettle in which to make chowder, his favorite soup***

Fred Price spent Christmas in merry olde England, where he'll remain before returning to the Colonies at the end of January***

Bob Mayer will be speaking on Luxembourg on the Fairchild Travel Talks on Wednesday afternoon, March 1, 1978***

Jack and Jayne Mack are the proud parents of a baby daughter, Alice Virginia, born on November 11th***

Edith L. Geiger

BAA PROFILE

Darwin Christy

Darwin Christy, who was president of the B.A.A. for two terms, is a man of many interests and abilities. Born in Ripley, N.Y., his early years were spent as a typical boy in a small town. Summers found him picking cherries and grapes, and as a grape picker he developed a lasting fondness for "the grape".

In his youth, Darwin studied the piano for a short time, learning the fundamentals, but gave that up when he became interested in clarinet and saxophone. He played in the Ripley High School band, and also in a dance band where he was reputed to play "Star Dust" like Benny Goodman.

While still a student of 15, Darwin's father introduced him to photography, which led to his doing commercial work. He developed and printed films for customers while in high school. He went into studio work and became a professional photographer, opening Christy's Camera Obscura Service.

In February of 1941, Darwin entered the Air Force hoping to serve in some capacity as a photographer. He was sent to Chanute Field in Rantoul, Illinois, for his basic training, after which he went to Keesler Field in Biloxi, Mississippi. At this base he served as a cook for two and a helf years.

Then came a letter asking if Darwin still wished to become a photographer in the service. Of course he said, "yes", so he was sent to Lowry Field in Denver, Colorado, where he bacame a camera repairman and technician. He worked on GSAP (gun sight aiming point) cameras, which were used to confirm any kills by fighter planes, because they operated with the guns. He repaired field cameras: Graflex; aerial cameras like the T4, triangulation type cameras; the reconnaissance type cameras K-3B, K-20, K-17 and the Major's camera, a Leica 3B.

Darwin's name was finally put into the shipment overseas pool and he embarked from Camp Stoneman, California, to Tantauta Air Base near Meuma on the island of New Caledonia where he awaited his final assigned destination. He became a member of the 13th Air Force of the 7th Fighter Wing of the 18th Fighter Group of the 70th Fighter Squadron known as the "White Knights".

He was overseas almost two years, during which time he was stationed at San Sapore, New Guinea. His first assignment was the Invasion No. 1 in the Lingayen Gulf in West Luzon, the most northerly of the Philippine Islands. They went in D+1, which means that they were the second force to go in. Luckily there were no casualties. Then came the burning of Manilla, so they went on to San Jose, Mindoro, and Mindanao. The war finally came to an end, and Darwin came home.

He became employed by American Optical where he made handfitted microscopes. Darwin was with the company for two years when he decided to go to the Michigan Technical Institute in Detroit to study commerical and industrial electrical work.

Then for a short spell Darwin went to work at the General Electric Service Shop, rebuilding motors before he became employed by the Schlicker Organ Company. While at Schlicker he worked on the windchests and did the installation of organs as well as the voicing and tuning. It takes great skill to be a good organ tuner, and Darwin, who has a very fine, sensitive tuning ear, was a great asset to the company. While working with organs, he became acquainted with the great organ artists, Virgil Fox and the late E. Power Biggs, and with highly esteemed local organists, Squire Haskins and the late Roberta Bitgood. Darwin is fond of organ music, especially J. S. Bach, Buxtehude, Sweelink and Mendelssohn.

In 1953, Mr. Christy went to work at the Niagara Mohawk Power Company and will have been with them 25 years next March. He started out at the Huntley Station on River Road as an operation man, then went to the Dewey Avenue Station from whence he was sent out to paint steel towers. Darwin then passed a test that put him in the service department out on the road for 12 years. He worked in meter and testing for 10 years until he became a test specialist, so he now repairs field and station instruments mostly. In testing, he has worked with microamps from 1/(1,000,000) of an amp to 8000 amps, and with volts from 1/(1,000) of a volt to 450,000 volts.

During a period of five years, Mr. Christy went to evening classes at Erie Community College to study electronics, graduating with an A.A. degree.

