



The WASP

MAY '76



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THE JOURNAL OF THE WARREN ASTRONOMICAL SOCIETY

THE WARREN ASTRONOMICAL SOCIETY PAPER (W.A.S.P.) IS PUBLISHED BY THE W.A.S., MONTHLY AS A PRIVILEGE OF MEMBERSHIP. THE W.A.S. IS ALSO A CAMPUS CLUB OF MACOMB COMMUNITY COLLEGE-SOUTH CAMPUS, WARREN MICH.



The Warren Astronomical Society (W.A.S.) is a local, nonprofit organization of amateur astronomers. Membership is open to all interested persons. Annual dues are as follows: Student K – 12 \$3.00, college \$5.00 ; Senior Citizens \$7.50; Individual \$10.00; Family \$15.00. Add \$6.00 for a one year subscription to Sky and Telescope magazine. Meetings of the Warren Astronomical Society are held on the first Wednesday and third Thursday of every month.

The Warren Astronomical Society Paper (W.A.S.P.) is published monthly, by and for the membership of the Warren Astronomical Society. Subscriptions and advertisements are free of charge to all members. Non-member subscriptions and advertisements are available upon arrangement with the editors of the W.A.S.P. Contributions, literary, artistic or otherwise, are always welcome and should be submitted to either of the editors.

| | | |
|-----------------|------------------|-----------------|
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The editors of the W.A.S.P. will exchange copies of this publication for other astronomy club publications on an even exchange basis. If your club would like to participate in such an exchange, please contact one of the above listed editors. The Warren Astronomical Society maintains contact, sometimes intermittent, with the following organizations:

THE ADAMS ASTRONOMICAL SOCIETY

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THE PEORIA STRONOMICAL SOCIETY

THE SAINT JOSEPH COUNTY ASTRONOMICAL SOCIETY

THE SUNSET ASTRONOMICAL SOCIETY

Other organizations are invited to join this list.

Club News...

MAY 5, Cranbrook meeting
MAY 14/15 Toledo Symposium
MAY 20, General Meeting

A.T.M. for the Frantic Fringe and Astronomy 1930 style will not be featured in this month's edition of the **W.A.S.P.**, Garry Boyd who conducts these departments will be on vacation, however they will appear in the next edition.

On April 16 Pete Kwentus will speak on Astrophotography at the Detroit Astronomical Society friday night workshop. All are invited to come, for details call Richard Lloyd at 837-7857.

Carl Noble is still open for nominations in this year's elections. The event will take place at the May general meeting, even though nominations will be open on the floor, it's best to submit them now. Contact Carl at 573-0937-

The Editors apologize to Don Rosenfield for misprinting his name in the April issue. Don is a new member and I understand he teaches Astronomy.

In last month's **W.A.S.P.** we featured an Astronomical Concept in the Club News. It was the basics of Kepler's law of areas. From this Kepler derived the general Equation of Orbital Speed. By short analysis, Figure A represents the elliptical orbit of a planet, B represents a small part of the planet's path around perihelion.

Will Sell, Trade or Swap

Excellent 6"/8 mirror $\frac{1}{4}$ wave, Grinding Pedestal and Fixtures (4" - 12")
Edmund finder scope, 23mm - 6x. Wanted: a good 6"/5 or F/6. Contact
Lou Faix 781-3338



NAKED CAME THE TELESCOPE

NOTE: Due to nauseating subject matter, reader discretion is advised.

Well, here it is, guys! Another famous Dobrzelewski confession. With crayon in hand, I now venture back into the depths of time, and dig out my first (official) star log, Volume One. Names have not been changed because I don't give chicken feathers about the innocent!

'Old Betsy' was dying. She was faithful, faithful right up to the last minute. I came in to see her the night she passed on. She had a sad, somber air about her. Yet beneath the corroded tube and the scratched and worn objective, burned a flare of jealousy and regret.

I knew that she knew. It was inevitable; Another telescope! Betsy'd been ailing for some time, first a tripod failure, then her eyepieces went bad. I couldn't let her know I was thinking about another...forget it. Then it happened. I took her out one night, thinking we could have just one more row of it, and ..and ... (sob).. goodbye, Betsy. We were gonna have some fun that night!

But then I soon got over it. It couldn't have been a month, one lousy month! And there she was, standing there, all (CENSORED). She was bigger than Betsy, a whole FOUR INCHES bigger!

I thought I'd call her ...Luke! That's it! Luke! Luke and I really got to know each other ...a lot! ...a whole lot. But I was somewhat leery of her, maybe she wouldn't be as faithful as old, oh ..what's-her-name. But as it turned out, everything worked out okay. I took her out every night I could, and always had a riot. And then came Cumulus the Kid. Oh, my God!!

