

The Mason-Dixon Astronomer

Westminster Astronomical Society of Maryland

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Early Comet Halley Reports at April 30 Meeting

April was a busy month for WAS members who traveled abroad for a better view of Comet Halley. Ken Flynn went to central Florida while Mike Potter, Blaine Roelke, Steve Rice and Robert Sier Jr. journeyed down the coast to the Florida Keys. Farther south Curt Roelle viewed the comet from Montego Bay, Jamaica, and from the Andes mountains and desert in Peru. Dennis Mishler traveled the farthest south. He went all the way down to the Straits of Magellan in Chile. Some of you other members may also have vacationed south this month. We would like to hear your preliminary reports at the meeting.

A slide projector shall be available for those who bring slides. For those who bring prints, please have them mounted in a protective cover so they do not get damaged. We would like to see all Halley photographs taken by our members, no matter where you observed from.

The meeting shall be at 7:30 p.m., April 30, in Rm. 111 Lewis Science Hall, Western Maryland College, in Westminster.



Alpha and Beta Centaurus (left), Eta Carinae (right), and the Southern Cross (center) are visible in this photograph taken in the Andes at an altitude of 12,400 ft. from the Inca runs of Pucapucara near Cuzco, Peru. The Coal Sack, a dark interstellar dust cloud visible to the naked eye, is left of center. PHOTO: C. Roelle.

**** OBSERVING BULLETIN ****

Blaine Roelke and Mike Potter will be having open house at Key Observatory in Keymar for astronomy students from Western Maryland College on Tuesday night, April 29. They will be observing with the 17" telescope, and members are invited to help assist. In particular additional instruments are needed. If you wish to help, please come around dusk. The observatory is located at 6700 Keysville Road, Keymar, Maryland.

A.L. National Convention Update

As you hopefully know by now, the Baltimore Astronomical Society is hosting the 1986 national convention of the Astronomical League (A.L.) in August. At this time the BAS is encouraging early registration in order to obtain urgently needed seed money. WAS supports the BAS in this effort and has several members on the Convention Committee, including the co-chairmen, Mike Potter and Dave Pessagno. National conventions do not happen by magic alone. A national convention this near to Westminster is a golden opportunity for us. As new members of the A.L., the convention offers a perfect chance for us to become better acquainted with our League. Please support the BAS by registering early.

A.L. Extends Welcome to WAS

Frank Filemyr, WAS' Astronomical League Correspondent (ALCOR) has received a package of materials from the A.L. At the meeting he will briefly discuss the League and what they have sent us, as well as answer any questions you may have.

T-Shirts

T-shirts, sweatshirts, and caps should be available by meeting time for those who preordered. Please see Mike Scalion at the meeting to receive your merchandise.

Public Halley Watch at Hashawa May 4

WAS in cooperation with the Carroll County Parks Dept. shall host a Comet Halley observing night, 7:00 - 11:00 p.m., Sunday, May 4, at the Hashawa Environmental Center north of Westminster. Members are needed to bring telescopes, run the slide projector, and to keep the general order. This is a "last chance in a lifetime" event and is bound to be quite popular.

If you plan to help, then please come before 7:00 p.m. when the first slide show begins. Because of Daylight Savings Time, it shall not get dark until after 8:00. If you have questions or need directions, please contact Eugene Sterner at 346-7725 for more information.

Carroll County Astronomy Day

Saturday, May 10 is Astronomy Day in Carroll County. Why? Because we said so, that's why. The "official" A. D. was April

19, but is in reality determined worldwide by local custom.

We need volunteers to bring exhibits, telescopes, photographs, videotapes &c. We shall set up our displays at the Carroll County Library Main Branch (Main Street) at 9:30. It will be open to the public from 10:00 until 4:30 or so. We must be out by 5:00. Contact Eugene Sterner (346-7725), Astronomy Day Coordinator, for information.

May Star Party

Mike Scalion hosts a star party every month on the Saturday nearest New Moon. This month his star party should fall on May 10, Astronomy Day evening. You should call Mike and confirm this date. Mike's address is 2201 Green Haven Way, Hampstead, telephone 239-3105. A map was enclosed in the March MDA.

February Lecture

Dr. John Brandt's topic at the February 26 meeting was "Halley and the Exploration of Comets". Dr. Brandt is a Discipline Specialist for Large-Scale Phenomena (comet tail photography) for the International Halley Watch (IHW). Dr. Brandt was a comet scientist for the International Cometary Explorer (ICE) spacecraft mission which penetrated the tail of Comet P/Giacobini-Zinner last year, following which he was featured in an episode of the PBS program "Nova". Dr. Brandt is Chief of the Laboratory for Astronomy and Solar Physics at the NASA Goddard Space Flight Center.

In days of old comets were considered to be evil omens of doom. Each comet that appeared was thought to be a new comet until Edmond Halley used Isaac Newton's gravitational theory to prove that comets orbit the sun. We know the correct spelling of Halley's first name because he spelled it "Edmond". He varied the spelling of his last name using Halley, Hall'y, and Hally. The correct pronunciation rhymes with Wally, according to Dr. Brandt.