Darwin became interested in astronomy when his son, Orrin, who was in high school at the time, received a gift certificate from Science Kit. Orrin was enthused over astronomy, so it was decided that the gift certificate would be used to get a 3" reflector kit. With this, Orrin and Darwin made their first telescope. The blank meter cover was a ½" piece of glass, 7" in diameter. The question then arose as to who was going to use the telescope when it was time for observing, so it became necessary to make another one. This was in 1959. From this beginning, interest in telescopes and astronomy mushroomed at the Christys.

Honeyhouse, the Christy's observatory, was built in 1962, and Darwin is now on his 14th telescope, a 12.5" reflector, the mirror of which is finished. Orrin has been very successful in the field of radio telescopes with Darwin helping him with the massive structures.

Since 1972, Mr. Christy has developed a new astronomical interest. He has become absorbed in the study of micrometeorites and meteors and has given many lectures on the subject. He made a tape on micrometeorites for educational TV in Canada, where it went on tour for nine months. Darwin has been a speaker on this subject before the NFCAAA (two times), Masters University Club (RASC), Lockport Astronomical Society, Elmira-Corning Astronomical Association and the B.A.A. He has also spoken on meteors at a meeting of the NFCAAA in Syracuse.

Besides being president of our B.A.A., he has been president of the NFCAAA, and vice-president and program chairman of the Lockport Astronomical Society. It was during Darwin's term as president of the B.A.A. that the Beaver Meadow Observatory became a reality.

His enthusiasm for the various astronomical organizations with which he is associated has been a great help in the furthering of astronomy in the area. Darwin's bubbling humor, friendly manner and sincerity have established for him a special place in the B.A.A. throughout the many years that he has worked so diligently for our organization.

Edith L. Geiger

* * *

CONDOLENCES

Our sincerest condolences to Mr. and Mrs. Ed Schmidt, members of the BAA, on the recent loss of Mrs. Schmidt's mother.

E.L.

* * *

VISIT TO A SMALL PLANET

Someday men will again venture into space, visiting the worlds of our solar system and beyond. Which objects will attract their earliest attention? Surely the Moon and then Mars. But what next? Venus seems right, but its high temperature and tremendous atmospheric pressure are formidable obstacles for our technology to surmount. Better candidates are Mercury or the asteroids where conditions are more moon-like, and we've proved we can go there. An asteroid like Ceres, the biggest of them all, may be our next stop beyond Mars. One can't help wondering what it would be like to visit a world so small. How would its size and location affect physical properties we've adjusted to here on Earth?

We can be confident so small a body could not hold an atmosphere and, at 2.77 astronomical units from the sun, it will be cold, around -160°F or colder. Even inhospitable Mars is cozy by comparison.

Ceres has an orbit nearly five times as eccentric as ours although less so than Mars'. Nonetheless, its great distance from the sun results in a larger excursion between aphelion and perihelion--nearly 40 million miles. Our own planet varies its distance from the sun by only 3 million miles. Ceres' orbit is more highly inclined to the ecliptic than any major planet other than Pluto. This 10 degree inclination causes the planetoid to travel up to 50 million miles above and below Earth's orbital plane.

How does the rest of the solar system look from this vantage point? A tiny sun, just over 1/3 its width as we see it, sheds about 1/8 the light and heat we enjoy. If we look sunward, we may glimpse a zero magnitude object swinging first to one side of the sun and then the other, never more distant from it than 23 degrees. With keen eyes, or with the help of a small telescope, we may see a faint object, nearly 5 magnitudes dimmer and up to 3 minutes of arc from it. Both undergo the phases we're so accustomed to seeing when we view Venus. This double is, of course, the Earth and its satellite. Remembering that hard-to-see Mercury is sometimes 28 degrees distant from the sun, we might wonder if our planet could be seen from Ceres at all. But Ceres has no atmosphere to scatter sunlight and obscure the heavens. With the sun set and Earth still above the horizon it, and perhaps its attendant, should stand out clearly against the blackness of space. Every 466 Earth days, these objects repeat their motion around the sun, a short time compared to Ceres' 1682 Earth day year.

Day follows night much faster on this small planet than on Earth because Ceres rotates in about 9 hours and 5 minutes. As a result, approximately 4443 days pass on Ceres from one New Years Day to the next. Our visitors will have to make some significant adjustments to their clocks, both external and internal, if they want to linger here.