Cumulus (still, for that matter), the most hated, most dreaded, most wanted outlaw in these parts! And, unfortunately, he was Luke's old boyfriend!

NAKED CAME THE TELESCOPE (continued)

He came striding into town, FURIOUS! I remember the first night we met. There we were, Luke and I, out behind the garage (never mind, now!) when all of a sudden, all of the other observers started packing up their sweethearts, and going in. I couldn't figure it out! Everyone was going into hiding! Then I saw Cumulus. He came walking through ever so casual and slow, looking the town over, as hundreds of town folk scurried in a frenzy, searching for safety.

Then he saw me (with her)! A stare of utter shock leered from his fierce face, and then it dissolved into a hideous and intimidating grin. But then he saw the ring. He was too late! I had already taken her objective in holy matrimony. A flash of anger lashed out from him. He turned and stormed off. Later, he let out a threat (he called it a promise) in a thundering voice.

But that was to be only our first encounter. From that night on, he and his ol' gang of desperadoes, the Winter brothers, would come riding into town, almost every night to harass us, and every other observing couple in town. Oh, how I wished that the sheriff, Sonny Eliot (would you believe) would send out a posse after 'em, but one couldn't depend on him! Some days, he'd tell the town folk that Cumulus wouldn't be ridin' into town tonight, he's out robbing the observatories (the scoundrel!), but half the time he was wrong, Cumulus did come!

Sheriff Eliot always liked to blame his deputy, who was always spying on Cumulus for him, but I knew better! And just when I figured that Cumulus would forget about Luke, hearsay had it that he returned in a fit of anger. The story had it that the Winter mob was thrown in jail, he thought Luke and I were to blame. The story went that he was looking for his big brother, Cumulonimbus to come in and tear up the town till he had his way!

NAKED CAME THE TELESCOPE (not over yet!)

After all this fighting, I hated to tell Luke, but the battle wasn't worth it. Actually , I had the hots for this cute 24-incher over in Moo-U City, but I'd save her for next year. (don't let Luke know that !).

Why did I write this grotesque little tale? Hopefully, I hope to have gotten across a very real problem to Detroit area astronomers: CLOUDS!!! Although I realize that they are nothing new to any of you, I just thought that this article would come in handy on those nights when a cloud-out has you a bit perturbed (as you have mangled a screw driver into a pretzel shape) to remind ,you that I too, like everyone else, have my cloud-outs.

And one last note, a moral: Be faithful to your Luke , or else she may run off with a clock drive!

THE SUN ---1976

Dr. Helen Dodson Prince, Associate Director of the McMath-Hulbert Observatory and Professor of Astronomy at the U. of M., will present a program entitled "The Sun--1976" on Friday, April 30 at 8:00 p.m.

Slides and films will be used to illustrate the many forms of Changing solar phenomena in 1976. Solar-terrestrial relationships will also be considered.

Since seating is limited, please return the completed form below promptly if you wish to attend. If you cannot attend, you can still make the tax-deductable donation to the William Schultz Memorial Fund.

Make checks payable to Cranbrook Institute of Science and return to:

William Schultz. Jr. Memorial Fund
Cranbrook Institute of Science
500 Lone Pine Road
Bloomfield Hills, MI 48013

I am enclosing \$_____ for _____ reservations for the lecture.

Enclosed is an additional donation of \$_____ for the memorial fund.

I will be unable to attend but wish to donate \$_____ to the memorial fund.

Note: All donations are tax-deductible.

Name_____

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CRANBROOK INSTITUTE OF SCIENCE

William Schultz, Jr. Memorial Lecture

FRIDAY, APRIL 30, 1976

Dr. Helen Dodson Prince

McMath - Hulbert Observatory

PART III: IN THE BEGINNING

by: Frank R. McCullough

Well, I had now gone to a W.A.S. meeting and was about to participate in one of their first "quarter moon camp-outs." Dave and I got there on a Friday, and Mr. and Mrs. Alyea arrived later that evening. Mr. Alyea set up what I believe was an 8" telescope. What a monstrosity compared to my 4½" reflector! It looked like a giant cannon. I thought to myself how some day I would like to have a telescope of that size. Back then, that was one of the biggest telescopes owned by one of our club members. Now that I finally reached the big time, I have my 8" telescope, and now my fellow club members own 16", 14½", 10", 8", Cassegrains, etc. (Show offs!)

That evening I remember a still, calm, dewy, night, with the frogs and crickets chirping, when a friendly woman's voice broke the evening air. A beam of light from her flashlight funneled into the dewy night as she outlined Cygnus the Swan, and showed a young group of kids the constellation. I remember her mentioning the star marking the head of the Swan as Albireo, and that this star was actually a blue and gold double star in a telescope. Mr. Alyea, the woman's husband, now was showing people the double star in his telescope. I ran over and had to see if the heavens actually could display color. When it was my turn, I saw, like two jewels, one blue and one gold, and said to myself, "There really is color!" He then showed us M-13, the globular cluster in Hercules, and M-57, the Ring Nebula in Lyra.

