

While You Were Gone...

Secretary's Report

by Jason Stahl

For those who did not attend the February meeting, you need no explanation. Thanks to a snow storm, the attendance was very small. For those fourteen people who braved the roads, and the snow drifts at the Observatory, you should be congratulated. Because of the low attendance, no voting or official action by the club took place. After John Bruce gave us a brief summary of what he encountered, the topic of the site was discussed by the members in attendance. John will summarize the site news again at the March meeting for those who missed the February meeting.

The weekend of the 9th in April is when the club will take a trip to the Kansas Cosmosphere & Space Center. If you have not already made reservations for a hotel, don't delay any longer. If you are planning to attend but would like more details, contact Rick Johnson or Jack Dunn.

On May 10, Hyde Observatory will be open to the public for the Solar Eclipse. Volunteers will be needed to help with the programs, telescopes, and crowd control. If you have equipment that can S-A-F-E-L-Y view the eclipse, you are encouraged to bring it to Hyde for public use.

In July, the 1st Nebraska Star Party at Merritt Resort will take place on the 7-10. So far there is a large turnout from several different clubs from around the country. Collection of the fees will be beginning shortly for those of you who have reserved a cabin. If you have not reserved a cabin, you can still get a cabin in your name by contacting any one of these people: Tom Miller 466-4145, or David Scherping 477-2596. If you want or know of someone who would like to share a cabin, please contact one of the above persons.

A call for program papers has begun as of February one. If you are interested in giving a twenty to thirty minute paper during the day, please contact David Scherping, or Tom Miller.

If you have missed a meeting as of

November 1993, you can still watch that months meeting on video tape anytime one week after that months meeting. Each tape covers the entire business meeting and the program. To obtain a tape of a meeting you have missed, call Tom Miller at 466-4145 during the evenings. Sorry, but because of the low turnout at the February 1994 meeting, the business meeting and the program were not taped.

As a reminder, the first star party at Mahoney State Park is April 22. Those interested should be at the park around 6:30p.m. Don't forget about the two dollar entry fee for the park. The observing grounds are located on the soccer field at the west side of the park.

Special Message

For those who have reserved cabins at Merritt Lake for the July star party, Tom Miller needs a deposit by April 1, 1994. The deposits are as follows:

1 Bedroom	\$62.64
2 Bedroom	\$73.44
3 Bedroom	\$84.24
4 Bedroom	\$95.04

There are still a couple of cabins available. If you are interested, contact Tom ASAP at 466-4145.

Special Note: Dave Scherping will be showing slides of the Merritt Lake area, including where we will be camping, the cabins, and where we will be observing from.

The Prairie Astronomer

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FROM THE PROGRAM CHAIRMAN

Based on the results of the questionnaire sent out a few months ago, one of the most desirable topics for the monthly programs is telescope making. Therefore, the next two meetings will be totally dedicated to ATM. This month's presentation will be given by Ron Veys and will be a portion of the telescope class Ron taught several years ago. The focus of his presentation will be on telescope tube assemblies, including how to build your own spider and mirror cell. So if you're even thinking about building a scope (or eager to devote time and talents toward building the club's 13" scope....hint!, hint!) this is one meeting you won't want to miss.

And it doesn't stop here.... In April, Martin Gaskell is going to enlighten us with details of designing and building of "Tel-Poke". Who says astronomy is an expensive hobby? It doesn't have to be. How does this sound? A 6" tube assembly on a wooden equatorial fork mount for less than \$30! No that wasn't a typo! How about a drive for a mere \$25 extra? Want to learn how to make eyepieces and barlows for it too? Then you won't want to miss the meeting next month.

On the agenda for later in the year is the return of "Name That Object". Also, with the help of Eric Hubl, I'm trying to arrange a presentation by Prof. Wakefield Dort to give us an update on the Myrma meteor crater.