What physical properties of this giant among asteroids would confront visitors? How big is it? It seems to be growing if one compares size estimates of a few years ago against recent determinations. Apparently Ceres, and many other asteroids, is darker than astronomers previously thought. Consequently, size estimates have increased and Ceres is now thought to be about 625 miles in diameter or just a bit less than 2000 miles around its circumference. Compared to Earth this sounds pretty small, yet when you realize its surface area exceeds one million square miles, Ceres seems more formidable than the telescopic dot we're accustomed to observe and then casually dismiss.

It's fairly safe to say that the cratering seen everywhere we've looked in the solar system will have scarred the surface of Ceres. If we stood on this surface, all five pounds of us, we would see a horizon about 0.8 miles away--not the 2.8 miles we know on Earth. Why 5 pounds? Well, Ceres has a gravitational attraction of about 1/30 Earth's. On Earth, objects fall 32 feet per second faster every second. On Ceres, each second speeds a falling object by only one foot per second. Drop something from eye level on Earth and in just over 1/2 second it strikes the ground. Do the same on Ceres and it takes more than 3 seconds for it to land. Think of that--tick-tock, tick-tock, tick-tock--and it lands.

Ceres could prove dangerous for the unwary. If you aimed a rifle just right, you could have the distinction of shooting yourself in the back of your head. Why? Because orbital velocity at Ceres' surface is roughly 1300 feet per second, about 1/20 what's needed on Earth to achieve orbit. The problem isn't too serious because more than two hours will elapse from the time you discharge the rifle until you have to duck. That's how long an object takes to travel around Ceres in minimum orbit.

Be careful not to aim your rifle straight up. If you do you may lose your bullet to interplanetary space because escape velocity from Ceres is only about 1800 feet per second. Earth's escape velocity is over 36,000 feet per second, or about 7 miles per second. If we ever visit this little world, we'll find we won't have to expend much effort to leave it for the return trip.

An anonymous BAA member

* * *

METEOR NOTES

On the 17th of January there are two meteor showers. The first and main shower are the Kappa Cygnids. These generally produce fireballs or bolides. It is a variable shower, producing from 5 hourly some years to upwards of 30 hourly in peak years. Their period is about five days around the 17th, with that date being maximum. The average magnitude of these meteors is -4, and some have been bright enough to cast shadows. The radiant is at RA 19h 40m, Dec. 53 degrees north.

The other shower is the Coma Berenicieds. It has been related to Comet 1913 I, but not much has been recorded about them. They could have been around for a few years and then just disappeared. While observing the Kappa Cygnids, one could record any sporadic meteors, which could be the Coma Berenicieds and would be a good subject for observation. No recorded average magnitude has been submitted, although sporadic meteors have been said to be magnitude 4 or better on these dates.

On February 9, the Aurigids (also known as the Alpha Aurigids) will show themselves. Although not much has been done with recording these meteors, about 12 hourly with an average magnitude of 3 is on record. I do not know how they consider this a major shower, but it is.

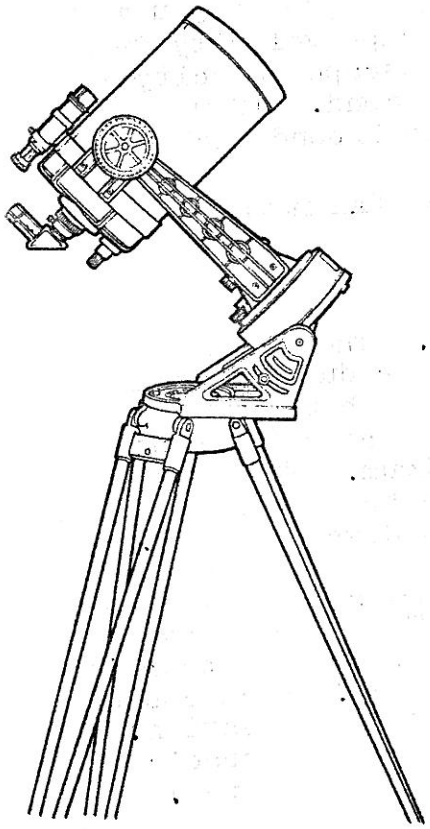
METEOR NOTES (cont'd)

The Orionid meteor shower of 1977... Anyone having seen this meteor shower this year would have been in for a treat. These slow, short-lived streaks of light were fantastic. Starting right after dusk, I was able to see only a few on October 20. Between 0200and 0300 hours on the 21st, I observed 52 having an average magnitude of about 3.5. Because of the city light factor, any meteor fainter than 4.5 would have been obliterated. If I had been able to observe away from city lights, I would probably have been able to observe four-fold the number I did observe.