After I saw each object in his telescope, I ran to my 4½" to see if I could find them. Albireo - success! M-13 ... sweep, sweep, sweep ... wait a second, go back, yes - there it was at 45x, a hazy fuzz ball, not as spectacular as through his 8", but none the less, I had found my first Messier object. M-57 gave me much difficulty, that small donut hovering in his eyepiece. If I could not find it in my scope, I would throw the thing in the lake. If I could not see these amazing objects other amateurs were seeing, then I would not settle for second rank observing. My eye ached, my neck ached, and my telescope was starting to give me an ache someplace else. Poor Dave Atnip found Albireo, but could not find M-13. I stopped and found it in his 2" refractor. The thing that amazed me most was the faintness of M-13 in his scope compared to mine, and how much greyer the companion of Albireo appeared in his scope as compared to mine.

I wiped the dew off my finder and tried again to find the Ring Nebula. Then out of the black sky popped what I thought appeared to be my elusive object. Carefully, with the slow motion cables, I backtracked and there it was, fairly bright. I was so excited and called Dave over to look. I finally felt like calling myself an amateur astronomer. The thing I remember most was not knowing when to say I was an amateur astronomer, and not feeling guilty about it. How much did I have to know and what did I have to do? Dave, I'm sorry to say, lost many a clear evening with his refractor because of dew, and such was the case on our first camp-out.

We hit the hay that night, told a few jokes, wrapped the sleeping bags around us and listened to the evening's song. Quiet, peaceful, eerie, mysterious, but away from everything, and above our tent was that beautiful star studded sky, which revealed so much excitement this evening. I hoped the next night would be clear!

The next morning we cleaned up under ice cold water, cooked Spam and eggs, and did a little fishing. As the afternoon wore on, more cars showed up, always waiting for someone else with a telescope to arrive. We left our telescopes set-up, hoping to draw these W.A.S. members in our area. Mr. and Mrs. Alyea were on the north side of our mountain with their trailer. Finally a car pulled up next to our tent. The man had a telescope and he pitched his tent next to ours. Then another car came, a tent, a telescope. Everyone came on our side of the mountain, except for a couple of people.

We had a kick-ball match with Martin Butley and Gene Francis, friends who would never be duplicated, as we smashed line-shots into the side of our tents. A baseball game was planned and after that, another marathon game, when we were whipped and exhausted.

I remember Mrs. Alyea coming over to talk to Martin and Gene, as she looked at my shirtless body. She said I was as red as a beet and had better put a shirt on. So as she mildly continued to chew me out for letting myself roast that long, she rubbed on this white goo which felt like ice on my "burnt bodd!" I hardly knew the lady, and I guessed maybe I was a little embarrassed that she pampered me like that, yet I thought also it was pretty damn nice of her to do that. I told her thank you, and she went her way and me mine.

As the sun got low in the sky, everyone started to get scopes ready, then the mosquitoes came. We who played our marathon games walked around like human salt licks, and like something out of the movie, "The Birds", the "Mosquitoes" buzzed, landed, and sampled our blood. The hissing of "OFF" broke the late afternoon air and the clouds moved in. The moon and Jupiter were viewed briefly, but not many scopes were to be seen manned. Sleep was the only thing anyone had on their minds. I know I slept like a rock. Why? Probably because I took the afternoon for granite! (A little "rock joke" there, I couldn't resist).

Well, I know I was quite sad to see the week-end come to an end, but Dave and I said we would return again, and we would as Part IV will show you next month.

* * * *

FRIDAY, APRIL 23, 1976 - MESSER CONTEST AT STARGATE OBSERVATORY

1st, 2nd, and 3rd place certificates and prizes presented at next general meeting, May 20th. Rules and regulations to be announced at April general meeting.

NO RFT's or telescopes less than f/6 or fields of more than 1 degree.

Judge will check all instruments before beginning of contest.

FOR MORE INFORMATION call 791-8752.

- Frank McCullough

THE SEARCH FOR LIFE ON OTHER PLANETS

submitted by Doug Lanier

As we - the inhabitants of the planet earth - search for life on the moon, the other planets in our solar system and even into interstellar space, there may be an intelligent form of life looking at us. What theories have these beings formed about life on the planet earth? The following article is one possibility:

FROM MARS: A Report on Earth

by Arthur C. Clarke

from the May, 1959, issue of HOLIDAY

From: Chief cryptographer, Base Camp III, Syrtis Major, Mars.

To: Headquarters, Interplanetary Archaeological Commission,
Rome, Italy, Earth.

