

AMATEUR OBSERVER'S BULLETIN

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IHW NEWS

Observations of Comet Halley continue to be made, albeit at a reduced rate, by the professional astronomical community during each observing season. Observations at the European Southern Observatory, involving hours of integration over several nights, show the comet to still be carrying a small coma with it. There is beginning to be a consensus that the rotation of the nucleus is an oblique spinning with minor nodding of the long axis and an oscillatory roll about the long axis.

Amateur observations closed with David Levy's magnitude estimate of 16.6 and Charles Morris' estimate of >16.5 on 1988 Feb. 23. Ten months earlier, in late April 1987, Halley surprised observers with an outburst when it was much farther from the Sun than where one would have expected such an event.

The principal product of the IHW, the archive, is well along in production. A test version of the CD-ROM containing the archive of Comet Giacobini-Zinner observations has been distributed to scientists for evaluation. It contains tabular data as well as digitized imagery. The tapes of Halley data have arrived from the Discipline Specialist centers for use in producing the Halley CD-ROMs (23 to 28 will be needed, most containing digitized wide-angle imagery). The

archive will be distributed to professional astronomers, observatories, and research libraries over the next year.

Overall, the IHW was a great success. More astronomers participated than expected and the data return has already led to better understanding of comets. The publication of the archive can be expected to continue this process for decades to come.

AMATEUR OBSERVATIONS OF P/GIACOBINI-ZINNER

The CD-ROM of G-Z observations contains 1016 listings of the comet's visual appearance (magnitude, coma diameter, tail length and PA, etc.), 53 listings of drawings, and 20 listings of photographs (only photos for which an image of some kind is on file are listed). Only the Astrometry Network has more files in the archive than the amateur observers. Amateur observations of all types span the period 1985 April 13 to December 10, and 106 observers' work is included in the archive.

Listed below are amateur astronomers who submitted observations of G-Z. An asterisk (*) indicates there is no Observer Index form on file for the observer. The letters following the names indicate the types of observations made: Astrometry, Drawings, Magnitudes (visual appearance), and Photographs.

P/GIACOBINI-ZINNER OBSERVATION SUBMITTERS

*Adamoli, Gianluigi	M	Harrelson, James P.	P	Poitevin, P.	M
Aerts, Leo	M	Hasubick, Werner	M	*Portela, Alfredo	P
*Aleynikov, A.	M	Haver, Roberto	M	Remo, Sala	M
Arbour, Ron	P	Hayashi, A.	M	Ridley, H. B.	P
Bohme, Dietmar	M	Hudak, Daniel M.	M	*Ripero, Jose	D
Bortle, John	M	*Izquierdo, Jaime	P	*Rodriguez, Diego	D
Bottger, Bernd	M	Jones, Albert F.	M	Rossi, Luigi	M
Bouma, Reinder	M	Kammerer, A.	M	Sabia, John D.	P M
Bro, Mark	M	Keitch, Graham S.	M	Sanchez, J. L.	P
Bus, E. P.	M	Knight, S.	M	*Sanford, John	P
Campos, Jose A. S.	M	*Knyazyuk, N.	N	*Sanz, Angel	D
Caramella, Roberto	M	Koch, B. O.	M	Schambeck, Christian	M
*Cardiel, Nicolas	D	Koch, V.	M	Scholten, A.	M
Castino, Rocco	M	Korth, Stefan	D	Schott, Gerd-Lutz	D
Cavagna, Marco	M	Kuipers, G.	M	Seargent, David	M
*Chernis, K.	M	Lieder, Freidreich	M	*Serov, V.	M
Clark, Maurice L.	M	Linder, Jurgen	M	Shanklin, J. D.	M
Cluyse, L.	M	Lipski, Peter	M P A	*Shirokov, A.	M
Comello, Georg	M	Lovejoy, Terry	D	Sicoli, Piero	M
*Conte, Guido	M	Luga, M.	M	*Solodkin, V.	M
DeYoung, James	M	Machholz, Don	M	Sostero, Giovanni	P
Dietrich, M.	M	Maraziti, Antonio	M	Spratt, Chris E.	M
Dilsizian, Rick	P	Masnik, R.	M	Stomeo, Enrico	M
Edberg, Stephen	M P	*Maydik, A.	M	*Sventitskiy, V.	M
Fabre, Ray	M D	Meozzi, Diego	M	Tregaskis, T. B.	M
Fabrizio, Melandri	M	Merlin, Jean-Claude	M	Troiani, Daniel	D
Feijth, Henk	M	Mikuz, Herman	M	Underhay, E.	M
Fender, Eldin	M	Milani, G. Antonio	M	van de Weg, R. L. W.	M
Ferrin, Ignacio	M	Moeller, M.	M	van der Laan, T.	M
*Gallego, Jesus	D	*Normil, V.	M	van Loo, F. R.	M
Genebriera, Joan	P	Morris, Charles S.	M	*Velasco, Enrique	D
Glassett, Walt	M	Morrison, Warren	M	*Velasco, Pedro	D
Glowinski, C.	M	Nassr, J. L.	P	Ventura, Frank	M
*Gomez, Angel	D	*Nesterov, Yu.	M	Villa, Mirco	M
*Gomez, T. L.	D	Nolle, Michael	M	Watanabe, Akira	M
Gozzoli, Enrico	M	O'Meara, Stephen J.	D	Zanotta, Mauro	M
Green, Daniel W. E.	M	Paradowski, Mieczyslaw	M	Zanstra, W. T.	M
*Guryanov, S.	M	Parisio, Roberto	M	Zische, Eberhard	M
Guthier, Otto	M	Pearce, Andrew	M		
Hale, Alan	M	*Pedraz, Santos	M D		

AMATEUR OBSERVATIONS OF P/HALLEY

A final count of amateur observation records of Comet Halley numbers 15,160, distributed among 11,641 observations of the visual appearance, 1309 drawings, 2165 photographs, and 45 spectrograms. Amateur observations will hold a plurality in the total number of observations in the archive. These observations span 1985 January to 1988 February, a remarkable length of time. A total of 870 amateur astronomers submitted observations of the comet.

A number of wide-angle photographs of the comet have been requested by the Large Scale Phenomena Network for use in the Halley Atlas. A Spectroscopy and Spectrophotometry Discipline Specialist has pointed out that amateur spectra are the only ones for this apparition that record Halley's complete spectrum in one record.

Listed below are amateur astronomers who submitted observations of Halley. As noted above, an asterisk (*) indicates there is no Observer Index form on file for the observer. The letters following the names indicate the types of observations made: Astrometry, Meteor Counts, Drawings, Magnitudes (visual appearance), Photographs, and Spectra.

P/HALLEY OBSERVATION SUBMITTERS

*Abad, Carlos	M	Bernardis, Angelo	M	Campbell, Robert N.	M
Abbadessa, Mario	M D	*Bernasconi, Angelo A.	M	Campos, Jose	M
Abbott, Jim	P D	*Bertucci, Franco	M D	Camurri, Luca	M
*Adamoli, Gianluigi	M D	*Bezrodnij, A.	M	*Cano, Manuel	D M P
Aerts, Leo	M	*Bezerra, Ulisses Lenos	P	*Canonaco, G.	P
*Afeltra, Javier	P	Bhadriah, L. H. Evans	M	Cappellari, Michele	M D
Akita, Isao	M	Bhattacharyya, Rabindra Kumar	M	Caramella, Roberto	M D
*Aleynikov, A.	M	Bigbie, Biff	P	Cardiel, Nicolas	D
Allen, Eric	M	Bilek, Vlastimil	M	*Carello, Silvano	M
Allen, Mark T.	P	*Binard, N.	M	Carragan, Julie	M P
*Alvarez, Manuel Lopez	P	Binnewies, Stefan	P	Carragan, William	M P
*Alves, Avelino A.	M	Birkner, Alan Jay	M	*Carrington, Peter	P
Amoretti, Mauro	M	Blown, E.	P	Castineiras, Ricardo S. J.	P
Andreas, F.	P	Boettger, Bernd	M P	Castino, Rocco	M
*Anke, Daniell	M	Boetto, Massimo	M	*Castrillon, Maria Elena	M
*Anklam, W.	D	Bohme, Dietmar	M	Caviglia G., Fernando	M
*Anthony, Darren	M	*Bonnet, M.	P	Caviglia G., Leonardo	M
Arakawa, Sinji	C	*Bordignon, Fiorenzo	P	*Caviglio, Gripero Fernando	D
Arbour, Ron	P	Bortle, John E.	M	*Chanal, R.	A
Ariail, Robert B.	M	Both, S. J. J.	M	*Chavez, Manuel Rojas	D
Arpin, Pierre	D	Bouma, Reinder J.	M	*Chen, Dong Hua	P
Ashdown, Michael	M	Bracken, Ray	M	*Chernis, K.	M
Ashley, James B.	D P	Bragadin, Alberto	M D	Chester, Geoffrey R.	P
Atala, Hernan E.	D	Brancik, Kamil	M	Chian, Ru-hu	P
Auckbur, Ricaud	M	*Brandli, Walter	P	Chmielewski, Wladyslaw	M
Bagla, J. S.	D M	*Breisemeister, Jorg	D	Chodorowski, Franciszek	M D P
Bailey, George	D M	Bremseth, Per-Jonny	M D P	*Chuprakov, S.	M
Bailey, Thomas E.	M	Bretschneider, Hartmut	M	*Churyumov, K.	M
Barak, Richard	M	Bril, H. J.	M	Cifuentes T., Eduardo	D M
Barani, Roberto	M	Bro, Mark	P	Cimatti, Andrea	M P
*Barclay, Jim	P	Brogioni, Alfredo	M D	Cimetta, Mauri	M
Baroni, Sandro	M	Brown, Joseph L.	D	Clark, Maurice Leonard	M
Bartnik, Michael	M	Brown, Sara	D P C	*Clay, Meeghan	M
Battacharyya, Dr. Rabinda K.	M	Bruhln, Werner	P	*Cockeram, Louise	M
*Battaini, Paolo	P	*Bruno, L.	M	Coco, Mark J.	P
*Battipede, Francesco	P	Brutsche, Eric	P	Comello, Georg	M
*Batza, Hilmar	M	Brutsche, M.	P	Conrad, Rudolph	M P
Bauer, Hans-Peter	M	Bryant, Ken	P	Cook, Anthony	M P D
Beach, Greg	M	Buchanan, W. Tom	P S	*Coviglia, L.	M
Begbie, Michael	M	*Budilka, P.	M	Crist, Michael	P
*Bekeshev, D.	M	*Bukotkin, A.	M	*Crossley, Gary	P
*Belll, Vanni	P	Burch, John Q.	D M	Csomos, Gabriel	M
*Belyaev, D.	M	*Burrows, Joh-Ann	M	*Csukas, Matyas	M D
Bembrick, Colin	M	Bus, E. Peter	M	Cunningham, James	P M
Benavides, Alfonso	M	*Buso, Victor A.	P	Curtis, David	D M
*Berge, P. M.	P	Bustos, Arnoldo	M	Cuthill, Douglas D.	D M
*Bernabeu, Manuel	D M	Buzonas, Robert E.	M	Cuthill, Laird	D
*Bernal G., Antonio	P	*Cake, David	M	Czerniewski, Wiestow	M

