ASTRO-CHAT

Newsletter of the Chatham Kent Astronomy Club

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Deadline for June issue is May 9th.

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Upcoming events

May.	2 & 3rd.	Observing (see Halley's Comet, pg 2)
	4th.	Eta Aquarid meteors
	8th.	New Moon
	9 &I0th.	Observing
	I2th.	Council meeting (tentative)
	I6th.	Annual Meeting of R.A.S.N.Z, New Zealand
	23rd.	Regular meeting (very tentative, update later)
	23rd.	Full Moon

A.T.M's please note,no more grinding until the I5th.

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WHAT'S HAPPENING IN THE SOLAR SYSTEM

MERCURY, is not visible this month, being in superior conjunction, meaning it's on the other side of the sun away from the Earth.

VENUS, can be readily seen in the Western sky 20° above the horizon at sunset. TIP, observe Venus before it gets dark to reduce the glare from this magnitude -3.9 planet.

MARS, moving in for its closest approach to Earth since I97I can be seen as a morning object rising about 5 hours before the Sun and being due South at sunrise. Take this opportunity to view the red planet as it increases in brightness and angular size. During May it grows to almost I7" and brightens to magnitude -I.5.

JUPITER, rising higher in the southeast at sunrise will remain in Aquarius for the rest of the year. Viewing of Jupiter over this period should be the best we've had for over I0 years. Near its closest approach (594 million km) this year a telescope magnifying only 36 times will give an image of Jupiter equal in size to the full Moon seen with the naked eye. Now is the time to start following its progress.

SATURN, moving into Scorpius rises about sunset and is visible all night. At the end of the month Saturn is magnitude 0.0 and has its ring system tilted 25° with the north face visible.

(continued on page 4)

THE CHATHAM — KENT ASTRONOMY CLUB
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PRESIDENT'S REPORT

Even though it has been 3 months since the last time I gave an activity update there really hasn't been a great deal going on. I guess the weather has something to do with it, or possibly we're all getting just a little sick of Halley. Well, in any event here's what's been happening and what's coming up.

February 21 Regular meeting at CKSS. The scheduled NFB film 'COMET' was not shown due to the snowstorm which held up delivery from Windsor. Instead, videos of the recent Uranus encounter and the Shuttle disaster were shown. Dan Kahraman also updated everyone on the light pollution crusade.

March 7 Public lecture on Halley's Comet at the Council Chambers at City Hall. Over 50 people attended this successful event with talks by Jaymie Matthews, Peter Jedicke and yours truly. A very special thanks goes to Ron Crowley of CFCO for the wonderful job he did of emceeing the evening.

March 21 The scheduled Halley's observing night at the Eagle Conservation area, hosted by the Windsor Centre, RASC, was a total cloud out, although I understand there was a very good turnout of people from various clubs.

Coming Up:

May 3 Halley's Comet Public Observing night at the Thamesgrove Conservation Area. Hopefully the night will be clear and we can say goodbye to Halley once and for all!

May 24 NFCAAA conference in Toronto. I'm sure I have mentioned before how good these conferences are, and this one appears to be just as exciting. Here is a brief summary of what you can expect
11:00 Special Planetarium presentation
12:00 Lunch
1:30 Short presentations
6:30 (approx) Lecture/Banquet at the Park Plaza Hotel, guest lecturer is Warren Morrison, variable star observer and discoverer of Nova Cygni 1978.

Cost for the entire event is $25 (not including transportation down there and any accomodation and extra meals). Please let me know if you are interested in attending since there is only a limited number of s spaces available.

Our mirror-grinding group has been hard at it at the home of Bill Franssen on Thursday nights with 6 members in various stages of completion.

Our present membership stands at 24, I think.

John Christopher has resigned as treasurer, his new business is very taxing, time-wise and he felt that the job would be better in the hands of someone who could spare the time. So we welcome Paul Aoki to the business! Our thanks to J.C. for his past efforts and we hope he can return to an active position.

M. Flegel

LIGHT POLLUTION AND YOU

Q1. What is 'light pollution'?