The following document is one of the most remarkable that our expedition has yet deciphered, and throws a vivid light upon the mental processes and scientific attainments of our vanished neighbors. It dates from the late Uranium (that is, final) Age of the Martian civilization, and was thus written a little more than a thousand years before the birth of Christ.

The translation is believed to be reasonably accurate, though a few conjectural passages have been indicated, and some notes of explanation added in brackets. When necessary, Martian terms and units have been converted into their terrestrial equivalents for ease of understanding.

The recent close approach of Planet Three, the earth, has once again revived speculations about the possibility of life upon our nearest neighbor in space. This is a question which has been debated for centuries, without conclusive results. In the last few years, however, the development of new astronomical instruments has given us much more accurate information about the other planets. Though we cannot yet confirm or deny the existence of terrestrial life, we now have a much more precise knowledge of conditions on earth, and can base our discussions on a firm scientific foundation.

One of the most tantalizing things about earth is that we cannot see it when it is closest, since it is then between us and the sun and its dark side is therefore toward us. We have to wait until the earth is a morning or evening star, and thus a hundred million or more miles away from us, before we can see much of its illuminated surface. In the telescope, it then appears as a brilliant crescent, with its single giant moon hanging beside it. The contrast in color between the two bodies is striking: the moon is a pure silvery-white, but the earth is a sickly blue-green. (The exact force of the latter adjective is uncertain; it is definitely unflattering. "Hideous" and "virulent" have been suggested as alternatives. - Translator.)

As the earth turns on its axis -- its day is just half an hour shorter than ours -- different areas of the planet swing out of darkness and appear on the illuminated crescent. By carrying out observations over a period of weeks, it is possible to construct maps of the entire surface, and these have revealed the astonishing fact that almost three quarters of the planet earth is covered with liquid.

Despite the violent controversy which has raged over this matter for some centuries, there is no longer any reasonable doubt that this liquid is water. Rare though water now is upon Mars, we have good evidence that in the remote past much of our planet was submerged beneath vast quantities of this peculiar compound; it appears, therefore, that earth is in a state corresponding to our own world several billion years ago. We have no way of telling how deep the terrestrial "oceans" -- to give them their scientific name -- may be, but some astronomers have suggested that they may be thousands of feet in thickness.

Planet Three also has a much more abundant atmosphere than ours; calculations indicate that it is at least ten times as dense. Until quite recently we had no way of guessing the composition of that atmosphere, but the spectroscope has now solved this problem, with surprising results. The thick gaseous envelope surrounding the earth contains large amounts of the poisonous and very reactive element oxygen, of which scarcely a trace exists in our own air. Earth's atmosphere also holds considerable quantities of nitrogen and water vapor; the latter forms huge clouds, often persisting for many days and obscuring large areas of the planet.

Since it is nearer the sun than Mars, earth is at a considerably higher temperature than our world. Readings taken by thermocouples attached to our largest telescopes reveal intolerable temperatures on its equator; at higher latitudes, however, conditions are much less extreme and the presence of extensive ice caps indicates that temperatures at both Poles are often quite comfortable. These polar icecaps never melt completely, as ours often do during the summer, so they must be of immense thickness.

Earth is a much larger planet than Mars (having almost twice our diameter) and its gravity is a good deal more powerful. It is, indeed, no less than three times as great, so that a 170-pound Martian would weigh a quarter of a ton on earth. This high gravity must have many important consequences, not all of which we can foresee. It would rule out any large forms of life, since they would be crushed under their own weight. It is something of a paradox, however, that earth possesses mountains far higher than any that exist on Mars; this is probably another proof that it is a young and primitive planet, whose original surface features have not yet eroded away.

Looking at these well-established facts, we can now weigh up the prospects for life on earth. It must be said at once that they appear extremely poor; however, let us be open-minded and prepared to accept even the most unlikely possibilities, as long as they do not conflict with scientific laws.

The first great objection to terrestrial life -- which many experts consider conclusive -- is the intensely poisonous atmosphere. The presence of such large quantities of gaseous oxygen poses a major scientific problem, which we are still far from solving. Oxygen is so reactive that it cannot normally exist in the free state; on our own planet, for example, it is combined with iron to form the beautiful red deserts that cover so much of Mars. It is the absence of these areas which give earth its unpleasant greenish hue.

Some unknown process must be taking place on earth which liberates immense quantities of this gas. Certain speculative writers have suggested that terrestrial life forms may actually release oxygen during the course of their metabolism. Before we dismiss this idea as being too fanciful, it is worth noting that several primitive and now extinct forms of Martian vegetation did precisely this.

Nevertheless, it is very hard to believe that plants of this type can exist on earth in the inconceivably vast quantities which would be needed to provide so much free oxygen. (We know better, of course. All the earth's oxygen is a byproduct of

vegetation; our planet's original atmosphere, like that of Mars-today, was oxygen-free.-Translator.) Even if we assume creatures exist on earth that can survive in so poisonous and chemically reactive an atmosphere, the presence of these immense amounts of oxygen has two other effects. The first is rather subtle, and has only recently been discovered by a brilliant piece of theoretical research, now fully confirmed by observations.