Dahlquist, Ronald	M	Gainsford, M. J.	M	*Hladik, Mark	M P
Dal Santo, Mauro	M	*Gallego, Jesus	D M	Hodonsky, Kenneth	M
D'Amico, Andrew	P	*Galli, Alejandro	M	Honko, Maigorzata	M
*Danilov, M.	M	*Gandini, Alfredo	M	Hope, K.	M
*Darren, Anthony	M	*Garcia, A.	P	*Hornsby, Bernard R.	M D
Darvann, Tron Andre	P	*Garrada, G.	M	House, Ronald R.	M
da Silva, Luiz Augusto L.	M	Carradd, Gordon J.	M P	*Howe, Arthur L.	D
Date, Makoto	M C	*Garsztko, Jean-Philippe	D	Howland, John Allan	M D
*de Abreu, Edimar Rodrigues	C	*Gaucher, Claudio	M	Hroch, Filip	M
de Assis Neto, V. F.	M	*Gavin, Maurice	P	Huang, Zhong Dong	P
de Chazal, Gonzalo	D	Geenen, J. J.	M	Hudak, Daniel M.	M
Deconinck, Michel	M	Gelinas, Marc A.	M	*Humensky, Dr. J.	M
*Deitch, D. Gregory	D	Genebrifera, Joan	P	Hurst, Guy M.	M D
de la Rosa, Alfredo	M D	*Cerasimov, A.	M	Ichikawa, Kazuhiko	M
*Delfs, M	D	Gerber, Friedrich Wilhelm	D M S	Infantes, Marilu	C
de Lorenzo, Antonino	M	*Germann, Robert	M D	Ino, Yoshhiro	M
*de Luis, Jose	P	Chione, Gabriele	P	*Inwood, Neil	M
*Deshmukh, C. K. Mane	D M	*Giampaolo, Gambato	M	Isenhart, Chip	P
DeYoung, James	D M	Gianforte, John S.	P M	Ito, Osamu	C
*Diaz P., Edgar	M P	Ciergielewicz, Jerzy	P	Ivan, Peter	M
*Dietel, D. Gregory	D	Gigli, Paolo	M	*Ivanov, V.	M
Dietrich, Mathias	M	Gilbert, Cecil	M	Iwaki, Yoshitaki	M
Dilsizian, Rick	P	Gilchrist, Douglas K.	M	*Izquierdo, Jaime	P
Di Meglio, Francesco	M D	*Girardo, M. Marcela	M	Jacobs, Tom	M
Dionisi, Massimo	M D	Giraudi, J. D.	M P D	Jacobson, Eric A.	M
Dodd, William J.	M	*Giuntoli, Massimo	M	Jacoby, Margaret M.	M
Dominici, Andrea	M D	Glassett, Walt	M D	Jager, Michael	P
Donatiello, Giuseppe	D	Glowinski, Christian	M	Jahn, Jost	M
Donth, David	M D	*Gojdic, Stefan	D	Janecek, Vit	M
Dornacher, Werner	D P	*Goldfarb, M.	M	Jannink, D. W.	M
Douma, Harry	M	*Golubev, V.	M	*Jeffrey, J. Thomas	M D
Dragesco, Jean	P	*Gomez, Angel	D M	*Jing, Feisheng	D M
*Drapun, A.	M	*Gomez, T. L.	D	Johnstone, G. F.	P
*Drapun, I.	M	*Gonzales, Alejandro	M D	Jones, Albert	M
*Duran, Leonidas	M	Gora, Dariusz	M	Jones, Barrie W.	P
*Dyachuk, A.	M	Gorski, Larry	H	Jorczyk, Rainer	P
*Dzhultae, K.	M	*Gostev, A.	M	Jordan, Jerry	M
*Dziura, Wilhelm	M	*Couran, Mohamad A.	D	*Kabalin, V.	M
Eberhard, Paul	P	Gozzoli, Enrico	M	Kaila, Kari	M
Edberg, Stephen	M P S	Graham, Francis G.	D P S M	Kalauch, Klaus-Dieter	M P
Elias, Pavel	M	Granslo, Bjorn H.	M	Kamenickj's, Milan	P
Eltri, Maurizio	M	Graves, Donald	M	*Kamichitis, Joe	P
Emerson, Gary	P	*Graziani, Mauro	M	Kammerer, Andreas	M
*Emrich, Georg	P M	*Green, D. W. E.	M	*Kamnev, Y.	M
*Ensargueix, Yvonne	D	Grieser, Daniel	S	Kanai, Kiyotaka	M
*Esparza, Daniel A.	P	Grogel, Oliver	P M	*Kasirin, I.	M
*Essandon-Yeddo, Joseph	M	Gronck, James D.	M P	Kato, Taichi	M
*Evans, Simon	M	*Gruengard, Emanuel	P	Kaufmann, Ronald	M
Fabre, Ray	D M	Guarro Flo, Joan	P	Kauschke, Andreas	M
Fabricius, Jan	M	Cubo, Herbert	M	Kawasaki, Yasuhiro	C
Fajardo, Sergio	M	*Cuerrini, Fabrizio	M D	*Kazanski, D.	M
Falorni, Marco	M D	*Guershon, Roy	M	Keen, Richard A.	M
*Falsarella, Nelson	P	Guhl, Konrad	P	Keijmel, P. C.	M
Falvo, Samuel A.	D M	*Guryanov, S.	M	*Kellner, Anton	M
*Fangor, Roman	M	Guthier, Otto	M	Kemble, Fr. Lucian J.	D M
*Fariello, Carlos A.	M	Haagh, Niels	P	Kerber, Florian	M
Farrington, William R.	D M	Hajek, Petr	M	Keszthelyi, Sandor	D M
*Farroni, Gino	D P	Hale, Alan	M	Kieltyka, Grzegorz	P
*Fedenko, L.	M	*Hall, Bill	P	*Kirsch, Karsten	P
*Fedkiv, N.	M	Hannon, James	D M P	*Kiselev, N.	M
Feijth, Henk	M	*Hannum, Jim	P	Kishi, Ayumu	M
Ferrin, Ignacio	M D P	*Harrington, Philip	M	Kitamura, Kiichiro	D M
*Filho, Antonio Padilla	C	*Harris, Luis Alberto	M	Kitta, Dietmar	P
Filimon, Erwin	M	Hasegawa, Ichiro	M	Kliche, Jan-Lars	M
*Fillimonchev, S.	M	Hasegawa, Takashi	M	Knain, Erik	M D
Firth, Mary	P	Hashimoto, Takema	C	Knight, Stephen	M
Fischer, Daniel	M P	Hasubick, Werner	M	Knisley, David	D M
Fischer, Lynn S.	P	Haver, Roberto	M D	*Knyazyuk, N.	M
*Fitzgerald, P.	M	*Havrilak, M.	D	Kobayashi, Juro	M
Fleet, Richard	M D	*Hayashi, Akiyoshi	M	Kobe Univ. Astronomical Club	C
Folz, German	M	Hayashi, Hironori	M	Koch, Bernd	M C
Foster, Grant	M	Hays, Robert H. Jr.	D M	Koch, Bernd	P
Foulkes, Michael	M D	Healy, David	P	Koch, Volkmar	M
Fox, James H.	D M	Hebert, Scott	M	*Kohler, Norbert	P
Franch, John	M D	*Henderson, M. C.	M	Kojima, Takuo	P
Franciosi, Carlo	D M	Henshaw, Colin	M	*Kolchanov, V.	M
*Freydank, Erika	D	Henzler, Jurgen	M P	*Kolomeyets, S.	M
*Freydank, Heinz	D	Hernschier, Wolfgang	P	*Konstantinov, S.	M
Fritsche, Andreas	P	*Higuera, Armando	P	Kopp, Matthias	D
Frosina, Angelo	M	Hilburn, Alan P.	D M	Kopplin, Jorg	M
Fukui, Keiichi	C	Hiragu, Mitsuataka	M	*Kopriva, Mike	M
*Fullmer, Jack	P	Hiroe, Toru	C	*Korneev, V.	M
*Furia, Salvatore	P	Hirth, Gerhard	M	Korth, Stefan	D M P