A1. Light pollution is wasted light which, in turn, is a result of inefficient, haphazard lighting practices. A graphic representation of this progious waste of money is the 'airglow' over present day communities, whether large or small but much more noticeable over major urban centres.

Q2. How much of the lighting is wasted?

A2. With unshielded lights, about 40% of light is directed to the sky where it serves no useful purpose whatsoever. Another 30% to 50% is reflected from bright surfaces such as concrete. Since outdoor lighting consumes about 50% of our total electrical energy use, we are talking about large sums of money - YOUR MONEY!

Q3. What would be a solution?

A3. One solution would be to have all outdoor lights shielded. Effective shields would cut off any light from extending to the horizon. The inner surfaces of the shields could be made of highly reflective material further reducing the area and intensity of the illuminating source, yet providing similar levels of illumination - effective illumination, that is!

Q4. Are there any compelling reasons to have shielded lights?

A4. Unshielded lights are a traffic hazard since the illumination source impinges upon the night driver's field of vision. This is the primary source of 'glare' while bright, shiny surfaces such as concrete contribute as secondary sources. Glare could be minimized greatly by directing light to dark or rough surfaces like asphalt, grass or bare earth.

Q5. Are there other ways of saving money?

A5. There are many. One important suggestion being the conversion of all outdoor lights to low-pressure sodium. Currently we are in the process of phasing out mercury vapour lights and many municipalities are opting for high-pressure sodium (HPS) . Low-pressure sodium (LPS) lights cost half as much as HPS, are relatively free from glare, and being monochromatic (one colour), are easy to filter out. LPS is distinguished by it's golden-yellow hue while HPS is pinkish-orange in colour. Incidentally, a study conducted in New York State suggests that HPS is a traffic hazard, while LPS has been approved by the AAA and was preferred by 86% of motorists.

Q6. Wouldn't it cost to convert from present illumination forms to shielded LPS fixtures?

A6. The costs would be more than offset by the large and immediate savings realized. For example, in Clearwater Florida conversion from mercury vapour (MV) to LPS resulted in $250,000 savings per annum, or 64%. A comparable figure for HPS would have been only $92,000, or 33% in savings. Similarly, cities such as San Diego, Long Beach, San Jose, Tucson, Phoenix and Houston, who are converting to LPS, are saving close to $2,000,000 annualy. If these cities had switched to shielded LPS then the annual savings would have been twice that figure.

Q7. If LPS is really less expensive than HPS then why aren't we seeing more of a conversion from MV to LPS?

A7. There are two main reasons. HPS is patented while the patent for LPS is held by a foreign Multinational company (Phillips of the Netherlands). The other reason is more obvious, utility companies sell more energy with HPS than they would with LPS. In the past 10 years, energy use has increased by 25% but the amount for outdoor lighting has increased by 300%.

Q8. What about crime, don't we need lighting to deter criminal activity?

A8. A careful study by the National Institute of Law Enforcement and Criminal Justice, part of the U.S. Department of Justice found that there was no "statistically signifigant evidence that street lighting impacts the level of crime....there is strong indication that increased lighting....decreases the fear of crime". Here is an example of a false sense of security, an expensive myth to the detriment of the environment. For those who insist that such a linkage exists, a less disruptive method of addressing one's security needs would be by means of burglar alarms.

Q9. Do other measures of lighting reform exist?

A9. Some cities such as Tucson and Flagstaff, Arizona have saved 30% of lighting by turning off advertising or other business-related lights off after 11 p.m. The savings are then passed on to the customers in terms of lower prices for purchased goods.

Q10. What can we do?

A11. Contact your local Public Utilities Commission, City or Township Council, Municipal Planning Board, Newspaper, etc. Inform them of developments in the State of New Jersey, where a bill stipulating the reforms outlined in this brochure is expected to be signed into law this year. In New York City, Dr. Bernard Harleston, head of Mayor Koch's Commission on Science and Technology, has made recommendations identical to the suggestions discussed here. With your help we can provide sensible lighting for legitimate needs, allow unhampered access of the public to the wonders of the universe, and realize large monetary savings.