I want to thank those of you who continue to contribute door prizes. Every month, I think we're about to run out of door prizes and then a couple more show up. February's door prizes included a sky atlas donated by Tom Miller and an astrophotography book from Les Myers. This month, we have a book and children's door prize donated by Eric Hubl, a red flashlight Doug Bell donated, and a couple of astronomy text books I found at the "\$2 per armful" sale at Nebraska Book Store.

When a Comet Fell on Earth What Might Take Place if Halley's Comet Were Shipwrecked as Biela's Was

*An article from the November 25, 1909 Park Rapids
Enterprise, submitted by Rick Johnson*

The astronomers announce that Halley's comet is approaching the earth at the rate of a million miles a day. As Halley's is the most splendidly attractive (otherwise most alarming) of all our regular comets, they add that we need not fear that it will strike the earth, because it will not come closer to us than 13,000,000 miles.

This is the scientific schedule, but that does not keep any one who wishes to be inspired with proper awe on the approach of our most remarkable comet, from asking what might take place if, for any reason it leaves the scientific schedule, as Biela's comet did when it did the most remarkable thing thus far known in the history of the solar system since men have begun to watch the

sky. That is, after coming back over and over on schedule time, until it was supposed to be as regular as the earth itself, it split in two, underwent final shipwreck somewhere in the heavens, and according to the last supposed to be known of it, fell on earth several hundred miles southeast of El Paso, Tex.

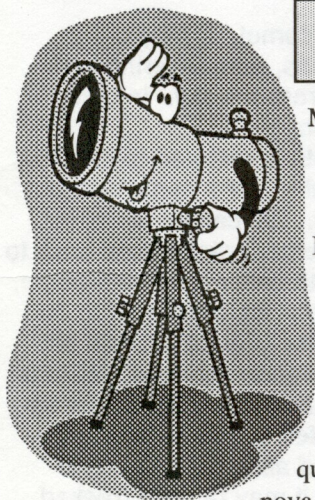
The probability that this was the last of that comet is conceded by such cautious astronomers as Prof. Young of Princeton. It is an authentic record, valued because it is about as near the history of Biela's comet as we will ever get. It is certainly lost, and it is thought that we have the last trace of it on earth now in a lump of nickel-iron which fell in Mexico when supposed fragments of the lost comet (called "Bielids" after the astronomer, Biela, who discovered it) were being watched for and expected to fall in a shower somewhere on earth, if they were not burned to vapor by heat from friction as they were being whirled through the earth's atmosphere in falling. Although Halley's comet has been coming back regularly every 76 or 77 years since it is supposed to have appeared with its tail filling the sky before the fall of Jerusalem, it may end finally as Biela's comet did,

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Observing Chairman's Report

by Jason Stahl



The next scheduled star parties are on April 1, and the 8th, at the Atlas Site. cloud/rain dates are the 2th of April, and the 9th.

Moon Phases:

Last Quarter is on the 2nd

New Moon is on the 10th

First Quarter is on the 18th

Full Moon is on the 25th

If we could hear sound in space, we may have heard a loud BOOM on the night of March sixth. That night a lonely observer discovered a super nova in NGC 4526. NGC 4526 is located in the constellation Virgo at 12h 34.0m, 7.42 degrees, and at a magnitude of 10.6. A week after its discovery, the super nova brightened to about 12.2 magnitude. The estimated maximum brightness is to be around 11th magnitude. Several members were able to observe this super nova days after it was discovered, and had terrific views of this great event. If you have not observed the galaxy and its new friend, do not waste any more time. As the nights go by, the super nova is growing fainter very quickly. Even though the moon is becoming brighter, it may be the only chance you have to observe the nova.

In the southern part of Virgo is NGC 4594(M104 The Sombrero Galaxy). This 9.3 magnitude galaxy will make you feel as though you are in Mexico watching a small man walk past you with a sombrero that is larger than him. If you have seen this galaxy before, you understand why it is called The Sombrero Galaxy. You can find M104 at 12h 40m, -11.37 degrees, all by its self looking for someone to dance with. There is no explanation needed for this galaxy, for once you look at it, you will know what it is.