Kosa-Kiss, Attila	M D	*Martis, A.	M	*Onofre D., Dalavia	M
Koschny, Detlef	D M	Maruyama, Takuya	C	*Oskin, E.	M
Kosinski, Janusz W.	M	Marx, Harald	M	*Oss, James D.	D
Kourimsky, Miroslav	M	Masnik, Bob	M D C	Ostergaard Oleson, J.	P
Kral, Martin	M	Matchett, Victor	M	Pacholka, Walter	P
Kraling, Winfried	M	Matgorzata, H.	M	Padilla, Steve	P
Krisciunas, Kevin	A M P	*Matthias, Dietrich	M	*Palko, Yu.	M
Kronk, Gary Wayne	M	*Maturkanic, Michal	M P	Paolinetti, Riccardo	P
Kroon, B.	M	*Maydik, A.	M	Paradowski, Mieczyslaw	M P
*Krylov, A.	M	*Maylisov, P.	M	Parisio, Roberto	M D
Kucera, Petr	M	McBain, John	M	*Parker, Don	P
*Kudzej, Dr. Igor	M	McBride, Paul	M	Parkinson, Murray Linton	M
Kuipers, Gauke	M	*McFarland, John	P	*Paschenko, A.	M
Kukkonen, Ilmo T.	M D	McGaha, James	M	*Pashko, D.	M
Kurokawa, Takesi	C	*McLaughlin, Robert	M	Passalacqua, Pat	D M
*Kurtsov, S.	M	McNaught, R. M.	D P	Paul, Eberhard	P
Kusumi, Eiji	M	Medway, Ken	M	*Paulos, Marvin	M
*Lairret, Rafael	M	Mehta, Kiran N.	M	*Pawlutschenko, B.	D
*LaMar, Diana	P	Melandri, Fabrizio	M P C	Pearce, Andrew	M
Lanino, Bernardino	M	*Mendez, Ildefonso	M	*Pedersen, Viggo Th.	P
Laroche, Yves	P	*Mendez, Javier	M	Pena, Edgar Diaz	P
Laszlo, Antoni	M	Menichetti, Roberto	M D	Pennelli, Giovanni	M
Lavarack, Neville	M	Meozzi, Diego	M	Pereira, Alfredo	M
Lazerson, Howard	P	Merlin, Jean-Claude	D M	*Perez, Alain	D
Lehmann, Thomas	M	*Mhaiskar, S. D.	D	*Perez, Diego Rodriguez	P
*Leider, Alberto	M	Micek, Ivo	M	Persell, Dorothy	P
*Leitao, Claudio Brasil, Jr.	M	Mikuz, Herman	M P	Pesci, Frank	M
*Lepardo, Antonio	P	Milani, G. Antonio	M	Pesci, Stefano	M D
*Levai, Renato	M C	*Min, Wai Yee	P	*Petrov, P.	M
Levy, Alberto	P	Minton, R. B.	M P S	Pfitzner, Elvira	M
Levy, David	D M	*Misuhi, A.	M	Phillips, James H., M.D.	D M
Lewis, David E.	P	*Mitchell, Katrina	M	Piccinini, Massimo	M
*Li Causi, Gianluca	M D	Mitchell, Robert C.	P	Pilch, Robert	M
Lieder, Fredrich	M P	Mitsuma, Shigeo	M	Pilski, Andrzej	M
Lifgren, Martin W. Jr	M	Mitsutaka, Hiraga	M	*Pinto, Jose Angelo Leite	P
Linder, Juergen	M P	Mobberley, Martin	P	*Pishenko, V.	M
Linger, Stephen F.	M	Moeller, Michael	M	*Pizzi, Rogelio	D P
Linke, Heiko	M P	*Molero, Hebert	M	*Pleshkunov, D.	M
Lipski, Peter	A M P	*Molinari, Luca	P	Polak, Jiri	M
*Little, Robert T.	P	*Moller, Dennis	D	*Polus, Greg	P
*Llabres, Juan	D M	Momose, Masahiko	M	*Ponomaryov, E.	M
*Lohvinenko, Todd	D P	Monopoli, Marcelo O.	D	*Poroshin, A.	M
*Lopez, Eduardo V. A.	P	Moore, Arthur	P	*Portela S., Alfredo	P
*Losada, Rodrigo	M D	Moreno, Gonzalo	D M	Posa, Otto	M
Lovejoy, Terry	D M P	Moriya, Masashiro	M	Poulos, Darwin	M
*Lovera, Analia	M	*Mormil, V.	M	Pratibha, Tripathi	D
*Lozano, Luis	M	Morris, Charles S.	M	Pravec, Petr	M
Lucius, Dirk	D M	Morrison, Warren	M	Priester, David C.	P
*Ludewig O., Luis Felipe	M	Morrisby, Arthur G. F.	M	Pryal, Jim	M
*Luft, Herbert A.	M	Mosch, Jorg	M	Purvinskis, Robert	M
Luga, Marek	M	Moskal, Wacław	M	*Qi, Shanguan	M
Lund, Loren M.	P	*Moyano, Rosario	M	Quintana R., Carlos J.	M
Lunde, Runar	M	Muller, Knut	P	Raffaello, Danti	M
Lupianez, Bernardo	M	*Muller, Russell D.	P	Rainer, J.	P
Luthen, Hartwig	M	Muller, W.	P	Rapavy, Pavel	M P
Luukkonen, Ismo	M	Munoz, Luis E.	M	*Rasmussen, Jerry	P
*Lyubavin, A.	M	*Muravyeva, Yu.	M	Ratz, Kerstin	M
Maat, W. J.	M	Nagele, Arno	M	Ratz, Manfred	M
*Macaulay, Brian	M	Nakamura, Akimasa	M	*Rawlings, Paul	M
Machholz, Don	M	Nakamura, Yuuzi	M	Reddemann, Norbert	P
Maciejewski, Witold	M	*Naranjo, Orlando	M	Renner, Gilberto Klar	M
Mac Kenzie, Graham	M D	Nassr, John L.	P	*Ribas, Josep Marti	M
*Madenberg, Janet	P	*Navalhin, M.	M	*Richards, A.	P
Maeda, Shozí	M	Negishi, Mika	C	*Richardson, Colin	P
*Magalhaes, Dr. Antonio Mario	P	*Nelson, Jeremy	M	Riccabone, Giuliano	M D
Magrath, Bernard	P	*Nelson, Ronald S.	P	Richert, Marcus	M P
*Mahoux, G.	P	*Nesterov, Yu.	M	Ridley, Harold	P
Mahuron, Jimmy G.	M	*Nezry, Edmond	M	*Ripero, Jose	D M
Nakela, Veikko	M	Nieborek, Tomasz	M	Risch, Michael	M
Makino, Jun	M	Nieschulz, H.	A	*Riveros, Carlos	P
*Maksimov, S.	M	Nijjima, Tsuneo	P	Robertson, Glenn	P
*Mamedov, V.	M	Nolle, Michael	M D	Robertson, Timothy	M
Mameta, Katuhiko	C	Notley, Mary	D M	Robinson, Paul	D
*Mandon, Eric	M	Nowak, Gary	D M	*Robinson, Robert L.	D M
Manoussos, Bill	D	*Ocampo M., Walter	M	*Robledo, Jorge A.	M
*Manulis, Ilan	P	*Ocenaz, Daniel	M	Robotham, Rob	D
*Mao, Alessandro	M	Ochiai, Takashi	P	*Rodriguez C., J. A.	M D P
Marafie, Abdul Hadí	P	*Ofek, Eran	C	*Rodriguez, Jaime	P
Maraziti, Antonio	M	Oka, Akio	M	Rodriguez, Ramiro	M
*Marcario, Mike	M D	Okada, Masanori	M	*Rodriguez, R. L.	M
*Marekfia, Gunter	M	Okuda, Masataka	M P	*Rodriguez, Victor	M
Martin, Donald	P	Okumura, Shigemí	M	Rogers, John	M D
Martinez, Claudio M. J.	P	O'Meara, Stephen	M	*Rogozin, V.	M
*Martinez, Patrick	P			Rogusky, Helen Berta	D M

*Rojas, Mario Chaves	D	Soder, James	P	van Munster, T.	M
Roos, M. C.	M	*Sorathia, Barkat	M	Vargas B., A. G.	D P
Rosenthal, David A.	P	Sostero, Giovanni	P	*Vasile, Lupean	D
Rossi, Luigi	M	*Sowani, V. V.	M	*Velasco, Enrique	M
Rousom, John F. W.	M	Spalding, G. H.	M	*Velasco, Pedro	M
*Roy, Herve'	D	Speil, Jerzy	M	*Venant, Philippe	D
*Royer, Fr. Ronald E.	P	Spratt, Chris E.	M	Ventura, Frank	M
Rozdilsky, Jack	P	Srinivasan, S. R.	M	Verdener, Michel	D M
*Rudakov, G.	M	Stahlhut, Jorg	P	Verhoeven, P. G.	M
*Rudenko, S.	M	Stangl, Martin	M D	Vesely, Jiri	M
Rudolph, Michael	M P	Stapleton, Jay	M P	Villa, Mirco	M P C
*Rueda, N.	P	Stephan, Christopher	M	*Villar, Washington	M
*Ruiz, Javier	M	Stolzen, Peter	P	*Villate, Francisco	P
Rumsey, Paul	P	Stomeo, Enrico	M	Villegas, Silvina	M
*Rumyantsev, I.	M	Storey, David	M	Vincent, A.	P
Sabella, Charles A.	M	Stott, David	M D	Vincent, Dr. Fiona	P
*Sabers, Don	P	*Sullivan, Shane	M	Vincent, John V.	M
Sabia, John D.	M P	Suzuki, Kenzo	M	*Vitovtov, Yu.	M
*Sajtz, Andrei	M D	Swart, E. T.	M	Vohla, Frank	M
Sakai, Yoshihito	P	Swavely, Michael	M D	VKS Frankfurt Am Main	P
Sanchez, Antonio	M	Szulc, Mieczyslaw	M	Volkssternwarte Hof	M
Sanchez, Domingo	P	Szymocha, Marek	M	Wagner, Gerold	M
*Sanford, John	P	*Takacs, Robert	P	Wakatsuki, Makoto	M D
*Santos, Pedraz	D M	Takahashi, Ryo	M	Walker, James D.	M D
Saraceno, James	M	*Tame, Jason	M	*Walker, Jerry L.	P
Sardini, Davide	M D	*Tanasijevic, Zoran	M	Walker, Paul	M
Sarocchi, Damiano	D	*Tanikawa, Masatoshi	D M	Walker, Raymond M.	M
*Savchenko, N.	M	Tanti, Tony	M	Wallace, Bryan G.	P
*Savelyev, A.	M	Tarnutzer, Andreas	P	Ward, Antony	M P
Saxon, Vernon P.	M	*Tatarnikov, A.	M	Washi, Izumi	M
*Scardella, Maurizio	M D	Tatum, Randy	P	Washi, Shinsyo	M
Schambeck, Christian	M D	Taylor, Drew L.	P	Watanabe, Akira	M
Schmeer, Patrick	M	Taylor, Melvyn Douglas	M D	Watanabe, Hiroko	M
Schneidereit, Jorg	P	Temprano, Javier	D M	Watanabe, Nobuo	M
Scholten, Alex	M	*Thebault, Serge	D	Webb, Robert	P
Scholz, M.	P	Thomas, Axel	M	Weise, Wilfried	P
Schott, Gerd-Lutz	D P A M	*Thomas, M.	P	Weissferdt, Frank	M P
*Schroeder, Jeff	P	*Thompson, Gregg D.	D M P	Westlund, Margareta	D M
Schumacher, Klaus	M D	*Thorel, Jean-Claude	D	*Whitney, Andrew	M
Sciezor, Tomasz	M D	Toledo, Joe	P	*Whitney, J.	M
Seargent, David A. J.	M	Tomohiro, Hideo	C	Wikholm, Leo	M
Searles, Mike	D P	Tonomura, Yasuhiro	C	Will, Matthew	M D
*Sedelkin, D.	M	*Torres, E.	M	Williams, Debra J.	D M
*Selevich, G.	M	Townsend, Robert Clive	P	Williams, Jeff	D
Shabram, Joe	M	Travnik, Nelson A. S.	P	Williams, Peter F.	M
Shakalis, William E.	M	*Treasure, Michelle	M	Wils, Patrick	M
Shankar, Arun	M D	Trebacz, Aleksander	M	Wilson, Annette M.	D
Shanklin, Jonathan D.	M	Tregaskis, Thomas B.	M P	Winkler, Roland	M
Sheckler, Beth	M	*Tripathi, Pratibha	D	Winzer, Andre	P
*Sheinberg, Chen	M	Trixler, Frank	M P	*Wire, Bob	M
*Sheppard, Aaron	M	Troiani, David M	D M	*Wirtanen, Paul-Christer	M D
Shiba, Yasuo	C	*Trost, D.	M	Wisniewski, Dr. Peter M.	D M
*Shilov, S.	M	*Tsvetkov, L.	M	Witte, Frank	M P
*Shirokov, A.	M	*Tsygankov, D.	M	Woidyla, Bruce	P
*Shitikov, A.	M	Turner, Neal	M	*Wood, Jeff	M
*Shuib, Abdul Rahim	D	Tuten, Jonathan	D P	Xia, Zhong Hui	D M
*Siccardi, Leonardo J.	M	Uberti, Massimo	P	Yabu, Yasuo	C
Sicoli, Piero	M	Uda, Kiyo-o	M	Yakimara, Hirashi	C
Sieler, Dave	P	Ueda, Keiko	C	Yasuki, Masanori	M
*Sikoruk, L.	M	Ueda, Masayoshi	C	*Yen, Bob	P
Silhan, Jindrich	M	Ueno, Toshihiko	C	Yoshihiro, Ino	M
*Silva, Vivian	M	*Ulbricht, S.	D	*Young, James W.	P
Simmons, Karl	M	Underhay, Ernest	M	*Yurchenko, Yu.	M
Simmons, Wanda	M	Urbanski, Piotr	M	*Zagaynov, V. A.	M
Skjaeraasen, Olaf	D M	Vaclik, Franlisek	M	*Zalles, Rodolfo	P
Skorupa, Waldemar	D	Vahle, Dirk	M	Zanette, Damian	D P
*Skvarka, Juras	P	Valasek, Vladimir	M	Zanotta, Mauro	M D
*Sladkov, Ya.	M	Valeriani, Gino	P	Zanstra, W. T.	M
Slusarczyk, Janusz	M P	*Valisa, Paolo	P	*Zanut, Stefano	M
Smith, Alton	D M	Valjus, Petteri	M	*Zhigalev, A.	M
Smith, Bill R.	D	van Asperen, H.	M	*Zhou, De-jun	P
Smith, Douglas	M	van der Laan, T. A.	M	*Zimnikoval, Peter	P
Snyder, Leroy	P	van der Mey, Lex	M	*Zinvyev, V. A.	M
Socha, Ladislav	P	van de Weg, R. L. W.	M	Zische, Eberhard	M
*Societe Astronomique De France	D P	Vanin, Gabriele	M P	*Znasik, Miroslav	M P
		van Loo, F. R.	M P	Zortman, Terry	M