It appears that at an altitude of twenty to thirty miles in the earth's atmosphere, the oxygen forms a gas known as ozone, containing three atoms of oxygen as compared with the normal molecule's two. This gas, though it exists in very small quantities so far from the ground, has an overwhelming important effect upon terrestrial conditions. It almost completely blocks the ultraviolet rays from the sun, preventing them from reaching the surface of the planet.

This fact alone would make it impossible for the life forms we know to exist on earth. The sun's ultraviolet radiation, which reaches the surface of Mars almost unhindered, is essential to our well-being and provides our bodies with much of their energy. Even if we could withstand the corrosive atmosphere of earth, we should soon perish owing to this lack of vital radiation.

The second result of the high oxygen concentration is even more catastrophic. It involves a terrifying phenomenon, fortunately known only in the laboratory, which scientists have christened "fire". Many ordinary substances, when immersed in an atmosphere like that of earth's and heated to quite modest temperatures, begin a violent and continuous chemical reaction which does not cease until they are completely consumed.

During the process, intolerable quantities of heat and light are generated, together with clouds of noxious gases. Those who have witnessed this phenomenon under controlled laboratory conditions describe it as awe-inspiring; it is certainly fortunate for us that it can never occur on Mars.

Yet fire must be quite common on earth, and no possible form of life could exist in its presence. Observations of the night side of earth have often revealed bright glowing areas where fire is raging; even though some students of the planet have tried, optimistically, to explain these glows as the lights of cities, this theory must be rejected. The glowing regions are much too variable; with few exceptions, they are quite short-lived, and they are not fixed in location.

(These observations were doubtless due to forest fires and to volcanoes, the latter unknown on Mars. It is a tragic irony that had the Martian astronomers survived for only a few more thousand years, they would have seen the lights of man's cities: We missed each other in time by less than a millionth of the age of our planets -- Translator.)

Its dense, moisture-laden atmosphere, high gravity, and closeness to the sun make earth a world of violent climatic extremes. Storms of unimaginable intensity have been observed raging over vast areas of Planet Three, some of them accompanied by spectacular electrical disturbances, easily detected by sensitive radio receivers here on Mars. It is hard, to believe that any form of life could withstand these natural convulsions, from which the planet is seldom completely free.

Although the range of temperatures between the terrestrial winter and summer is not as great as on our world, this is slight compensation for other handicaps. On Mars, all mobile life forms can easily escape the winter migration. There are no mountains or seas to bar the way; the small size of our world -- as compared with earth -- and the greater length of the year make seasonal movements a simple matter, requiring an

average speed of only some ten miles a day, there is no need for us to endure the winter, and few Martian creatures do so.

It must be quite otherwise on earth. The sheer size of the planet, coupled with the shortness of the year (which lasts only about six of our months) means that any terrestrial beings would have to migrate at a speed of about fifty miles a day in order to escape from the rigors of winter. Even if such a rate could be achieved (and the powerful gravity makes this appear most unlikely) mountains and oceans would create insuperable barriers.

Some writers of "science fiction" have tried to get over this difficulty by suggesting that life forms capable of aerial locomotion may have evolved on earth. In support of this rather far-fetched idea they argue that the dense atmosphere would make flying relatively easy; however, they gloss over the fact that the high gravity would have just the reverse effect. The conception of flying animals, though a charming one, is not taken seriously by any competent Martian biologist.

More firmly based, however, is the theory that if any terrestrial animals exist, they will be found in the extensive oceans which cover so much of the planet. It is believed that life on our world originally evolved in the ancient Martian seas, so there is nothing at all fantastic about this idea. In the oceans, moreover, the animals of earth would no longer have to fight the fierce gravity of their planet. Strange though it is for us to imagine creatures which could live in water, it would seem that the seas of earth may provide a less hostile environment than the land.

This interesting idea has received a setback quite recently through the work of our mathematical physicists. Earth, as is well known, has a single enormous moon, which must be one of the most conspicuous objects in its sky. It is more than two hundred times the diameter even of Phobos, the larger of our two satellites, and its attraction must produce powerful effects on the planet beneath it. In particular, what are known as "tidal forces" must cause great movements in the waters of the terrestrial oceans, making them rise and fall through distances of many feet.

As a result, all low-lying areas of the earth must be subjected to flooding twice daily; in such conditions, it is difficult to believe that any creatures could exist either inland or sea, since the two would be constantly interchanging.