Also in Virgo, NGC 4303(M61), is a face on spiral that can be found at 12h 21.9m, 4.28 degrees at a magnitude of 10.2. With its bright core and distinct arms, M61 is one of the better galaxies to observe.

Some distance north of Virgo, in Canes Venatici, you will find NGC 4258(M106). Located at 12h 19.0m, 47.18 degrees is the 9.0 magnitude spiral bound galaxy that has a fairly bright nucleus with two large arms penetrating into the void space that surrounds this galaxy.

Just a smidgen south of 4258, is NGC 4449, located at 12h 28.2m, 44.06 degrees, a couple of the members named 4449 The Massachusetts Galaxy. In larger scopes this irregular galaxy looks just like the state. With its star like core, and chunks of the galaxy broken into several pieces, this galaxy will give pleasurable views. At a magnitude of 9.8, 4449 appears fainter than it really is because of its faint edges, detail in these areas will be limited. But you can still make out a good portion of the core.

Spring is finally here, and to celebrate its arrival, take a look at our first bright globular cluster in Canes Venatici, NGC 5272(M3). At 13h 42.2m, 28.23 degrees, this 6.4 magnitude cluster will strongly remind you of the summer objects that are waiting around the corner.

Even brighter, at 5.8 magnitude, NGC 5904(M5), is on the border of a spring/summer object that will impress you more than M3. Located in Serpens Caput, at 15h 18.6, 2.05 degrees. M5 has a very dense core that will make a pile of sugar look like sugar water.

As the temperatures become warmer, and the nights shorter, this will be your last month to have for long observing nights before the bugs become a hassle. So make this month the best observing month.

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falling in a star shower on earth, or on some other planet, or into the sun, or scattering through space around the sun in masses perhaps of nickel-iron, unseen on earth, unless the earth captures them out of space and sets them blazing through the sky as they fall.

Suppose we were to capture Halley's comet and it were really to fall, what would become of the earth or of the comet?

That is a fair question for all who wish to keep a proper scientific awe of our finest regular comet. It may offer something to take the place of the unscientific awe which used to send thousands to their knees, remembering their sins and praying for pardon as soon as Halley's comet began to spread its magnificent tail across the sky. In other words, it made them try to think, which was, no doubt, the best thing a comet could do for them.

Another important question is whether Halley's comet will bring its magnificent tail back with it, restored to its ancient and awful splendor. If it does not, the world, learned and unlearned, will be disappointed, for a comet without a tail is not awful or sublime enough to be worth growing either enthusiastic or repentant over. We cannot tell about the tail. It may come back with the comet, reduced 30 per cent, or it may finally be lost altogether or increased back to awful magnificence, streaming across the sky in such a spectacle as can be hoped for on earth only once in a lifetime.

If it recovers its tail in its full historic splendor, Halley's will be too magnificent a comet to be lost, according to our ways of looking at comets. It is not a third-rate astronomer's comet, like Biela's; but a comet for everybody, with all mankind interested in it. It may set all the gongs in Asia beating while we are watching it through telescopes. Millions who do not know enough to be frightened at the idea of its striking the earth may find it awful enough to make them try hard to think, with results which, while they last, may seem to them the most awful they ever felt in their lives.

While all who are intelligently interested in comets will want Halley's back regularly, tail and all, as something to think about, there is a chance that it will lose its tail and also a chance, very remote now, that it may be shipwrecked finally and lost in space. It is a "chance" only until the law is learned. The chance is worth discussing only in the hope of learning more of the law. Can a comet lawfully get out of its regular path and be pulled down finally by the earth or some other planet? That is a question of law and as far as we have learned the law the answer is that it can.

We do not know much yet about the law. All we are beginning to find out dates from the night in January, 1846 when Pro. Challis looked through his telescope at the Cambridge observatory and could not believe his eyes. The spectacle he saw in the heavens was too astonishing to believe. It was Biela's comet split into two distinct comets. Such a thing had never been heard of or imagined as possible. But in some way it had actually occurred. Had the comet exploded by its own forces? Had it come in reach of the attraction of one of the planets and been pulled apart? What must become of a comet after being thus split in pieces? Could it come within range of the earth and be captured and pulled down to the surface? If so, would it jar the earth in its orbit or set the planet on fire?