FROM THE METEOR RECORDERS

It has been an interesting period, old acquaintances were renewed and new ones made. For us, the Recorders for Amateur Meteor Studies, it was a time of learning and hard work. It was enjoyable and really, despite the best the postal services of the world could do to lose and misroute data, lots of fun. We both would like to try it again for a few years around 2061, but it will be beyond our ability to do so.

Ruthi and I would like to take this opportunity to pass on our THANKS to all who participated in the IHW meteor program. Your time and effort making the program work have been much appreciated. We also want to thank Steve Edberg for all his help and assistance.

To all of you, Aloha from Hawaii.

Mike Morrow
Ruthi Moore

THE SHALLOW SKY BULLETIN

The Shallow Sky Bulletin (SSB) and Comet Rapid Announcement Service (GRAS) Notices will be mailed to anyone supplying a few legal-size (#10) self-addressed stamped envelopes (SASEs, or envelopes and international postal coupons equivalent to 1 ounce of air mail postage) to S. M. Smith/GRAS, P. O. Box 110282, Cleveland, OH 44111-0282, U.S.A. These publications provide ephemerides of comets, announcements of new, bright discoveries, and other comet news. The current issue of SSB can also be accessed via Compuserve's AstroForum. Send a SASE to the address above for details.

RESEARCH AMATEUR ASTRONOMY SYMPOSIUM

On July 8-12, 1991, a symposium on research amateur astronomy will be held in La Paz, Baja California Sur, Mexico, in conjunction with the total solar eclipse. Amateur astronomers and professional astronomers interested in research cooperation and communication are invited to attend. For more information, write to the Corporation for Research Amateur Astronomy, P.O. Box 16542, San Francisco, CA 94116, USA.

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Prepared 10 VII 87

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IHW Leader, Eastern Hemisphere: Jürgen Rahe

IHW Deputy Leader: Murray Geller

IHW Coordinator for Amateur

Observations and Bulletin Editor: Stephen J. Edberg

AMATEUR OBSERVATION NETWORK NEWS

The number of observations being received has reduced to a trickle. Meanwhile, the archiving process has begun in earnest. Data on Comet Giacobini-Zinner were tackled first, both because that archive will be published first and to finalize the archiving techniques before doing Halley data.

The G-Z archive including visual observations and photography listings is now in the computer. The archive presently holds over 800 magnitude estimates and over 40 drawings. More than forty photographs are listed. Over 90 observers contributed data on G-Z. There is still time for additional observations to be added.

The Halley data archiving situation is mixed. Over 6100 magnitude estimates are in the computer but not proofread, and at least half that number remain to be entered. Over 360 drawings have been entered in the computer but a large number have not been entered yet. The photograph and spectra catalogs exceed 1400 entries but their formats must be corrected and several hundred more entries are expected. Over 550 observers have sent in observations.

Over 300 meteor observers have sent in hourly counts of the η Aquarids, Orionids, and Giacobinids, as well as two photographs. These data have been shipped to the professional Meteor Studies discipline specialist team for use in its archive preparation.

Observations of G-Z, Halley, and their meteor showers are still desired.

They may be sent directly to JPL.

AMATEUR CONTRIBUTORS TO THE INTERNATIONAL HALLEY WATCH

In this issue of the Bulletin we begin listing amateur astronomers who have submitted observations. Listed below are observers of the Halley and G-Z meteor showers. An asterisk (*) indicates there is no Observer Index form on file for the observer, limiting the usefulness of his or her observations. Index forms may still be submitted. The letters following names indicate Counts or Photographs of meteors.

METEOR OBSERVATION CONTRIBUTORS

*Abela, Stephen	C	*Dietel, Frank	C	Koch, Bernd	C
*Ackermann, Roger	C	Dohrmann, Michael	C	Kolenko, Ignac A.	C
*Adib, Carlos A.	C	Domeny, Gabor	C	Kosa-Kiss, Attila	C
Alcaraz, David	C	Doughty, Stephen	C	*Koschack, Rolf	C
*Aldrich, Per	C	Downing, Anne	C	*Kothe, Michael	C
*Almeida, Luis Dias	C	*Durham, David	C	*Krawietz, Andreas	C
*Alves, Avelino A.	C	Espinoza, Edgar	C	*Kuschnik, Ralf	C
*Ambrose, Roger	C	*Evans, Simon	C	*Lam, Hung	C
*Andersen, Birger	C	Falvo, Samuel	C	*La Roche, Jason	C
*Anderson, Craig	C	*Farkas, Erno	C	*Lietonen, Timo	C
*Anthony, Darren	C	*Farrugia, Marcel	C	*Lippman, Jens	C
*Aquilina, Josianne	C	Fender, Eldin	C	*Lockhart, J. A.	C
*Araujo, Plinio Coelho	C	*Ferdinando, Darryn	C	Lohvinenko, Todow	C
*Arbex, M.	C	*Feriencsik, Arpao	C	*Lopez, Hugo	C
Arce, Mario	C	Ferreira	C	*Lord, Adrian	C
Arce, Victor	C	Fettig, Stephen	C	*Lowe, David	C
*Arlt, Rainer	C	*Fitzgerald, Peta	C	*Lowe, Dennis	C
*Athanasou, James	C	Fodor, Antal	C	Lunsford, Robert	C
*Avila, Manuel	C	*Foldesi, Ferenc	C	Luukkonen, Ismo	C
*Avila, Vladimir	C	*Foley, Clem	C	*Macaulay, Brian	C
*Azevedo, Clarice	C	*Ford, John	C	*Machado, Luis Antonio da S.	C
Azofeifa, Daniel E.	C	*Fortunato, Horacio	C	MacKenzie, Graham	C
*Baldacchino, Anna	C	*Gaarder, Kai	C	*Major, Shaun	C
*Baldacchino, Geoffrey	C	*Galea, Martha	C	*Makela, Veikko	C
*Baldauf, Petra	C	*Ghisolfi, Eduardo Sorenson	C	*Malone, Jeff	C
*Barata, Pedro	C	*Giles, Cameron	C	*Maloney, Ricky	C
Barrow, Russell	C	*Gilroy, Joan	C	Manulis, Ilan	C
*Berko, Erno	C	*Goldsmith, John	C	*Marchioro, Daniel	C
Bhadria, L. H. Evans	C	*Gomez, Daniel	C	*Martikainen, Matti	C
*Biro, Levente	C	Goodknecht, Ronald	C	*Martin, Daryl	C
*Blows, David	C	Goodman, Dennis	C	*McAtee, William	C
*Boelen, Richard	C	*Gray, Mark	C	McCallum, Alan T.	C
*Booker, Mark	C	*Grima, Antoine	C	McKinlay, Glenn	C
Boschat, Michael	C	Guhl, Konrad	C	*McLoughlin, Robert	C
Bretschneider, Hartmut	C	*Gyarmati, Laszlo	C	*McMullen, Mick	C
Brown, Peter	C	*Halmi, Gabor	C	*McNamara, Geoff	C
*Budee, David	C	*Hammond, Mark	C	*Melgarejo, Marisa	C
*Busson, Adrian	C	*Harnisch, Thomas	C	*Millan, Felicity	C
*Caccioppoli, Carmine	C	Hays, Robert M., Jr.	C	*Miranda, Gonzalo	C
*Cake, David	C	Higuera G., Mario Armando	C	*Miranda, Roberto	C
Canarete, Martha Victoria	C	*Hillestad, Trono Erin	C	*Mitchell, Katrina	C
*Carbonari, Adolfo	C	*Hinton, Craig	C	*Mohr, Thomas	C
*Carey, Rodney	C	*Hinz, Wolfgang	C	Monteon, Roberto	C
*Cheng	C	*Hollosoy, Tibor	C	Moore, Ruthi	C
*Chiam	C	*Honsa, Ralph	C	*Morais, Darlen	C
*Chiao	C	*Horn, Thomas	C	*Moreno, Gonzalo	C
*Choupay, P.	C	*Hort, Tim	C	*Moritz, Sabine	C
*Clark, Maurice	C	*Hotakainen, Markus	C	Morrow, Michael J.	C
*Clay, Meeghan	C	*Howell, Robert	C	*Moskal, Wacław	C
*Cockeram, Louise	C	Ibolya, Sagodi	C	Muller, Knut	C
*Cockeram, Michelle	C	*Illes, Eler	C	*Munoz, Silvia	C
Cook, Anthony	C	Infantes, Mariu	C	*Muscat, Tony	C
*Coroneos, Martin	C	*Inwood, Neil	C	*Nagy, Tivadar	C
*Cruz, P.	C	*Izaguirre, J.	C	*Natoli, Chris	C
*Csabai, Ildiko	C	*Jaaskelainen, Petri	C	*Nelson, Jeremy	C
*Csaszar, Tiborne	C	*Jahn, Andrea	C	*Nery, Marcelo D.	C
Czescik, Chester	C	*Jenkinson, Colin	C	*Nguyen, Minh	C
*Dalavia, Onofre D.	C	*Kaatz, Andreas	C	Nolle, Michael	C
Darvann, Tron Andre	C P	*Kadicik, Mario	C	*Nouslainen, Markk U.	C
Da Silva, Luis Augusto	C	*Kasz, Laszlo	C	*Nunes, Hilario Jose	C
*Day, Jamie	C	Kepple, Chris	C	Ortiz, Marlon	C
*de Araujo, Luis Antonio Reck	C	*Kerr, Stephen	C	*Otero, Jesus H. A.	C
de Assis Neto, Vicente F.	C	Keszthelyi, Sandor	C	*Otto, Frank	C
Deconinck, Michel	C	*Knofel, Andre	C	*Paradowski, Mieczyslaw	C