Dr. Brandt reviewed the leading theory that comets are dirty snowballs containing ices and dust. Energy from the sun causes the ice to sublime, or pass directly from a solid to a gas. Because comets are on the order of 5 km in diameter, they lack gravity sufficient to maintain the gaseous atmosphere. Pressure from the solar wind drives the gas and dust released from the comet to form the beautiful plasma and dust tails seen in photographs.

A quick overview of the anatomy of comets covered the nucleus, visible coma, and the plasma and dust tails. Another feature is the hydrogen cloud, best observed in ultraviolet light, whose diameter can reach 10 million miles. Comets have a structure that is simple overall, but complex when analyzed in detail.

The poor apparition of 1985-86 is compensated by the armada of spacecraft that have been dispatched to Halley. Each was targeted to reach Halley during the week that the comet crossed the plane of the earth's orbit on its outbound journey.

The European Space Agency's (ESA) Giotto was by far the most

daring, scheduled to pass within 300 miles of the nucleus, enabling features tens of yards across to be imaged with its cameras. Giotto was launched from French Guiana in July, 1985.

The Soviet Union's Vega-I and Vega-II probes also have good imaging systems and went to Venus before going to Halley. The name Vega is derived from the Russian words for Venus (Venera) and Halley (Gallei). They were launched in December, 1984.

The Japanese Space Agency (ISAS) also launched two probes, Planet-A and MS-T5. They were launched in August and January, 1985.

The American International Cometary Explorer (ICE) was the first spacecraft to reach a comet. On September 11, 1985, ICE passed through the tail of P/Giacobini-Zinner at a distance of 7800 km downwind from the nucleus. NASA's Robert Farquhar determined the nudges and orbital dynamics that moved ICE from a halo orbit around the L-1 point of earth (between sun and earth), employing five gravity assists from the moon, that sent it on its way to the comet.

The mission was not without risks. The final lunar encounter happened on December 22, 1983. At this time ICE was committed to a predetermined rendezvous point. But Giacobini-Zinner was not recovered until April 3, 1984, as a 23rd magnitude object from Kitt Peak National Observatory! The transmitter onboard the spacecraft was not designed to operate more than 1/100 A.U. from the earth. But at closest encounter ICE would be 1/2 A.U. distant! The greatest share of the cost was spent developing receivers sensitive enough to pick up the weak signal.

Observatories around the world donated observing time for tracking the path of the comet. The Japanese Space Agency loaned NASA their 64 meter dish to fill a gap in the Pacific region.

The antennae of ICE spanned a football field, 94 meters. A mass spectrometer confirmed the existence of water ice. The plasma detector measured 294 impacts with cometary dust particles.

Dr. Brandt then showed a photograph taken on the night of September 13-14, 1985, when Comets Halley and the brighter Giacobini-Zinner were within the same field of view. This picture has been dubbed the "changing of the guard" by professional astronomers. Giacobini-Zinner was on the way out, and Halley was on the way in. [This was the same night that Halley was first observed at a WAS star party - Ed.]

Dr. Brandt then showed other recent Halley photographs taken at NASA's Joint Observatory for Comet Research (JOCR), located near Socorro, New Mexico.

The IHW consists of eight disciplines: (1) large scale phenomena, (2) near-nucleus studies, (3) spectroscopy and spectrophotometry, (4) photometry and polarimetry, (5) infrared spectroscopy and radiometry, (6) radio science, (7) astrometry, and (8) meteor studies. The IHW requires the resources of at least 100 observatories worldwide to handle the constraints of geography and weather.

Dr. Brandt showed a series of photographs spanning 18 hours, taken in 1910 at observatories in Wisconsin, Hawaii, and Beirut,

in which E. E. Barnard noticed that the tail appeared to separate from the comet. This common phenomenon has been dubbed by Dr. Brandt a Disconnection Event (DE). According to Dr. Brandt, he discovered them in 1978, and then discovered that Barnard discovered them in 1896! He expanded on current explanations in response to questions following the lecture.

In conclusion, Dr. Brandt showed slides of a series of 1910 vintage German postcards depicting a smiling moon and planets, a stern looking sun, and a whimsical Halley's Comet skipping along as the spheres observe through their telescopes. The happy-go-lucky comet, with five-pointed star-like nucleus, carelessly impales itself on the earth, and as the sun looks on in utter disgust, the moon pries it loose, bandages up the hole, and sends the teary-eyed and humiliated comet on its way with head hung low.

"Halley and the Exploration of Comets" is available for loan to members on videotape in VHS format.

WAS CALENDAR

April	29	dusk	Open house w/17" - Key Observatory
	30	7:30 p.m.	Monthly Meeting
May	4	7:00 p.m. to 11:00 p.m.	Public Halley Watch - Hashawa Center
	10	9:00 a.m. to 5:00 p.m.	Astronomy Day - Library, Westminster
	10	dusk	Star Party - Mike Scalion, Hampstead
August	5 through 10		A.L. National Convention - Baltimore

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