To sum up, therefore, it appears that our neighbor earth is a forbidding world of raw, violent energies, certainly quite unfitted for any type of life which now exists on Mars. That some form of vegetation may flourish beneath that rain-burdened, storm-tossed atmosphere is quite possible; indeed, many Martian astronomers claimed to have detected color changes in certain areas which they attribute to the seasonal growth of plants.

As to the existence of animals on earth, this is pure speculation, all the evidence being against them. If they exist at all, they must be extremely powerful and massively built to resist the high gravity, probably possessing many pairs of legs and capable only of slow movement. Their clumsy bodies must be covered with thick armor to shield them from the many dangers they must face, such as storms, fire and the corrosive atmosphere. In view of these facts, the question of intelligent life on earth must be regarded as settled. We must resign ourselves to the idea that we Martians are the only rational beings in the solar system.

For those romantics who still hope for a more optimistic answer, it may not be long before Planet Three reveals its last secrets to us. Current work on rocket propulsion has shown that it is quite possible to build a space craft which can escape from Mars and head across the cosmic gulf toward our mysterious neighbor. Through its

powerful gravity would preclude a landing (except by radio controlled robot vehicles) we could orbit earth at a low altitude and thus observe every detail of its surface from only a few millionths of our present distance.

Now that we have at last released the limitless energy of the atomic nucleus, we may soon use this tremendous new power to escape the bonds of our native world. Earth and its giant satellite, the moon, will be merely the first celestial bodies our future explorers will survey. Beyond them lie ...

(Unfortunately the manuscript ends here. The remainder has been charred beyond decipherment, apparently by the thermonuclear blast that destroyed the Imperial Library, together with the rest of Oasis City. It is a curious coincidence that the missile which ended Martian civilization were launched at a classic moment in human history. Forty million miles away, with slightly less advanced weapons, the Greeks were storming Troy. -- Translator.)

THE END

SEVENTH ANNUAL GREAT LAKES ASTRONOMICAL SYMPOSIUM

May 14 and 15, 1976

Toledo, Ohio

Keynote Speaker, DR. FRANK K. EDMONDSON, Director,
Goethe Lick Observatory, Department of Astronomy,
Indiana University. "EXPLORING THE MILKY WAY"

Submitted papers and reports are due by May 7.

A \$50 and a \$25 award for the two best amateur
astronomical instruments displayed.

FOR MORE INFORMATION, write to

Mark Goforth
Adams Astronomical Society
Rogers High School
5539 Nebraska Avenue
Toledo, Ohio 43615

SPIRIT

by John Denver and Joe Henry

His spirit joined and so was formed
Ten thousand years ago
Between the swan and Hercules
Where even dark clouds glow

To live with grace, to ride the swell
To yet be strong of will
To love the wind, to learn its song
And empty space to fill

Apollo taught me to rhyme
Orpheus taught me to play
Andromeda cast down her sign
And Vega lights my way

Smoke rings in a galaxy
An endless flight through time
Lyra gave her harp to him
And left him free to climb

A winter's journey from the moon
To reach the summer sun
To rise again, to sing for you
A song that's yet unsung

Apollo taught me to rhyme
Orpheus taught me to play
Andromeda- cast down her sign
And Vega lights my way