*Parker, Judy	C	*Sanchez, Antonio	C	Szymocha, Marek	C
*Patak, Akos	C	*Sanchez, D.	C	Tabori, Sandor	C
*Pekkola, Marko	C	*Santana, Eddie Wm. de Pinho	C	Taibi, Richard J.	C
*Perry, Joseph	C	*Schembri, Anna	C	*Tame, Jason	C
*Persons, Eugene	C	Schott	C	Tarnay, Kalman	C
*Pokarney, George F.	C	*Schreyer, Thomas	C	*Taylor, Lance	C
*Posztobanyi, Kalman	C	*Schroter, Thorsten	C	*Tello, Alejandro	C
*Potter, Rheino	C	*Schutt, Stephen	C	*Tepel, Sven	C
*Price, Robert	C	*Sciezor, Tomasz	C	Tepliczky, Istvan	C
*Quan, Hai	C	*Sclovsky, Luciano	C	*Texeira, Marcio da Silva	C
*Quartermaine, Matthew	C	*Searles, Lee	C	Torres, Marcelino	C
*Rajala, Leo	C	Sears, Kathleen	C	*Toth, Janos	C
*Ranberg, Pentti	C	Sears, Paul N.	C	Trujillo, Macedonio	C
*Ramirez, Marcelo	C	*Seifert, Harald	C	Valdenassi, Eduardo	C
*Ramos, A.	C	*Selbmann, Uwe	C	Valjos, Petteri	C
*Rarisch, Ingolf	C	Shanklin, Jonathan	C	*Vella, Henry	C
*Ratkai, Ferenc	C	Shaver, Jim	C	*Vella, Ina	C
*Rawlings, Paul	C	*Shaw, Matthew	C	Ventura, Frank	C
*Rendtel, Ina	C	*Shepherd, Aaron	C	*Vera, Luis	C
*Rendtel, Jurgen	P C	*Shung, Kelly Louise	C	*Vidanoja, Jyrki	C
*Renner, Gilberto Klar	C	*Siepelt, Holger	C	Villa, Ricardo	C
*Revesz, Karoly	C	*Skinner, Craig	C	*Wake, Stephen	C
Riddle, Dorothy	C	Skjaeraasen, Olaf	C	*Waters, Bryant	C
*Rideout, Mark	C	*Sims, Chris	C	*Werner, Rolf	C
*Rikonen, Marko	C	*Smith, Trent	C	*Whitney, Andrew	C
Ritzi, Ferenc	C	Smolny, Rodja	C	*Whitney, Justin	C
*Robinson, Darren	C	*Sommer, Cesar Augusto de Silva	C	*Wiblin, Bill	C
*Robles, Sergio	C	Soos, Zoltan	C	*Willoughby, Craig	C
*Rocha, Edisio Oliveira	C	Sorathia, Barkat	C	*Winship, Martin	C
*Rodriguez, Felipe	C	*Soria, Grover	C	Wirtanen, Paul-Christer	C
*Rodriguez, Genoveva	C	*Spanyi, Peter	C	*Witzschel, Holger	C
*Rodriguez, Leison	C	*Stacey, Paul	C	*Witzschel, Steffen	C
Roldan, Rosario	C	*Stanley, Dean	C	Woldyla, Bruce	C
*Saarenpuro, Marko	C	*Speed, Nigel	C	*Wood, Jeff	C
*Saarilahti, Ari	C	Stephan, Christopher	C	*Yamaguchi, Walter	C
Saenz, Alejandro	C	Sule, Gabor	C	Young, Robert R.	C
*Sajtz, Andras	C	*Sullivan, Shane	C	Zalcik, Mark	C
Salas, Jose Luis	C	*Sutherland, I. B.	C	*Zalles, Rodolfo	C
Salm, Hans R.	C	*Swann, David	C	*Zschoche, Michael	C
*Salmond, James	C	Swavely, Michael	C	*Zuther, Olaf	C
*Sanchez, Gustavo	C	Szabo, Sandor	C		

IMPORTANT-BULLETIN SUBSCRIPTION UPDATE

The need for regular issuance of this Bulletin has diminished more rapidly than your editor had expected. At this point only a few issues are expected in the future, and they will be distributed at irregular intervals.

This is the last issue of the IHW Amateur Observer's Bulletin that will be distributed by the Planetary Society. We thank them again for their generous support. If you wish to continue receiving the Bulletin please return this coupon (or a copy) to IHW Amateur Observer's Bulletin, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109, U.S.A.

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ADDRESS UPDATE

The assistant recorder for Meteor Observations has moved. Please send IHW meteor data to

M. J. Morrow
Hale Hoku Observatory
91-1033 Hanakahi St.
Ewa Beach, HI 96706, U.S.A

Thanks to everyone for his contributions.

COMET HALLEY STAMPS III

Ruth Freitag and Stephen Edberg

Additional Halley stamps have come to our attention. Some were not on our initial lists and others have only recently been issued. Apparently some postal authorities were slow to jump on the bandwagon.

Benin	Madagascar	Nicaragua	Philippines
Cyprus	Malagasy	North Korea	St. Vincent
Guine-Bissau	Mauritania	Panama	Tanzania

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IHW Leader, Eastern Hemisphere: Jurgen Rahe

IHW Deputy Leader: Murray Geller

IHW Coordinator for Amateur

Observations and Bulletin Editor: Stephen J. Edberg

NEWS AND COMMENTARY

Halley's Comet is presently leaving solar conjunction and will not be observable until late October or November. Observers are encouraged to follow Halley outbound to the limit of their instruments. Registered observers have received a set of of A.A.V.S.O. charts for magnitude comparison purposes.

Many popular astronomy magazines have published accounts of the results of the spacecraft flybys. The May 15-21, 1986 issue of Nature has the initial reports from each team of experimenters on the Soviet, Japanese, and European spacecraft.

At JPL over 5000 visual magnitude estimates of Halley by more than 180 observers have begun the archiving process, and more observations continue to be received. Over 1500 Halley images submitted by over 100 astrophotographers have entered the cataloging process. Drawings of the comet are the last major group of cometary contributions from amateur astronomers and over 350 by 45 observers have been cataloged. A large number of meteor observations have also been received. Only a handful of astrometric and photoelectric observations by amateurs have been received so far, and about 50 spectra by four photographers have been received.

The archiving process for Comet Giacobini-Zinner visual magnitude estimates is well along. The cataloging process for other data types is not as far along as for Halley. Observations of both these comets may still be

submitted and observers are encouraged to do so.

Initial reports from the professional Discipline Specialist teams suggest that the IHW was a huge success. Apparently 100% of those astronomers saying they would contribute have done so, and even some who had not registered with the IHW were sending in observations! The implication of this great response is that the Halley archive could involve on the order of 40,000 printed pages of material when it is published in 1989.

COMET WILSON 19861

It isn't often that much advance notice is possible for a potentially conspicuous comet. Comet Kohoutek in 1973-4 is an example, and new Comet Wilson offers the opportunity to prepare for an object that may be moderately bright.

In the course of the new Palomar Sky Survey Christine Wilson found a comet, fainter than magnitude 12 visually, on a plate taken on August 5. A preliminary orbit and ephemeris by Brian Marsden published on I.A.U. Circulars 4242 and 4244 gives perihelion on April 22, 1987. A portion of the ephemeris is reproduced below. Observers should use this ephemeris only for planning purposes, as it could be substantially in error.