All we will ever have in the way of a final answer to these questions as they belong to the complete and final loss of Biela's comet is given officially now in the records of Mexico in the statement recorded by Senor Jose A. y Bonilla, director of the astronomical observatory in the state of Zacatecas. In November, 1885, it was supposed that between the twenty-fourth and twenty-ninth of the month the earth would pass in space through or near the fragments left by Biela's comet. As they were then called "Bielids," it had been concluded that they were a swarm of hundreds of thousands or perhaps of millions of small masses of meteoric matter, perhaps weighing from an ounce up to a ton or more. It was feared that if the earth passed through them and drew them to the surface in daylight they would not be seen at all, but would either burn up in gas or else fall in a few scattering stones on distant parts of the earth. This may have occurred in other places, but on a ranch near Mazapil, in the state of Zacatecas, one of them (or a mass of nickel-iron belonging to some group of the same kind) was seen to fall and recovered at once by the owner of the ranch, who made the deposition taken down in Spanish by Senor Bonilla and translated by William Earl Hidden, to close the last chapter in the story of Biela's lost comet:

"It was about 7 o'clock on the night of November 27 (1885)," said the ranchman in his deposition, "when I went out to the corral to feed the horses, Suddenly I heard a loud, sizzling (sic) noise, exactly as though something red hot was being plunged into cold water and almost instantly there followed a somewhat loud thud. At once the corral was covered with a phosphorescent light, while suspended in the air were small, luminous spars, as though from a rocket. I had not recovered from my surprise before I saw this luminous air disappear and there remained on the ground only such a light as is made when a match is rubbed. A number of people came running towards me from the neighboring houses and they helped me to quiet the horses, which had become much excited. We were afraid of being burned. We all asked what could be the matter. In a few moments, when we had recovered from our fear, we saw the light disappear. Bringing lanterns, we found a hole in the ground and in it a ball of light. We retired to a little distance, fearing it would explode and harm us. Looking up to the sky, we saw exhalations or stars which went out without a noise. We returned after a little and found in the hole a hot stone we could barely handle. This, on the next day, we saw looked like a piece of iron. All night it rained stars. We saw none fall to the ground, as they all seemed to be extinguished while yet high up."

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If this stone, the only one known to have reached the earth out of the "rain of stars," is all that is left of Biela's comet, there is 10 1/2 pounds left of it in the shape of a mass of iron ore, showing such "pits" from contraction after great heat as the telescope shows in a much larger way on the face of the moon.

As this was considered the most distinguished visitor that had ever reached the earth from infinite space, it was presented as a mark of his distinguished consideration by Prof. Bonilla to William Earl Hidden, as one of the most distinguished American mineralogists, who was also an authority on meteors and meteoric minerals. Analysis showed that it was 91.26 per cent. iron, 7.84 per cent. nickel 65-100 per cent. cobalt, 30-100 per cent. phosphorus with traces of sulphur, carbon and chlorine. (The percentages add to more than 100%.) Mr. Hidden wrote its history in the American Journal of Science. In the century Magazine of August, 1885, he answered the question. "Is it a piece of a comet?" by summing up the evidence in connection with the known history of Biela's lost comet, since it split in 1846 and returned as two comets in 1852, to disappear finally in what were supposed to be a swarm of "Bielids."

"At the time of the fall of this meteorite" (in Mexico), Hidden writes, "it was 10 hours after the maximum number of meteors was observed. The earth was meeting with only the stragglers of the train. It cannot be doubted that the cosmical (sic) dust proceeding from the disintegration of Biela's comet wholly enveloped the earth and was seen as meteors from every part of it. Such was the magnificence of the celestial phenomena in some parts of the eastern continent that some people believed there would be no more stars left in the sky."