Darwin Christy

***

SKY TEST * The Celestron 8



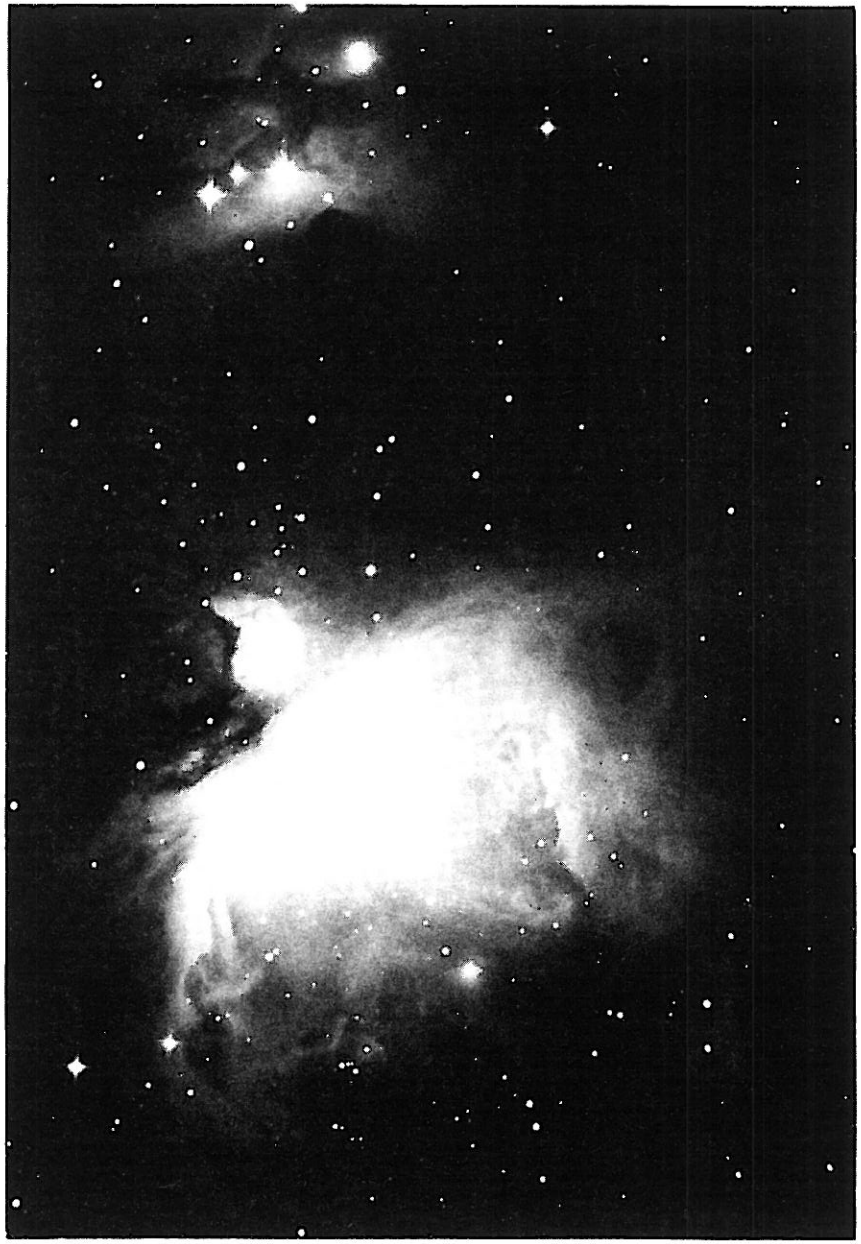
The Celestron 8, a much advertised and lauded instrument, is a compact 8-inch, F/10 Schmidt-Cassegrainian with an all-aluminum fork mount and dual motor clock drive system. Since its introduction in 1971, the C 8 has been progressively modernized and refined until it is perhaps the best bargain in a catadioptric instrument available today. I've owned one for about two years and have found it to be highly satisfactory in most respects.