Dan Kahraman

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(from page I)

URANUS, rises about I hour after Saturn. The small greenish disc will spend all year in Ophiuchus 2.7I billion km from Earth. Uranus, mag.5.5, apparent diameter of 3.9 seconds of arc can be found midway between the stars Theta and Xi Ophiuchus.

NEPTUNE, throughout I986 will be a difficult planet to find, being buried deep in the Milky Way in the constelation Sagitarius. Bluish-green Neptune shining at mag. 7.9 and angular diameter 2.3" is at opposition on June 26, when it is 4.37 billion km from Earth.

PLUTO, located in eastern Virgo is actually closer to Earth at the present time (4.3 billion km) than is Neptune. But with an apparent magnitude of I3.7 it is a difficult object to spot. A telescope of at least I50mm aperture is required to be able to even see the planet.(R.A.S.C Observers Handbook)

RR.

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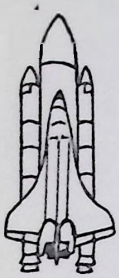
NOTE! May 3rd. See the Presidential Report . This may be YOUR LAST chance to see Halley FOREVER.



STS

New Shots of a Disaster

Robert Cattrysse

The Space Shuttle Challenger, pitched on its back, headed over the Atlantic Ocean last January when an explosion destroyed the spaceship and its seven crew members. The disaster halted the American manned space program until the problem is found and fixed.

Six weeks after Challenger's crew cabin was located 26 kilometres east of its launch pad in 26.5 metres of water NASA said remains of all seven of its crew members have been recovered.

In pictures made the day of the fatal launch January 28 and released by the space agency on April 18 there are scenes of the crew going to the launch pad including a shot of schoolteacher Christa McAuliffe receiving an apple from the pad crew. McAuliffe was the teacher chosen to be the first private citizen to fly in space. Included in the TV-tapes were all the pictures taken of the crew's last moments on Earth in the white room at the launch pad, where McAuliffe received the apple.

The new pictures show the Space Shuttle climbing into the dark blue sky where 1 minute and 13 seconds after lift-off a plume of fire from a leak in its right solid rocket booster (SRB) caused the explosion. Reaction to Challenger breaking apart can be heard from ground crews at the Space Shuttle's landing strip and from NASA cameramen.

"God no!"

"Oh! Oh! Everybody hear!"

"Anybody see the Shuttle?"

In the newly released pictures you can see falling pieces streaking toward the ocean. A large piece of debris, as seen by one of the telescopic cameras, is believed to be the crew cabin after it broke away almost cleanly from the rest of the spacecraft. The compartment descended appearing to be still intact and spinning as it went from an altitude of almost 14 km. Whether the crew could remain concious or even survive the initial blast and the long fall toward the ocean is still under debate among accident experts but all are convinced there could be no surviving the impact with the ocean at speeds above 240 km per hour. Sources close to the investigation said NASA tried to withhold some pictures just to avoid such speculation.

"It impacted in the ocean!"

"What?"

"It impacted in the ocean!"

"The orbiter?"

"Apparently so! We're getting close-ups!"

It was located March 7, 5 weeks later. Divers recovered remains of 6 of the 7 astronauts during the first few days and kept searching during the weeks that followed. They found the seventh crew member, astronaut Gregory Jarvis, April 15 and now with crew recovery operations complete officials will spend the next several days completing plans for a simple ceremony to honour Challenger's astronauts. The family of pilot Mike Smith are planning to bury his remains at Arlington National Cemetary, the most likely spot for the other six.

In other developments:

At the Johnson Space Center (JSC) in Houston on March 25 the former astronaut Richard Truly who now heads the Shuttle program

told NASA employees the entire Shuttle system will be reviewed before they fly again. Truly said that flight safety will be top priority when flights resume. He added that they will redesign the SRB joint. Truly said that when flights resume in a year or longer they will fly a conservative mission. It will include a daylight launch from Florida, a repeat payload, a crew of only NASA astronauts, and a daylight landing at Edwards Air Force Base in California.