1987 ET	α 1950	δ 1950	Δ	r	m_1
Mar. 6	20 ^h 36 ^m 71	-23°35'9	2.051	1.426	6.6
16	20 44.23	-26 51.2			
26	20 53.04	-31 27.4	1.504	1.297	5.5
Apr. 5	21 04.89	-38 30.3			
15	21 26.00	-50 16.9	0.921	1.230	4.2
25	22 41.5	-70 26.8			
May 5	6 40.0	-70 48.3	0.631	1.240	3.4
15	8 09.26	-43 20.5			
25	8 32.03	-26 33.3	1.034	1.323	4.8
June 4	8 44.54	-17 09.5			
14	8 53.74	-11 31.3	1.638	1.464	6.2
24	9 01.53	- 7 53.7			
July 4	9 08.60	- 5 27.0	2.202	1.642	7.4

The IHW is not now planning coordination or archiving efforts for this comet.

THE NAMING OF COMETS

Out of tradition and science come our modern procedures for naming comets. A newly discovered comet is assigned the name of its discoverer. Although early rules allowed but one discoverer to a comet, during the nineteenth century the current rules evolved, which permit a maximum of three discoverer names. Thanks to the efforts of some persistent comet discoverers, these comet names are not unique; for example, there are four Comets Meier. Since a particular name is needed, at discovery each comet is assigned a letter designation based on the order of discovery or recovery in a certain year. Thus, Comet 1982i was the 9th comet to be located in 1982. These designations are provisional but important since they are used when most of the active observations of the comet are being made. After some time has

elapsed, the comets are assigned new designations based on the order of perihelion passage in a certain year. 1984 XXIII was assigned to the 23rd comet to pass its perihelion distance during 1984.

I felt that there must be some poetic way to describe this colorful nomenclature, and found one in T. S. Eliot's book of light verse called "Ol' Possum's Book of Practical Cats," in which one of the poems describes the three types of names for each cat. Here is a somewhat revised version:

The Naming of Comets
(With apologies to T. S. Eliot)

The naming of Comets is a difficult matter,
It isn't just one of your holiday games;
You may think at first I'm mad as a hatter
When I tell you, a comet has THREE DIFFERENT NAMES.
First of all, there's the name that the family use daily,
Such as Whipple, Wilk-Peltier, Wirtanen or Wolf,
Such as Hubble or Humason, Honda, P/Halley--
All of them sensible everyday names.
There are fancier names if you think they sound sweeter,
Some for the gentlemen, some for the dames:
Such as Grigg-Skjellerup, de Kock-Paraskevopoulos,
Schwassmann-Wachmann, Herschel-Rigollet, Tsuchinshan 1,
Churyumov-Solodovnikov, Bappu-Bok-Newkirk--
But all of them sensible everyday names.
But I tell you, a comet needs a name that's particular,
A name that's peculiar, and more dignified,
Else how can he keep up his tail antisolar,
Or spread out emissions, or cherish his pride?
Of names of this kind, I can give you a score.
1910a, '84u, '86b and such,
Or '65f, '66b, '83d-- there's more--
Names that never belong to more than one comet.
But above and beyond there's still one name left over,
And that is the name that at first you can't guess;
The name that no human research can discover--
Until long after the comet's come and it's gone,
Like Nineteen hundred fifty-nine- X--
But the COMET HIMSELF KNOWS, and won't now confess.
When you notice a comet in profound meditation,
The reason, I tell you, is always the same:
His mind is engaged in rapt contemplation
Of the thought, of the thought, of the thought of his name:
His rotational, orbital
Coma-morphological,
Deep and inscrutable singular Name.

David H. Levy
A.L.P.O. Comets Section

COMET HALLEY STAMPS II

Ruth Freitag has suggested the addition of most of the following philatelic authorities to the list of Halley stamp issuers:

Barbuda	Guyana	Portugal
Bhutan	Jersey	St. Helena
Bolivia	Mozambique	St. Tome and Principe
Bulgaria	Papua New Guinea	Trinidad and Tobago
Fiji	Paraguay	Vanuatu
		Zambia

AMERICAN WORKSHOP ON COMETARY ASTRONOMY

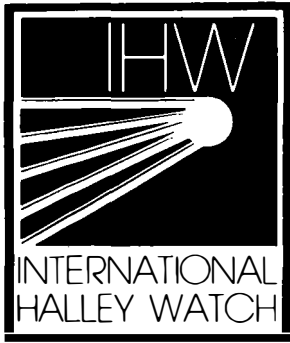
The program for this workshop, scheduled for Feb. 21-22, 1987, is well along. A mixture of papers by both professional and amateur astronomers is planned. Potential participants should send a self-addressed, stamped envelope to Comet Workshop/International Halley Watch, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109, U.S.A.

The Planetary Society publishes and distributes this bulletin as a service to NASA/JPL and to the dedicated community of comet observers who participated in the International Halley Watch. A special issue of our members' magazine, The Planetary Report, will be published in March/April 1987 on the results of Halley's Comet. A new Halley Comet slide set is also now available to members.

Membership is \$20 per year US; \$25, elsewhere. If you wish to join send name and address with your check to The Planetary Society/Dept. H.

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AMATEUR OBSERVER'S BULLETIN

THE INTERNATIONAL HALLEY WATCH AMATEUR OBSERVER'S BULLETIN

Issue 17

June 1986

Prepared 10 VI 86

IHW Leader, Western Hemisphere: Ray L. Newburn

IHW Leader, Eastern Hemisphere: Jürgen Rahe

IHW Deputy Leader: Murray Geller

IHW Coordinator for Amateur

Observations and Bulletin Editor: Stephen J. Edberg

NEWS AND COMMENTARY

Since the last Bulletin was prepared, reports of Comet Halley's actual behavior have shown significant differences from its predicted behavior. After Bulletin 16 was prepared observers in the Eastern hemisphere were treated to a dark lunar eclipse (on April 24 UT). During the total phase tail lengths of 15°-25° were reported, with one extreme report of a 42° length coming from Australia. As soon as the Moon was out of the way in late April additional reports of a long, faint tail were received, continuing into May. Even as the comet was fading, tail lengths of 3°-5° were reported in late May and 1° - 1 1/2° were visible in the second week of June with binoculars. This behavior is unexpected, given the early April fan tail and the geometry of the viewing situation.

A preliminary plot of the light curve by Charles Morris shows Comet Halley fading a little faster than the very similar postperihelion predictions by J. Marcus and by J. Bortle and C. Morris. A disappointing fact apparent in the light curve is that even very experienced observers disagreed on the brightness of Halley in April by as much as a magnitude. This occurred even though they were observing under the same or similar conditions in the southern hemisphere.

Amateur astronomers planning on contributing observations to the IHW should forward their data to their Recorder or National Correspondent as soon as possible. Data entry for Comets Giacobini-Zinner and Halley is already under way. Post-conjunction observations made next autumn should also be

forwarded in a timely manner. Continuing observations are encouraged as long as the comet is in reach. Comet Halley is continuing to exhibit nuclear outburst phenomena and antitails.

This is the last issue of the Bulletin to come out bi-monthly. Future issues will come out quarterly.

S. J. Edberg

COMET HALLEY STAMPS

Stamp collectors have had a field day with all the special issues prepared to commemorate Comet Halley. The following table, perhaps incomplete, lists all the known stamp-issuing entities which have so far issued comet stamps. The U.S.A. is not included as it issued only an aerogram.

These stamps can be obtained from the original sources or from stamp dealers over-the-counter or by mail. This topical collection is very colorful and interesting but a complete set will cost a few hundred dollars.

Comet Halley Stamp Issuers

Aitutaki	Mali
Anguilla	Marshall Islands
Antigua & Barbuda	Mauritius
Ascension Island	Mexico
Australia	Micronesia
Belize	Monaco
Bermuda	Montserrat
Botswana	Republique du Niger
Brazil	Niuafu'ou
British Antarctic Territory	Niue
Republique Centrafricaine	Norfolk Island
Chile	Palau
Christmas Island	Penrhyn
Ciskei	People's Republic of China
Republique Federale Islamique des Comores	Poland
Republique Populaire du Congo	Romania
Cook Islands	Seychelles
Czechoslovakia	Samoa
Republique de Djibouti	San Marino
Dominica	Sierra Leone
Gambia	Solomon Islands
Federal Republic of Germany	Sri Lanka
Grenada	St. Vincent
Grenada Grenadines	Suriname
Republica de Guinea Ecuatorial	Swaziland
Republique de Guinee	Redonda
Hong Kong	Republique Togolaise
Hungary	Tonga
India	Tristan da Cunha
Republique de Cote-d'Ivoire	Turks & Caicos
Korea	Uganda
Lesotho	U. S. S. R.
Republika Demokratika Malagasy	United Kingdom
Malawi	Wallis & Futuna
Maldives	

MEETING ANNOUNCEMENTS

The next American Workshop on Cometary Astronomy, designed to bring together amateur and professional astronomers to discuss the state-of-the-art, is scheduled for the weekend of February 21-22, 1987, with a third quarter moon. The meeting will be held at the Jet Propulsion Laboratory. Program and registration details are in the initial planning stages. The Workshop will most likely include contributed and invited papers, an open forum discussion with experts, and possibly an evening observing session. For further information send a self-addressed stamped envelope (SASE) to the address below. Registration information will be returned as soon as it becomes available. Potential contributors should send a 1/2 page abstract and a time request, also to the address below:

Comet Workshop, International Halley Watch
169-214 Jet Propulsion Laboratory
4800 Oak Grove Drive, Pasadena, CA 91109
U.S.A.

An international meeting of astronomers is scheduled for August 1-3, 1986 in France. For information contact Madame Michele Ramos, Professeur, Patufet, 81140 Castelnau de Montmiral, France.

AFTER HALLEY'S COMET, WHAT?

Halley's Comet, in its return of 1985-86, has had the first evident repercussion in the social environment: the conjunction of efforts, knowledge, resources, and enthusiasm around the world by people, professional and non-professional, to make the most extensive study of a comet in human history.

The International Halley Watch has proved and it is still proving the efficiency in having global coordination and standardization for comet studies. Without this program people would undoubtedly still be observing and collecting data. However, how could we evaluate, compare, and get results from those professional observations? How many measurements or pictures from the non-professionals with important data would only be a part of a collection or a pretty remembrance for the living room?

Halley's Comet is once-in-a-lifetime. But for the rest of our lives many more comets will appear in the skies, and some of these comets will be a surprise. Almost every decade there appears a new, big comet. In the 1960's it was Ikeya-Seki and in the 1970's it was Comet West. Which is the comet for this decade? With Halley's Comet we are observing the activity of a periodic comet. In new comets, we can see different and interesting activity. Will we be prepared?