Biela's comet had returned regularly in a period of a little less than seven yeads (sic) until it underwent complete shipwreck in the heavens. No one ever expects to see it again. The end, as far as known, is this star shower in the night the Bonilla bielid was picked up in Mazapil, to give us the best knowledge we have of what may be expected when a comet falls.

Biela's lost comet does not compare with Halley's, which must have billions of stones or small and large masses of matter, probably nickel-iron, in its magnificent head. If it were shipwrecked by Jupiter, by the earth or by any other planet, these, if they were drawn close enough by the planet to break the hold the sun has on them, may do a number of interesting things.

They might revolve around the earth at a distance, collecting in such a ring as that of Saturn, which is supposed to be composed of an infinite number of such stones, or they might whirl closer and closer in revolving around it until finally the largest of them, which do not burn up in the atmosphere by friction, must fall as this bielid fell in Mexico. The hope of getting a beautiful earth ring, such as that of Saturn's by capturing comets, is very small, if only because comets have not matter enough in them to make it.

Now for the real facts. Wilhelm von Biela first saw his comet in 1826 and later proved it was seen in 1772 and 1805. Last seen on its 1852 passage it was two comets separated by 2 million kilometers. It then generated great meteor showers in 1872 and 1885. We still see an annual shower but it is much reduced and is called the Andromedids. Biela's comet was a short period comet with an unstable orbit. Below is a table showing the various observed passages of the comet, the perihelion distance of that passage and the period. You will see it was approaching the sun up to the time it split then moved outward after splitting in two. This information came from the Dance of the Planets computer program which has orbital information on most historical comets.

Date	p(au)	Period
1772	.990	6.87
1806	.907	6.74
1826	.902	6.72
1832	.879	6.65
1846	.856	6.60
1852	.861	6.62

Were these changes due to violent outgassing from the comet. If so this could be why it "melted." Or are they due to perturbations from Jupiter or some other planet. If you have Dance of the Planets it would be an interesting comet to run.

The rancher's description seems to be glorified as a rock hunk like that would have fallen for the last minute or two at subsonic speed and certainly not be giving off sparks or red hot when it landed. The crater like depressions mentioned are, of course, ablation pits scoured out by the atmosphere and not contraction ridges. Nickel-iron is not common to comets as we think we understand them and the fall happened after the shower was mostly over. More likely it was just a coincidence but since no data as to its path across the sky still exists there is no way of knowing for sure.

See picture on next page...



The "BIELID" of 1885
SUSPOSED FRAGMENT
OF BIELA'S COMET

STAR TRAILS & COMET TALES

By Dave Scherping

While observing at that infamous piece of astronomical real estate, the PAC Atlas Site, several local amateur astronomers recently discovered the true nature of Comet Shoemaker-Levy 9. As they diligently gazed into the eyepiece, seeking the elusive "string of pearls" destined to collide with Jupiter in July, they began to wonder if the big Dob equipped with Naglers and enhanced by averted imagination was not enough to track down the faint object. They took turns at the eyepiece, scanning the friendly skies of Libra, but the comet was nowhere to be found.

Soon after one of the veteran observers took over, they heard him yell, "Here it is!!" They all waited in anticipation and after what seemed like hours, he finally let them have a look. They couldn't believe it. It was immediately obvious that the scope was pointed too close to the giant planet, for a bright diffraction spike shot all the way across the eyepiece. Could it be that SL9 is not a comet after all, but merely an all-too-common optical phenomenon? But where were the fragments of the comet...those "pearls on the string"? All they saw was a smooth band of light.

Following a few seconds of extremely deep thought, one of them reached into his eyepiece case and pulled out his worst eyepiece.... you know, the one that hadn't been used since 1979. After deliberately dropping it onto the concrete a couple of times, he picked it up, spit on it, and rubbed his fingers all over the lens. He then put it into the focuser and BINGO, there were the beads!!
Mystery solved.

By morning, the Atlas site was swarming with reporters seeking first-hand information concerning their immensely important discovery. When asked by CNN if they had any suggestions for other amateur astronomers, one of them replied, "If you ever get the chance to use the scopes at Palomar to search for comets, be sure to bring your own eyepieces!" Kind of makes you wonder about all the other comets they discovered, huh?