Rear Admiral Richard Truly, Associate Administrator for Space Flight, said: "I don't want you to think that this conservative approach and this safe approach is gonna be a namby-pamby Shuttle program. The business of flying in space is a bold business. We can not print enough money, as I said, to make it totally risk-free."

He acknowledged the decision what is safe to fly is, afterall, a judgement call. The Shuttle explosion has cost NASA some credibility. His plan is to gain it back.

On March 26 there was a congressional hearing in Washington on the future of the citizen in space program and an opportunity to share in remembering the astronauts again. Senator Jake Garn (R-Utah), the first politician in space, was there and so was Barbara Morgan, the teacher who will fly next. Singer John Denver was there and he had brought a tape of a song of his which he said meant a lot to him. The song "Flying For Me," a tribute to the Challenger Seven, brought the normally cold, unemotionally congressmen to tears. Said Peter Jennings from ABC NEWS: "They were flying for all of us."

A large piece of one SRB was brought up by a submarine crew on March 30. Some pieces still have potentially dangerous fuel on them that has to be burned off first. Then they can be examined and analyzed. More pieces of the right SRB were retrieved on April 1.

On April 2 the man in charge of Space Shuttle projects at the Marshall Space Flight Center (MSFC) in Alabama, Stanley Reinartz, asked NASA to relieve him of his duties for personal and health reasons. Reinartz is the official who admitted he never told his bosses about the warning from a key contractor that it was unsafe to launch the Challenger. There will probably be an extensive NASA shakeup to follow.

Also on April 2 the salvage teams had one of their most successful days in weeks. They pulled up a Shuttle engine nozzle and a large piece of the right side wing. The salvage operations contain the most sophisticated salvage vessels and over 100 of the nation's best divers. Bad weather and murky water have postponed their operations many times. So far about 1280 square kilometres has been mapped by sonar and the salvage operations has cost to date about $7 million. Only about 12% of the Shuttle has been recovered to date.

More public hearings took place on April 3 in Washington. It was the first time astronauts appeared. The four who testified have a total of 15 flights in space.

Chief Astronaut John Young, head of the astronaut office, said: "The very biggest problem that must be solved before the Space Shuttle flies again is that of communications. And that's communications with respect to the early identification and proper appreciation of program wide safety issues. And I wonder though, sometimes, why if the Space Shuttle is inheritantly risky, why we should accept additional avoidable risks in order to meet launch schedules, and we do that sometimes; or to reduce operating costs and that's been proposed; or to fly unsafe payloads. And I think sometimes that happens. The problem is that we've got right now and I think everyone in the astronaut office appreciates that we just can't afford to

have another accident."

Young also said: "I thought 1985 was a really outstanding year for the space program."

Commission Chairman Rogers replied: "But what if you would had have (to) do more, have you, it might have been too much?"

Young answered: "I think that would have...I think we would have been pushing it."

Paul Weitz, Deputy Chief Astronaut, was not informed of problems. He said: "We were not aware of any concern at all with the O-Rings, let alone the effect the weather on the O-Rings."

Astronaut Robert Crippen, who has flown in the Shuttle four times, heard of the problem but never knew there was no backup. Crippen said: "If I had been aware of that in association with the sitting I would have taken the problem much more seriously."

Astronaut Henry Hartsfield, II admitted atleast one emergency procedure would not work at all. He said: "I personnally don't think the vehicle would survive a ditching. When you're talking about smacking the water at 200 knots with a airplane that's basically an airliner-type design I'm convinced it's gonna break up. And if you got a 5000 pound payload behind you it's probably gonna come in the cockpit with you."

The four astronauts asked for changes in the Shuttle program. These include: No more landings at the Kennedy Space Center (KSC) in Florida because brake and steering is prone to failure and the weather is too unpredictable. Instead land all future missions at Edwards. No more night landings because of safety concerns for even experienced pilots.

They also recommended an independant safety panel to review Shuttle problems and insure astronauts and management are not kept in the dark again. The commission endorsed it and will likely include it in it's report due to President Reagan June 3.