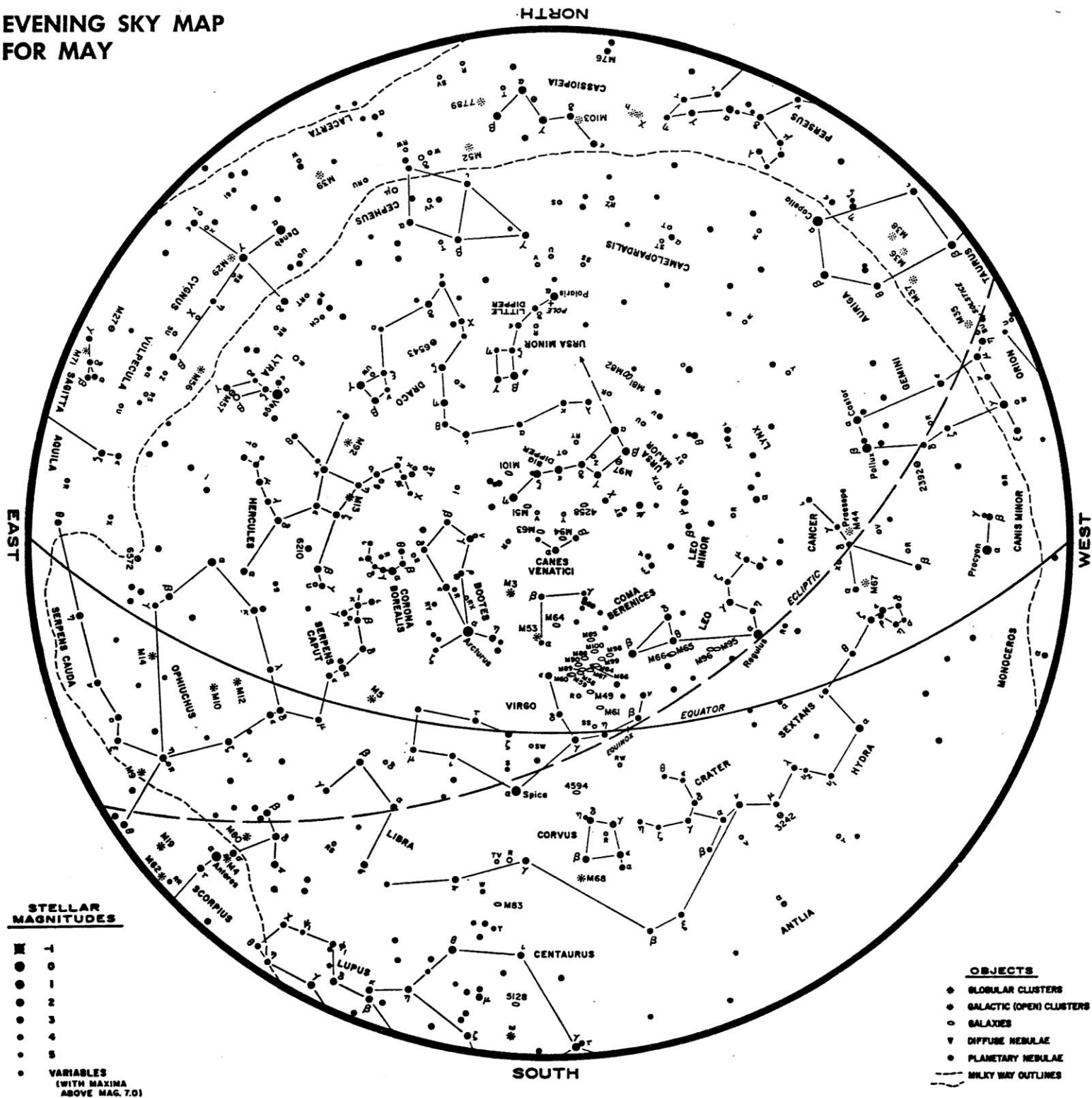
His spirit joined and so was formed
Ten thousand years ago
Between the swan and Hercules
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To live with grace, to ride the swell
To yet he strong of will
To love the wind, to learn her song
And empty space to fill

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(ASCAP)

Submitted by
Doug Lanier

EVENING SKY MAP FOR MAY



May 1, 10:30 p.m.

EVENING SKY MAP FOR MAY
May 15, 9:30 p.m.
(Local Time)

May 31, 8:30 p.m.

THE EVENING SKIES FOR MAY



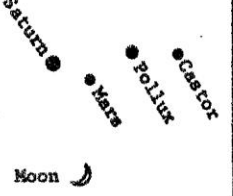
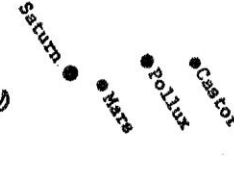


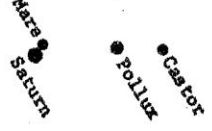

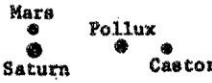


May offers a bright array of glittering constellations, with the promise of more to come. Beginning with the Dipper, now at the zenith in early evening, and tracing its handle eastward to Arcturus, we find Bootes, then Corona and Hercules. Finally, flashing Vega low in the northeastern hazes, rising higher as the evening passes, and then an early glimpse of Cygnus, the Northern Cross. A lovely time of the year under the stars.

Charts drawn for
Review of Popular Astronomy
by George Lovi

SKY CALENDAR MAY 1976

Information for helping teachers and students observe the sky

Magnitudes of the planets: Jupiter -1.6; Saturn +0.4 to +0.5; Mars +1.5 to +1.7. Mercury: May 1 +0.9; May 6 +1.5. Motions of planets against star background: Mars and Saturn both move eastward from Gemini into Cancer. Mars shifts 17° this month, passing Pollux, Saturn, and the Beehive (see observing activity on separate sheet). Saturn shifts 2.5°.

| SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|--|--|---|---|--|---|---|
| <p>Evening Planets: Saturn and Mars are well up in the western sky at dusk, to the left of Castor and Pollux, the "twin" stars of Gemini. Of these four objects, Saturn is clearly the brightest. At midmonth a line from Castor through Pollux extended 8° to the left points to Saturn. Try to detect changes in this alignment during May. Mars is a close match in brightness to Castor, the fainter twin, but is very different in color. From each night to the next, Mars shifts eastward slightly more than half a degree; in a few nights its change in position will be obvious. Watch the changing configuration formed by Saturn, Mars, Pollux, and Castor this month (see date blocks). Mars-Saturn are 5° apart May 1, 1.3° on May 11 and 12, and 9° on May 31.</p> | | | <p>Mercury is visible in evening sky first few nights in May (see May 1, 3, 6). The planet fades quickly, passing between earth and sun May 30. Morning Planet: Jupiter emerges by May 31, rising in ENE 1 1/4 hrs before sun. See May 26.</p> | <p>The Stars as a Calendar: On the dates at right, the "indicator star" sets as twilight ends from lat 40° N. Look each clear night. You should be able to keep track of each star until a few days after tabulated date.</p> | <p>DATE INDICATOR STAR</p> <p>Apr 25 Rigel</p> <p>May 4 Aldebaran</p> <p>May 6 Sirius</p> <p>May 12 Betelgeuse</p> <p>May 30 Procyon</p> | <p>1 hour after sunset (face WNW): Mercury 11° lower right of Aldebaran.</p>  |
| <p>2 Tonight and tomorrow night Mars appears closest to Pollux, 4.9° to lower left of that star. For comparison, Castor is 4.5° to right of Pollux. The next time Mars passes Pollux will be in October 1977.</p> | <p>3 1 hour after sunset (face WNW): Mercury 11° lower right of Aldebaran.</p>  | <p>4 1 hour after sunset (face west):</p>  | <p>5 1 hour after sunset:</p>  | <p>6 First Quarter (half moon in evening sky). 1 hour after sunset: Mercury 10° lower right of Aldebaran (last chance to see them?)</p>  | <p>7 1 hour after sunset (high SSW):</p> <p>Regulus</p> <p>Moon tonight</p> <p>Tomorrow night</p> | <p>8 Tonight and tomorrow night Mars is about 6° from Pollux and 2° from Saturn. All of next week Mars will be within 2° of Saturn. Observe each night, and watch Mars pass Saturn.</p> |
| <p>9 1 hour after sunset (face west):</p>  | <p>10 1 hour after sunset: Face SE.</p> <p>Moon tonight</p> <p>Spica</p> <p>Tomorrow night</p> | <p>11 Tonight and tomorrow night Mars and Saturn appear closest, 1.3° apart. This event is the only conjunction of planets visible in a dark sky in 1976. The next Mars-Saturn conjunction will occur in June 1978.</p> | <p>12 1 hour after sunset:</p>  | <p>13 Full Moon rises tonight within 15 min after sun sets. Observe from place with unobstructed view toward WNW and ESE. Note moon's color and flattened shape just as it rises.</p> | <p>14 Tonight moon rises in ESE about 1 1/4 hrs after sunset. An hour later:</p>  | <p>15 1 hour after sunset:</p>  |
| <p>16 This week moon rises late enough to allow dark skies during evening hours. But in mid-May the Milky Way is poorly placed: It coincides with horizon 2 hours after sunset.</p> | <p>17 After twilight ends, locate these star clusters: Coma Berenices (the hair of Berenice) and the Beehive. Use binoculars.</p> | <p>18 As twilight ends, Procyon is 12° above horizon in west (look 23° lower left of Pollux). By May 31, Procyon will set before end of twilight. On what date will you last see it?</p> | <p>19 Remember seeing the Pleiades until late April? That cluster is now on far side of sun and is lost in sun's glare. By late Nov earth will orbit halfway around sun, and Pleiades will be visible all night.</p> | <p>20 Last Quarter (half moon in morning sky). Look for moon in daytime: It passes due south about 1 hour after sunrise, and sets just south of due west 5 1/2 hrs later.</p> | <p>21 Tonight Mars and Saturn are 4 1/2° apart, same as Castor and Pollux.</p>  | <p>22 Mars 5° upper left of Saturn (see last night's diagram). Using binoculars after sky darkens, look for Beehive cluster 3° upper left of Mars. Watch Mars approach cluster next week.</p> |
| <p>23</p> | <p>24</p> | <p>25</p> | <p>26 45 minutes before sunrise: Use moon as guide to Jupiter, low in ENE. Binoculars help.</p>  | <p>27 Tonight and tomorrow night Mars appears within the Beehive cluster. Use binoculars or telescope. Light from Mars takes 16 minutes to reach us; light from the Beehive, 500 years.</p> | <p>28 New Moon, in conjunction with sun. Today the sun and moon rise and set together. Also, moon's dark side is toward us, so moon isn't visible.</p> | <p>29 Each year at the end of May, Aldebaran is on the far side of the sun (not visible) and Antares is up all night. Six months from now, it's the other way around. Explain with diagram.</p> |

East Lansing Sunrise: May 1 6:32 a.m.; May 16 6:15 a.m.; May 31 6:03 a.m. EDT.
Sunset: May 1 8:38 p.m.; May 16 8:54 p.m.; May 31 9:09 p.m. EDT.