DOS 6 DoubleSpace may become Vaporware

by Rick Johnson

If you were planning on upgrading to DOS 6.2 for its DoubleSpace program you may be too late. Microsoft recently lost a patent suit with Stac Electronics, maker of the rival STACKER disk compression program, and is reported to be taking DoubleSpace out of all of its operating system software rather than pay Stac any royalties. This includes Windows NT as well.

You may still be able to find versions of DOS 6.2 with DoubleSpace in the stores but only if you act soon. Stac has come out with version 4 that claims to have a much higher compression rate than DoubleSpace so you might consider that but then Stac lost a counter-suit by Microsoft and may have to pull its product from the market as well! See me at the meeting for the latest info.

COMPUTER BUYER'S GUIDE UPDATE

by Rick Johnson

Things have been changing rapidly in the computer field since the original series was published and its time to update things since last time. CD-ROM drives have improved dramatically, "local bus" has become more than just a buzz-word and the Pentium has finally come out. Also PC now means your computer is "Politically Correct" (green) in the sense that it uses far less power, especially when idling.

Since about every amateur astronomer with a computer can benefit from a CD-ROM drive I'll start there. First off, they are slow compared to your hard drive. Early drives needed a second or longer to locate the asked for data. At the time of the last article this time had been cut to about .3 seconds on the fastest

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drives. It is now down to .15 seconds or less. This time can be very important if you are searching through a large data base. It is unimportant if you are reading a single file or series of files.

The other bottleneck is in the rate the CD spins. In order to read standard CD audio they must turn at a rate that passes 150KB of data per second. Faster or slower the audio output won't match the read rate and you will have data loss or gaps in the audio. NEC found a way around this about the time the first article came out. They spin the disk twice as fast for data and slow to normal for audio. This means large files read twice as fast. Now most manufacturers make double spin drives and many have come out with 3X drives with 4X on the near horizon. A higher data rate means far smoother animations and movie clips in multimedia applications. Again you must weigh the value of this added speed against the added cost. But since double spin drives cost about the same as single spin did a few months ago they are a good bargain.

To understand what a local bus computer can and can't do for you I need to first discuss what a bus is. The bus is the superhighway data flows along inside your computer. Actually there are many different buses in a computer. The bus that I'm going to be talking to is the one that carries data to and from add-on boards inside the computer.

ISA was the first and worked just fine for the old 6 and 8Mhz machines that first used them. Later IBM tried to convert the world to the Micro-channel but by keeping all rights to it and licensing them out the world stayed with the slower but far cheaper ISA because it was still good enough. That is, while slow the attached boards were slower still. But ISA is a 16 bit bus and by now the 32 bit 386 was standard. EISA (Extended ISA) was developed to compete with Micro-channel. It wasn't quite as good but for all but network server machines the old ISA was still good enough and a lot cheaper. As computers continued to get faster and the add-on boards also got faster, the old ISA just didn't cut it any more. The local bus concept was developed. First to market was the VESA (VL-BUS). It is found in most newer 486 machines. It is a true 32 bit bus that runs at up to 33 Mhz but doesn't support the burst mode of data transfer, the fastest way the 486 has of moving data. Still it is good enough for all but the speed freaks. At the same time Intel developed the PCI standard. It is more complex but is both a 32 and 64 bit bus also running at a maximum speed of 33 Mhz. It does support burst mode so in theory it can transfer data faster than VESA. So far in actual use they are about the same on 486 machines. Since VESA is cheaper and more widely supported it is the way to go for now.