Also on April 3 Jake Garn said he was told af safety problems and if there was a failure it would have most likely been in a joint.

On April 8 it was said that a combination of problems affected the booster joint. They were a poor fitting, cold weather on the O-Rings, and bad putty in the joints. James R. Thompson, NASA Task Force, said: "We were walking on the edge of a cliff and several of these factors just pushed us over."

On April 9 reporters got to see the wreckage of the Challenger for the first time but not items from the crew cabin. 12-14% was already recovered. Later reports said 20% of the Shuttle was retrieved. The wreckage was laid out on a grid in a building at KSC. There was proof brought out that the crew cabin survived the explosion and that a combination of aerodynamic stress and water impact tore the compartment apart. Said Terry Armentrout of the National Transportation Safety Board: "There is evidence that in this outer shell the damage that we see would indicate that we had some mass within this outer shell when it struck the water. It didn't float down slowly." He also said: "The optics were deceiving in some regard because it appeared to all of us initially that there was a huge explosion and everything came down in tiny fragments."

A safety board member on lone to NASA pointed out that the entire structure was free of burns or "toasting." He said: "We see more evidence of aerodynamic breakup than we do of any blast affect."

The left SRB cone was intact. The right cone was damaged, clear evidence that it crashed into the external tank. There were barnacles on the pieces of debris, evidence of 2½ months under water.

Twenty relatives and family friends of the seven astronauts were in attendance March 27 at a nighttime John Denver concert in Houston. The 3000 seats were sold out after it was pulled together in less than two months. The performance was a benefit to raise $50 000 for a fund to help the 11 children of the astronauts who died in the explosion.

On April 13 salvage teams recovered a piece of the right SRB. The piece, measuring 6 metres by 3 metres, weighed about 1800 kilograms. It contained a burnt out hole 0.3 metres high and 0.6 metres across right where the leak occurred. It's the first direct physical evidence that a leak in the booster's joint caused the accident. The piece was brought ashore on April 15.

Also on April 13 the commission recommended some objectives. They said the new design of the joint should be failsafe, not sensitive to temperature, water or ice, and less vulnerable to damage when being assembled. They may also recommend a safe short-range solution and a separate search for long-range changes.