Certainly, the optics of the C 8 are a fine example of what sophisticated (semi-mass production) optical fabrication techniques can accomplish. The C 8 optical system does indeed resolve double stats to Dawes' limit under good seeing conditions - the characteristic 60x per inch of aperture being fully usable. The planetary views it affords are excellent also: Jupiter's moons show as distinct discs, and some of the minor ring divisions and belt details of Saturn are also discernible. Detail on Mars is sharp and borders on being impressive at favorable apparitions.

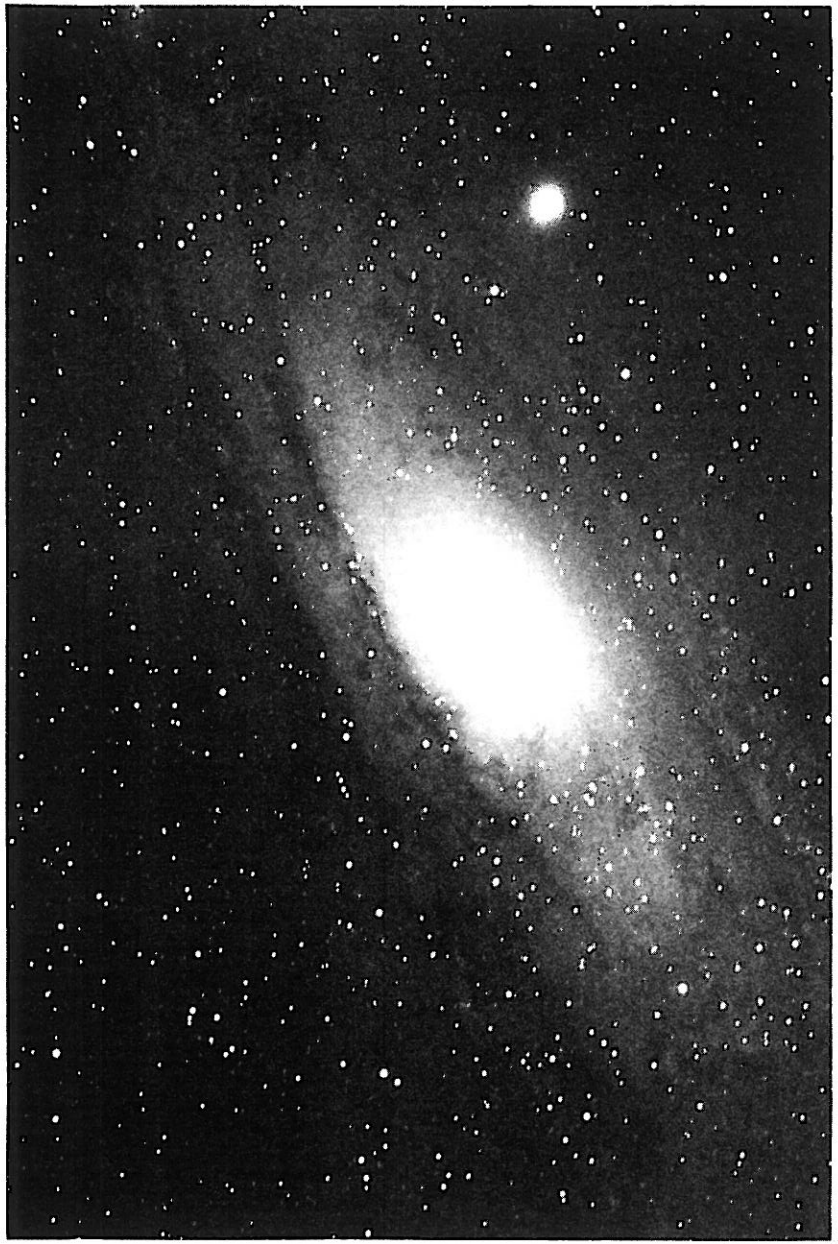
Still, a side-by-side comparison with a professionally-made Newtonian of equal aperture almost invariably shows the Newtonian to be superior, its contrast of planetary detail and sharpness of high-power stellar diffraction rings always a bit better. Perhaps the large secondary obstruction of the Celestron grants this advantage to the Newtonian, but the advantage is a small one indeed. Only the most critical of planetary observers would consider it significant.