The ISA bus is still fine for supporting boards which don't process data rapidly. Sound boards, backup tape drives,

floppy disk drives, modems, optical scanners and the like all need data at speeds slower than that of an 8 Mhz bus so there is no problem. For these, local bus machines still have ISA slots. (Most have 5 or 6 ISA slots and 2 or 3 local bus slots.) There are two devices that do need local bus speed, both vital to the computer's everyday performance. The big one is the video board. When running graphic based applications, such as anything run under Windows or anything with pictures the ISA bus can be a big bottleneck. If you are running 800 x 600 graphics in Windows at 256 colors, in order to get smooth scrolling the video board would have to process over 60 million bits of data per second. Thus, the speed of a Windows based word processor greatly lags that of a DOS one which only needs 500,000 bits per second to do the same thing. An easy chore for an ISA bus to handle. The cure is the local bus. The VESA bus being the first standard to reach market is by far the most common. Nearly every video board makes a VL-bus based board. The PCI bus is somewhat faster and is 64 bits wide to handle the Pentium chip. VESA has made some extensions for the Pentium as well but they just don't have the zip the PCI bus does. The downside of PCI is that its just out and not many things are available for it as yet. Also its speed comes at a higher complexity and thus cost though since its speed only benefits the very top machines costing top dollar you'll never notice it. For now its probably best to avoid PCI as its having some developmental problems right now. VESA has come out with 64 bit standards at up to 66 Mhz for Pentium chips and PCI is still stuck back at 33 Mhz. Though I'm yet to see such a VESA board either!

The other area that can benefit from a local bus is the hard disk controller. The best hard drives now can take data faster than the 16 bit 8 Mhz ISA bus can provide it. But this only applies to the very top drives usually over 1GB in size. Thus, while local bus hard drive cards will become important it is more advertising right now. Next year it won't be.

If you are planning on using Windows in a 486 machine the VESA local bus and a good VESA video card are a necessity. If you are going to be mostly DOS based then any good SVGA ISA bus computer is all you need but get a local bus machine anyway as they cost only \$50 more and who knows, you might want Windows later. Local bus machines still have ISA slots for add-ons that don't need local bus speed so a cheap ISA SVGA board will work for now and you can upgrade later on. If you are thinking Pentium go with PCI local bus as VESA just isn't up to Pentium's needs. Even in DOS a Pentium needs video and hard disk boards faster than anything else can manage. Don't even think about EISA and it looks like even IBM will give up on Micro-channel in the near future as their top new machines are all PCI not Micro-channel.

The power saving features previously only found in lap

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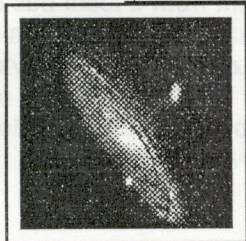
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top computers are now starting to show up in desk models as well. While these "green" computers save energy and money the savings is very small for a home machine. It is important to a large business that may have several hundred machines running all day long. Most all boards now on the market draw far less current than those of only a year ago. This means that you can probably get along with a smaller power supply than in the past. The 200 watt standard supply has now been replaced with a 145 watt supply. As long as the additional boards you add in the future are also energy efficient this should be enough. If not you can always get a higher wattage supply later.

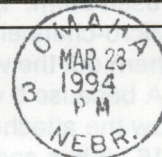
In a "green" computer the main computer and monitor will power themselves down when not in use. Usually there are two levels of power down. The first will cut power to unneeded circuits and allow the computer to nearly instantly come to life when a key is pressed or the mouse moved. This level cuts power usage by 25% to 50%. The second level cuts in after the machine has been at the intermediate level for some time. (User controlled in most cases.) This level will turn off nearly everything but memory refresh circuits. This means that for the computer to come back to life the picture tube in the monitor must warm up, and the hard disk come to speed. Some machines even shut down memory and save it to hard disk so that must then be reread off the hard disk. This

takes 15 seconds or so but can save as much as 95% of the power of a fully running machine. CPU's currently run at 5 volts in most cases but those currently nearing production and a few already in production run at 3.3 volts, next generation chips will run at 1.5 volts. Since power used drops with the square of the voltage drop these chips will draw far less power than those currently in use. All this is nice but really means very little to the home user that uses one machine for a few hours a day. They do run cooler and heat is an enemy of your computer. Other than this green machines are more advertising than anything.

Rick's article will continue next month...



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