Halley's Comet is leaving very soon. The experience of the IHW must not go with the comet. We now have the basis to continue this research with later comets. The IHW must continue as an ICW, International Comet Watch. With the experience of the IHW, an ICW would be the most extensive permanent network in the future for the study of comets and the meteor showers related to them.

Halley's Comet is going. Will we need the next return to make a similar effort or will we be able to continue this effort with an ICW?

Antonio Sanchez
Mexican National Correspondent
Resident Observer INAOE

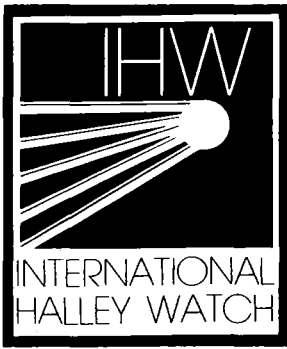
[Editor's Note: The Inter-Agency Consultative Group (including NASA, ESA, ISAS, Intercosmos, and the IHW) is studying the possibility of an ongoing international comet watch. Whatever is decided in the way of an ICW, several groups act as repositories for amateur observations (primarily visual) of comets. These groups include the International Comet Quarterly, the Comets Section of the Association of Lunar and Planetary Observers, the Dutch Comet Section, the Comet Section of the British Astronomical Association, and others.]

ADDRESS CHANGE

Southwest Visual Recorder Alan Hale has a new address. Reports of visual Halley observations should now be sent to him at 2312 Barela Rd., Las Cruces, NM 88005.

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June 12, 1986

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Dear Observer:

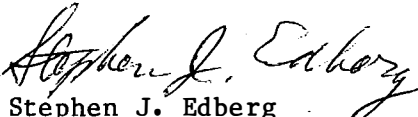
By courtesy of the American Association of Variable Star are attached variable star charts suitable for Comet Halley both pre- and postconjunction this summer. The charts give visual magnitudes (no photoelectric checking was done). Any stars that have obviously incorrect magnitudes should not be used as comparisons (occasionally inconsistencies are found on these charts). Other comparison sources including the SAO, DCS, BAA or others that are reliable may also be used as long as the source is indicated on the visual report form (give the variable's name if AAVSO charts are used). Recall that a comparison star's magnitude is indicated without a decimal point: e.g. 84 should be read as magnitude 8.4.

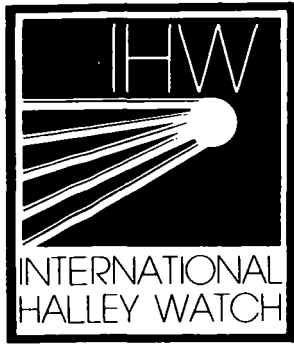
Because Halley is in a retrograde loop it is not easy to recommend specific periods for which specific comparison charts should be used. In general, X Sex, S Sex, and SX Leo may be used preconjunction. Early post-conjunction SX Leo, T Vir, and V Hya will be useful, while later in the period V Hya and X Sex will be closer to Halley.

Over 2000 Halley and Giacobini-Zinner visual observations have so far been entered into an IHW computer. The catalogs of drawings, photographs, and other data are being started. Please submit your past observations to the appropriate Recorders or National Correspondents for further processing, and submit your later observations in a timely manner.

Thank you for your efforts on behalf of the IHW. Professional astronomers are anxious to see these results.

With best wishes,


Stephen J. Edberg



AMATEUR OBSERVER'S BULLETIN

THE INTERNATIONAL HALLEY WATCH AMATEUR OBSERVER'S BULLETIN

Issue 16

April 1986

Prepared 15 IV 86

IHW Leader, Western Hemisphere: Ray L. Newburn

IHW Leader, Eastern Hemisphere: Jürgen Rahe

IHW Deputy Leader: Murray Geller

IHW Coordinator for Amateur

Observations and Bulletin Editor: Stephen J. Edberg

News and Commentary

Following its February 9 perihelion, Comet Halley was recovered by numerous observers in South America as early as 1986 February 15.4 UT. Visual and astrometric observations were reported at that time. The comet was distinctly brighter than its last appearance late in January and even as the Moon interfered during the last week of February the comet could be easily followed with the naked eye and binoculars, looking distinctly cometary. Larger apertures and high magnifications showed jet structures in the inner coma.

During the Moonless period in March Halley was well condensed and sporting a tail 3° - 5° long, though particularly sensitive observers reported lengths to 18° (which were supported by photographs). With hindsight, this was the best overall period to see the comet. The spacecraft encounters with Halley added to the excitement of this period.

By the Moonless period in April Comet Halley's surface brightness had decreased significantly - the coma appeared larger in the sky as it approached Earth - causing an apparent fading. The tail was also fainter and shorter even as seen from the southern hemisphere.

Comet Halley is now outbound from the Sun and the Earth and should fade seriously over the next two months of visibility. In June the comet will be lost again in evening twilight. Although the comet will still be a binocular object in May and perhaps June, a telescope will most likely be necessary when Halley is recovered in morning twilight late this summer.

The IHW encourages ongoing observations as long as the comet is within reach of amateur telescopes. A set of comparison charts for magnitude estimates will be distributed to registered observers in the near future.

S. J. Edberg

predicted the arrival of a flattened, heliospheric current sheet near the time of closest approach. Multiple encounters with the current (with periods of ~20-30 minutes) were actually detected on the day of closest approach. If such multiple crossings were incident on the magnetic barrier surrounding Halley, magnetic field disconnection events may have occurred.

Vega

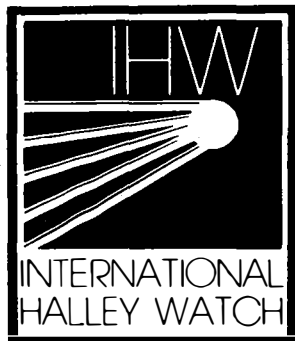
The two Vegas had their solar panels fully exposed to the impinging dust. Vega 1 lost at least 45% of its power, while Vega 2 lost 80%. Anticipating this, the Vegas had an enormous power pad, and neither suffered any data loss as a result. Several instruments were lost near the closest approaches, two on Vega 1 and three on Vega 2, according to Science magazine. T. Encrenaz reported that the cryogenic system for the IR detectors failed on Vega 2, so they acquired data only on Vega 1. Apparently the visible spectrometer data was lost on Vega 1, as was the plasma wave analyzer data, the latter some 30,000 km out. Which other instruments were lost on Vega 2 is not available at present. Images taken by Vega 2 were generally overexposed because the CCD detector was overcooled. The images released so far show the dust jets.

R. L. Newburn, Jr. and B. T. Tsurutani
Jet Propulsion Laboratory

The Planetary Society publishes and mails the "IHW Amateur Observer's Bulletin" in cooperation with NASA and the Jet Propulsion Laboratory as a service to the worldwide amateur astronomy community. The Society is a non-profit public membership organization encouraging exploration of the solar system and the search for extraterrestrial life. Membership is open to all at \$20 per year (U.S.) or \$25 abroad. Color reprints of the Vega and Giotto close approach view of Halley's nucleus are available--2 prints for \$3.

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AMATEUR OBSERVER'S BULLETIN

THE INTERNATIONAL HALLEY WATCH AMATEUR OBSERVER'S BULLETIN

Issue 15

February 1986

Prepared 23I86

IHW Leader, Western Hemisphere: Ray L. Newburn

IHW Leader, Eastern Hemisphere: Jürgen Rahe

IHW Deputy Leader: Murray Geller

IHW Coordinator for Amateur

Observations and Bulletin Editor: Stephen J. Edberg

NEWS AND COMMENTARY

The early January observing window for Comet Halley saw further development and activity in the comet's tail. The most extreme report indicated a naked eye tail about 10° long under exceptional conditions: the zodiacal light was visible to at least 60° above the horizon. Most observers continued to see the tail as half this length and only in binoculars.

The long tail being observed was the ion tail and it showed changes nightly. On some nights a short tuft of dust tail was visible near the head of Comet Halley.

With Halley now rounding the Sun astronomers are taking stock of the results to date. They are also preparing for the hectic period of spacecraft encounters in March and the close approach to Earth in April. The curtain is rising on the most exciting period of the Halley apparition.

At present over 1000 amateur astronomers from 55 countries have registered with the IHW.

COMET CROMMELIN ARCHIVE

The printed version of the Archive of Observations of Periodic Comet Crommelin (1983-84 apparition) is presently in press. This trial run effort successfully served its purpose both in demonstrating the coordination of observing activities and in indicating the problems of archiving the data

7) Thus far in Halley's apparition, the tails have not been very prominent and often careful visual observers have seen as much or more tail than has been photographed. This should be considered when composing the image (see paragraph (2) above) and an occasional extra long exposure may surprise the photographer with the extent of tail recorded. Even professional astronomers have been producing "thin" negatives. Also, a variety of lens focal lengths will record different aspects of the comet.

8) Photoelectric photometrists who find the report form in the IHW Amateur Manual inadequate may submit their data in the manner they choose. Keep the raw values in case a new form is developed so the data can be re-submitted on it.

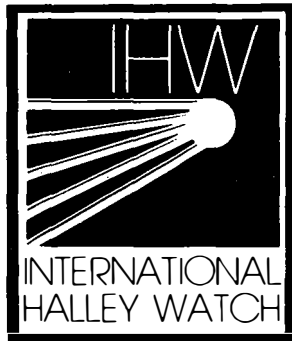
Good luck and clear skies for the upcoming Halley season.

S. J. Edberg

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NEWS AND COMMENTARY

November provided a good deal of Halley excitement. A week before Comet Halley's passage by the Pleiades, Charles Morris and Stephen Edberg made the first announced naked eye observations of the comet, coincidentally on Edmond Halley's 329th birthday. The media and public interest in the sighting was a surprise to the observers.

Halley began showing tails in November to visual observers. The maximum reported visual lengths have stayed at about 2 degrees since the end of that month, but photographs with Schmidt cameras indicate a tail length exceeding 9 degrees. The visual character of the tail had changed by late December, broadening to the width of the coma. There have been reports by professional astronomers of tail disconnection events.

Jet activity has been reported by the Near-Nucleus Studies network beginning late in November. Some visual observers have also made reports of it.