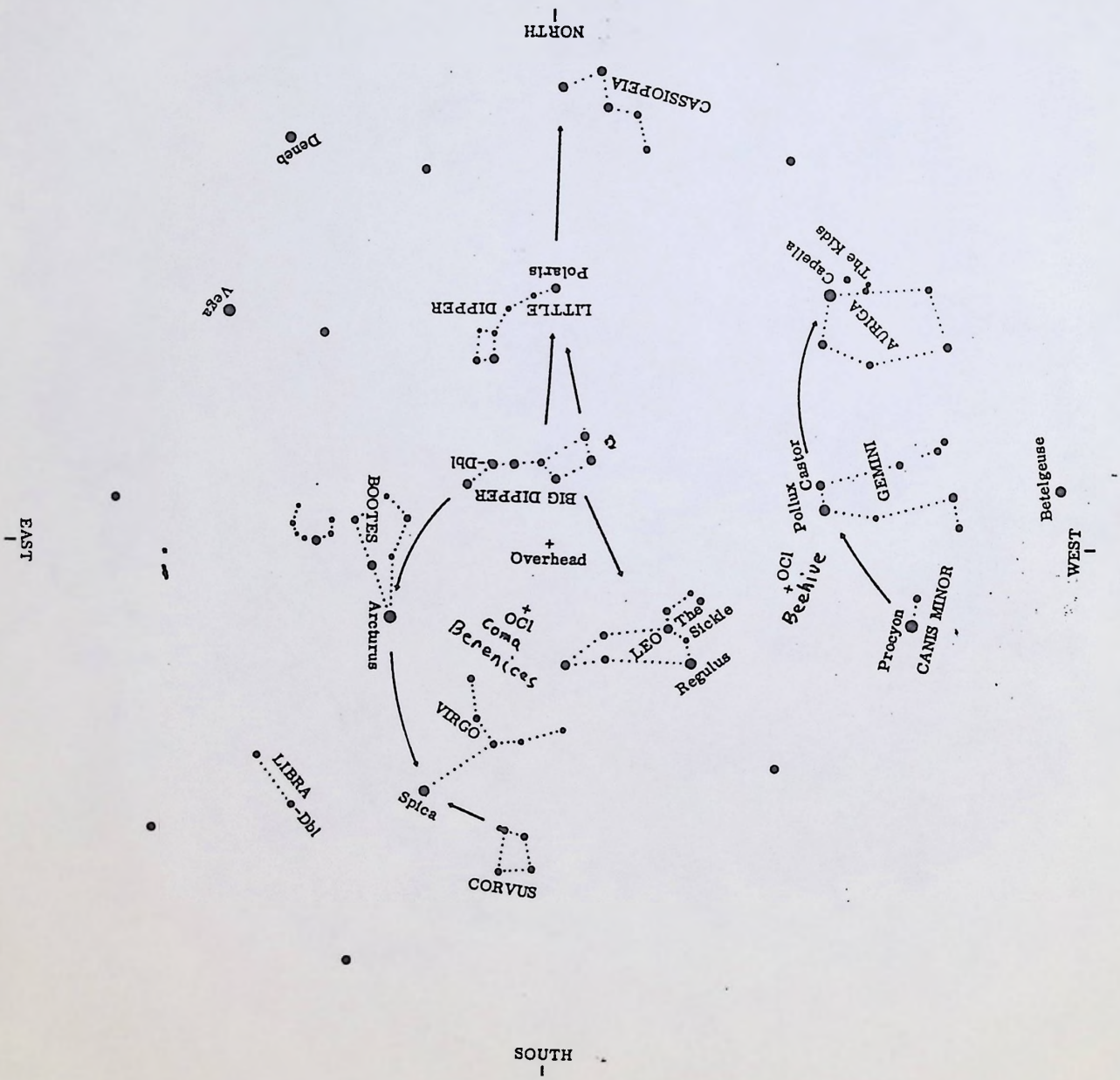
Barbara Morgan talked on the three network morning news programs. On ABC's Good Morning America David Hartman asked: "What, if any, second thoughts have you had in the months since, about you going up?"

Morgan, who was McAuliffe's backup, replied: "I have no problem with myself going up. I'm really excited about the project. I think the teacher in space project is a wonderful program for education. Christa was flying for education and I will be flying for education and I'm very excited about that." Morgan plans to carry out the two projects McAuliffe was going to.

The same day Morgan was interviewed on April 16, NASA announced it had selected 100 semi-finalists as potential Space Shuttle astronauts in its journalists in space program. The list includes a wide-range of magazine, newspaper, wire service, and freelance writers. Two of the 100 are from Detroit, Michigan. Among those from broadcasting are the former CBS anchor Walter Cronkite. Jay Barbree and Robert Bazell from NBC. From ABC they are Barry Serafin, James T. Wooten, Lynn Sherr and Bill Blakemore. Also on the list is the 71 year old publisher of the Mexico Missouri Ledger Robert White, II, four Pulitzer surprise winners, independant news services Morton Dean, the currently unaffiliated Geraldo Rivera, and, maybe, the editor of Astro-Chat is on that list. Too bad Ray, the competition is only good in the United States. Better luck next time.

The list of 100 semi-finalists will be paired down to 40 by the middle of May, 1986. Eventually 5 finalists will be chosen. Then a winner will be selected and an alternate. The first journalist in space was scheduled for this fall but will be delayed because of the explosion of the Space Shuttle Challenger.

May Skies


NORTH
CASSIOPEIA
Deneb
Polaris
LITTLE DIPPER
Vega
The Kids
Capella
AURIGA
Dbl
BIG DIPPER
BOOTES
Overhead
Arcturus
OCl
Coma Berenices
LEO
The Sickle
Regulus
Pollux
Castor
GEMINI
Betelgeuse
OCl
Beehive
Procyon
CANIS MINOR
WEST
EAST
VIRGO
Spica
LIBRA
Dbl
CORVUS
SOUTH