On deep-sky objects, however, the C 8 is unbeatable. Its fully baffled mirrors and optical design combine to produce an amazingly dark field of view that pulls in faint objects with alacrity. Using a 20mm Erfle eyepiece at Beaver Meadow, the C 8 revealed the elusive Pluto, Uranus' moon Oberon, and showed subtle wisps in the Veil Nebula. M13 was spectacularly resolved, and the faint "dark" nebula Barnard 86 showed well without averted vision - very impressive, to say the least.

Mechanically too, the C 8 is excellent. The stability of the



THE GREAT NEBULA IN ORION by T. L. Dessert
30 min. exposure on 103aF film



ANDROMEDA GALAXY M31 & M 32 by Nancy Miess
30 min. exposure on 103aF film

(This is Mrs. Meiss' third astrophotograph!)

SKY TEST (cont'd)

fork mount, wedge and tripod combination is remarkable and quite sufficient for long-exposure astrophotography as well as for visual observing. Manual slow motions on both axes facilitate centering of objects - although the RA control is a bit coarse. The two-motor sidereal drive is smooth and accurate in its operation, and the setting circles provided are nicely readable.

There is no paucity of production and aftermarket accessories for the C 8, and one may easily run up a considerable price tag if too many are added. One absolutely necessary item, however, is a good dew cap (either purchased or home-made); without it, the C 8 dews over almost instantaneously on a humid night and renders the instrument useless.

My two years of C 8 ownership have found the 'scope to be great fun to use. It's rugged and reliable, and with its 48 pound fully mounted weight, highly portable. At its current list price of about $1200 (with wedge and tripod), it's certainly not inexpensive, but one can undoubtedly better this price by several hundred dollars by carefully shopping the many Celestron "dealers" who advertise in Sky and Telescope and Astronomy.

The C 8 is most certainly a very fine instrument, but only the potential user can determine whether its technical sophistication justifies its premium price.

L.M.C.

* * *

ASTROMATH

Question: What is the apparent visual magnitude of the sun seen at various distances from it?

Answer: Calculating from: $m = M - 5 + 5\left[\log\left(\frac{r}{3.262}\right)\right]$

where m = apparent magnitude
M = absolute magnitude
r = distance in light years

Looking at sun from	r in light years	apparent visual magnitude of the sun	
Mercury	6.12×10^{-6}	-28.8	M(absolute visual magnitude) for the sun = 4.79
Venus	1.143×10^{-5}	-27.5	
Earth	1.581×10^{-5}	-26.8	
Mars	2.41×10^{-5}	-25.9	
Jupiter	8.23×10^{-5}	-23.2	
Saturn	1.51×10^{-4}	-21.9	
Pluto	6.24×10^{-4}	-18.8	
Alpha Centauri (nearest star)	4.3	+0.4	
Regulus	85	6.9	
Antares	400	10.2	
Rigel	850	11.9	Mag. +23.1 is the approximate Palomar limit
M13	20,550	18.8	
M31	2,100,000	28.8	
Virgo cluster of galaxies	35,880,000	35.0	

Phil Cizdziel

IMPORTANT NOTICE !!!

If you have not paid your membership dues on or before Jan. 13, 1978, your name will be dropped from the membership list! Pay Edith Geiger in person or send your dues to her address: Box 23, Orchard Park, New York 14127. The current membership rates are as follows:

Regular membership - $7.50
Full-time student - $3.00
Senior citizen - $3.00
Family membership - $10.00

* * *

IN THE NEXT ISSUE . . .

- Darwin Christy explores the "Constellations of the Ancients"
- Phil Cizdziel again displays his ASTROMATH prowess
- We SKY TEST the Criterion Dynascope RV-6

* * *

The Buffalo Astronomical Association, Inc.
c/o Lawrence M. Carlino - Editor
453 Niagara Falls Blvd.
Buffalo, New York 14226

FIRST CLASS