As more reports have come in it appears that Japanese observers were not the only ones noting Giacobinid activity, contrary to the report in Bulletin 13. British and Swedish radar observers also noted enhanced activity, as did some other visual observers scattered around the world.

ADDRESS UPDATES

National Correspondents for South Africa and Ireland have recently been added to the corps and one Mexican correspondent has changed his address:

Orion points the way to two other bright stars. If you draw an imaginary line joining the three stars of the belt and extend it to the east, you will meet a new friend, Sirius, the night sky's brightest star and the lead star of Canis Major, Orion's big hunting dog. To the north of Sirius is Procyon, the eye of Canis Minor, Orion's little hunting dog.

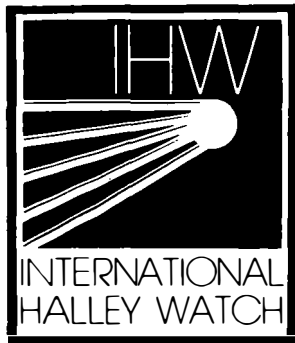
Not far from Procyon is a place in the sky with not too many stars. It is a special place, for it is the deep space home of Comet Halley. In years to come, each winter you can look east of Orion, east of Procyon, and think that somewhere there, Halley's Comet is speeding away from us. With each year the comet will slow down as it gets farther and farther away. In some thirty-eight years, when you are a happy and successful adult, Comet Halley will slowly start to return. As you get older, Halley will increase its speed as it tries to keep its promise to you. In 2061, when you have a long life to look back on, your comet friend will burst in on your life again! Just think of the stories, the fun, and the memories of happy starry nights you will share together, as you gaze again on Halley's Comet! With that long-sought reunion, Project 2061 will have been a success.

David H. Levy
A.L.P.O. Comet Section

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NEWS AND COMMENTARY

Contrary to the discussion in Bulletin 12, IAU Circular No. 4090 reports that the earliest post-conjunction recovery of Comet Halley was by Richard West on July 19.4 with a 40 cm astrograph at the European Southern Observatory. Photographic amplification was used to bring out the image.

The ICE encounter of Comet Giacobini-Zinner was a great success. New and unexpected results were obtained, including the observation of perhaps a new type of bow shock (separating solar-controlled and comet-controlled magnetic regions), large electrical potentials, and high energy particle production. Analysis continues. The spacecraft made the flyby about 8000 km tailward of the nucleus and was undamaged by the pass through the comet's tail and neutral sheet.

The Giacobinid meteor shower put on an interesting (about 200 per hour) display for Japanese observers several hours before the predicted time of maximum. Curiously, observers in other parts of the world failed to see many meteors at the same UT.

News reports shortly after conjunction suggested that Comet Halley was fainter than predicted. In fact, with appropriate aperture corrections Halley has so far nicely matched the predictions in Don Yeomans' ephemeris, which is based on work by C. Morris and D. Green. Observers should keep in mind that the ephemeris prediction is based on a telescope of standard aperture 67.8 mm and observations must be corrected to this value before comparisons can be made.

structures originating from the nucleus. Whipple has suggested (e.g., ref. 5) that these can diagnose times of origins of dust bursts from the nucleus, which might relate to the rotation period. Estimating the central condensation is out of fashion today, but without these visual data, much valuable information about Halley's Comet in the present apparition may be lost.

Joseph N. Marcus, Editor
Comet News Service

REFERENCES

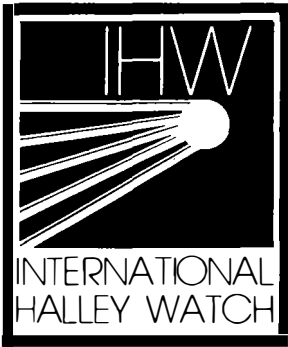
1. Morris, C. S. and Green, D. W. E. 1982, Astron. J. 87, 918-923.
2. Marcus, J. N., 1983, Comet News Serv. 83-2, pp. 2-4.
3. Bortle, J. E. and Morris, C. S. 1984, Sky and Tel. 67, 9-12.
4. Marcus, J. N., 1985, Comet News Serv. Supplement, in press.
5. Marcus, J. N., 1981, Comet News Serv. 81-1, pp. 1-2.

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* COMET HALLEY, A Planetary Society Special shown on *
* PBS, is available on videotape for members of the *
* Society. Write to **The Planetary Society** for member- *
* ship or sales information. *

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October 28, 1985

Refer to: 324/SJE⁴³:pd

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Dear Observer:

International Halley Watch Days have been designated to encourage the greatest coordination of Halley observation efforts. Professional astronomers, amateur astronomers, and spaceflight projects are observing the comet during these periods to provide a record on the status of the comet that is as complete as possible. I hope you will make a special effort to observe on these dates, besides any additional observations you plan.

1985	- Nov. 3-5, 12-18 Dec. 8-13
1986	- Jan. 4-6 Feb. 17-19 (comet may still be too close to the Sun) Mar. 4-18, 28-30 Apr. 6-13 May 3-5 June 1-3 Aug. 1-3 Nov. 12-14
1987	- Jan. 6-8 Apr. 22-24 June 16-18 Dec. 27-29
1982-87	- May 2-6 and Oct. 20-24: Halley Meteor Days

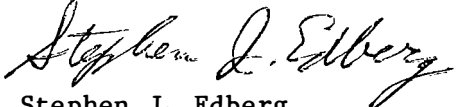
Please submit your observations on standard IHW report forms. There is simply too little manpower available to transfer data from personal report forms into the standard IHW format for computer archiving. Report forms should be submitted to a Recorder or National Correspondent, not directly to me at JPL.

Meteor observers, if they desire, may add hourly count columns for various magnitude ranges; the ranges should be either 0.5 magnitude or 1.0 magnitude wide, starting on a whole magnitude. For example columns could read < 0, 0-1, 1-2, 2-3, etc. or < 0, 0-0.5, 0.5-1, 1-1.5, etc. Meteors other than the η Aquarids and Orionids may still be lumped into the non-shower category without a magnitude breakdown.

I appreciate your participation in the IHW and your adherence to these guidelines.

Wishing you many clear nights,

Sincerely,


Stephen J. Edberg



October 28, 1985

Refer to: 324/SJE⁴³:pd

**Western Hemisphere
Lead Center**

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109 USA

Dear Observer:

International Halley Watch Days have been designated to encourage the greatest coordination of Halley observation efforts. Professional astronomers, amateur astronomers, and spaceflight projects are observing the comet during these periods to provide a record on the status of the comet that is as complete as possible. I hope you will make a special effort to observe on these dates, besides any additional observations you plan.

R. Newburn, Jr. Leader (213) 354-2319	1985	- Nov. 3-5, 12-18 Dec. 8-13
Murray Geller Deputy Leader (213) 354-2593	1986	- Jan. 4-6 Feb. 17-19 (comet may still be too close to the Sun) Mar. 4-18, 28-30 Apr. 6-13 May 3-5 June 1-3 Aug. 1-3 Nov. 12-14
L.W. (Bill) Carls, Jr. Administrator (213) 354-2075		
Zdenek Sekanina Archives Editor (213) 354-7589	1987	- Jan. 6-8 Apr. 22-24 June 16-18 Dec. 27-29
Lee Elson Computer Scientist (213) 354-4223	1982-87	- May 2-6 and Oct. 20-24: Halley Meteor Days

Stephen J. Edberg
Coordinator for
Amateur Observations
(213) 354-6085

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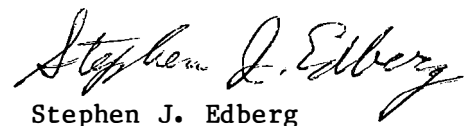
TWX 910-588-3269
TELEX 67-5429
DATA FAX (213) 354-3770

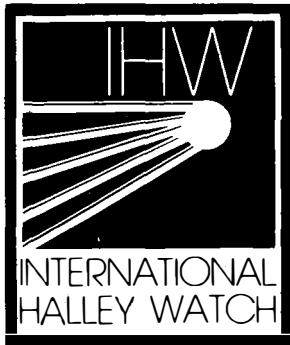
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I appreciate your participation in the IHW and your adherence to these guidelines.

Wishing you many clear nights,

Sincerely,


Stephen J. Edberg



June 1985

Refer to: 324/SJE:pd

**Western Hemisphere
Lead Center**

Jet Propulsion Laboratory
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4800 Oak Grove Drive
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DATA FAX (213) 354-3770

Dear Observer:

By courtesy of the American Association of Variable Star Observers (AAVSO) are attached variable star charts suitable for making magnitude estimates of Comet Giacobini-Zinner (G-Z) and Halley's Comet. These charts should be used preferentially for the periods indicated below over any other sources of comparison magnitudes. Underlined magnitudes are photoelectric V magnitudes. Estimates based on underlined magnitudes should be underlined on the report form. In the Chart No. column indicate which AAVSO chart was used by giving the star's name. No decimal points are given on the charts since they might be confused with stars: for example read 113 as visual magnitude 11.3 and 124 as V magnitude 12.4.

For G-Z the following charts should be used:

230759	V	Cas	period suitability:	July 1985
021558	S	Per		July 31 - Aug. 25
060547	SS	Aur		Aug. 25 - Sep. 9
		CZ Ori		Sep. 9 - Sep. 23
061702	V	Mon		Sep. 23 - Oct. 15
072820b	Z	Pup		Oct. 15 - Oct. 31

A pair of charts should be used during the overlap periods.

For Comet Halley the following charts, checked photoelectrically by R. H. Stanton, should be used preperihelion. Choose the one that is closest to the comet and/or has comparison stars surrounding Halley's brightness. These charts should be used when Halley reappears from solar conjunction in August and through October if necessary, until the charts in the IHW Amateur Manual become suitable.

Comet Halley comparison star charts:

SU Tau
CZ Ori (also used for G-Z)
Y Tau
V Tau

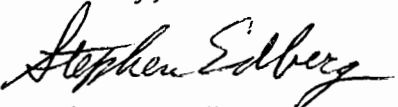
A similar series of charts will be distributed later for use from June 1986 into 1987.

June 1985

Once your observations have been recorded on IHW report forms they should be submitted to a U.S. Recorder, the International Recorder, or to your National Recorders or Correspondent. They will forward your observations to the IHW Lead Center for further processing.

The comets are upon us. Good luck and clear skies.

Sincerely,



Stephen J. Edberg