THE COMET'S TALE

Newsletter of the Comet Section of the British Astronomical Association

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GEORGE ALCOCK REMEMBERED

an appreciation by Martin Mobberley

"We will not see his like again"; these seven words are often used when great men die, but they could not be more appropriate when the man in question is George Alcock. George was simply the greatest visual discoverer who ever lived under the cloudy British skies. His ten discoveries (five comets and five novae) surpass even the achievements of Caroline Herschel, who discovered eight comets from Britain and did not have to battle against the likes of Honda, Seki, Ikeya, Mrkos and Burnham, competing with George from much clearer skies. As most TA members will know, George also had to memorise the northern Milky Way to eighth magnitude (and fainter in some regions) to make his binocular nova patrol viable. His extraordinary success in this area implies that, locked in his brain, were thousands of star patterns, containing maybe more than 30,000 stars, as seen through his binoculars.

The Early Years

George was born in Peterborough on August 28th 1912 during the time of the great East Anglian flood. He died, in hospital, on December 15th 2000, 88 years and 109 days later, with the river Nene once again at dangerously high levels. Excluding the war years, George would spend his whole life in the Peterborough region.

George Alcock and Kesao Takamizawa at the IWCA in August 1999 [MPM]

George's first big encounter with Astronomy was as an eight year old, when he saw the large partial eclipse of April 8th 1921. The eclipse was annular at around 9am from NW Scotland and the Sun was 86% obscured from Peterborough. George and his schoolmates observed the eclipse through smoked glass. But, while George had learned much about astronomy from this experience, and developed a keen interest in the night sky in the following years, it was not the event which fired his latent desire to contribute observations; this was to come some 9 years later.

George Alcock, Brian Marsden and John Alcock at the IWCA II in 1999. [MPM]

On December 30th 1930, whilst crossing the Peterborough town bridge, George saw a bright meteor "as bright as Venus". This single event spurred him to contact the BAA meteor section director, J.P.M.Prentice, with his first serious observation. Manning Prentice lived at Stowmarket, a small town midway between Bury St Edmunds and Ipswich and, critically, some 60 miles SE of Peterborough, a useful baseline distance for meteor triangulation observations. Prentice invited George to join the BAA's Meteor Section and George (although not yet a full BAA member) attended his first Meteor Section meeting in July 1931 (aged 18), in the library of Sion College. W.F. Denning, discoverer of five comets and a 3rd mag nova in Cygnus (V476 Cyg) had just died and the meeting began with a minutes silence in memory of the great man. During the meeting, George was approached by the veteran ninety year old meteor observer Grace Cook, who let George know that he would take the place of Denning. Whether she was endowed with clairvoyant abilities or was simply a good judge of character, we will never know; however, she would surely have been aware, via Prentice, that the young Alcock was a meticulous observer, fully familiar with the night sky and one who showed great promise.

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Comet Section contacts

Director:	Jonathan Shanklin, 11 City Road, CAMBRIDGE. CB1 1DP, England. Phone: (+44) (0)1223 571250 (H) or (+44) (0)1223 221400 (W) Fax: (+44) (0)1223 221279 (W) or (+44) (0) 1223 571250 (H) E-Mail: JDS@AST.CAM.AC.UK or J.SHANKLIN@BAS.AC.UK WWW page : http://www.ast.cam.ac.uk/~jds/
Assistant Director (Observations): (and also Editor of *The Astronomer* magazine)	Guy Hurst, 16 Westminster Close, Kempshott Rise, BASINGSTOKE, Hampshire. RG22 4PP, England. Phone & Fax: (+44) (0)1256 471074 E-Mail: GUY@TAHQ.DEMON.CO.UK *or* GMH@AST.STAR.RL.AC.UK
CCD Advisor:	Nick James, 11 Tavistock Road, CHELMSFORD, Essex. CM1 5JL, England. Phone: (+44) (0)1245 354366 E-mail: NDJ@BLUEYONDER.CO.UK
Photographic Advisor:	Michael Hendrie, Overbury, 33 Lexden Road, West Bergholt, COLCHESTER, Essex, CO6 3BX, England Phone: (+44) (0)1206 240021

Subscription to the Section newsletter costs £5 for two years, extended to three years for members who contribute to the work of the Section in any way. Renewals should be sent to the Director and cheques made payable to the BAA. Those due to renew should receive a reminder with this mailing.

Section news from the Director

Dear Section member,

Whilst I was away in the Antarctic I heard the sad news of George Alcock's death. An appreciation by Martin Mobberley appears elsewhere in this issue. I was back in time to attend his memorial service in Peterborough Cathedral, along with several other members of the Comet Section. At the reception afterwards many of George's sketches were on display, not just of comets, but also of churches, weather and wildlife, all things that I myself am interested in. It is hoped that it will be possible to publish a book featuring these sketches in due course. In the meantime I can recommend George's biography 'Under an English Heaven', written by Kay Williams, which has a few of his sketches in it. If you would like to obtain a copy, contact Kay at kwilliams@kayor.demon.co.uk or 3 Vandyke Road, Leighton Buzzard, Beds LU7 8HG

Also whilst I was away, I heard the news that Albert Jones had discovered his second comet, 54 years after the first and in similar circumstances. I was able to email Albert from the Antarctic congratulating him on his discovery. He replied commenting how communication had changed since his first discovery! At the time I was deep in the Southern Hemisphere summer twilight, but fortunately we were heading north and I eventually managed to glimpse the comet through a gap in the clouds. Unfortunately it only survived a short time after perihelion and faded rapidly. I also observed 1999 T1 from the Falkland Islands and was lucky enough to see the green flash and a display of noctilucent clouds whilst at sea.

Whilst on board ship I did enter the remaining long period comet observations from the 1970s, and now all I need to do in order to complete the archive of BAA comet observations is to include the observations that were sent to the ICQ in the 1980s. Also whilst south I completed the bulk of the work on the papers on the comets of 1997 and 1998. I finished these off on my return and they are now being reviewed for publication in the BAA Journal. One rather disappointing aspect that arose from analysis of these observations is that one or two visual observers are reporting what they would like to see, rather than what is actually there. In particular:

1. The reported position angle of the tail of a binocular or fainter comet is often in significant disagreement between observers. There are several possibilities to explain this. Some observers may be using a star diagonal and failing to correct for the east-west reversal caused by the reflection in the light path. Others may be measuring the position angle with respect to the horizon when they should be measuring it with reference to the RA/dec co-ordinate frame. A final possibility is that the observer is reporting a feature that is of uncertain reality, but the detail is given using the normal TA or ICQ coded format. Any feature that you are unsure about should be reported as a remark in plain language, for example:
1999T1 2001 01 28.25 Possible tail 5' long in pa 345.

2. The light curves of some comets appear highly unusual as the magnitude of the comet gets towards the sky limit in medium and large apertures. Here it seems probable that a real comet is not being seen at all. As the eye strains to see something at the limits of visibility it starts to

supply information of its own making to the brain, which is then interpreted as being the comet and hence a magnitude estimate can be made. It is akin to seeing a ghost - you can be convinced that it is there, but it is in reality a mirage that would not be seen with better instrumentation. Again in such cases it is probably better to give the report in plain language rather than to code it up, for example:

1999T2 2001 01 28.25 Comet possibly seen at mag 13.6 (S, HS) in 20cm f10 T x120, with coma 1.0' DC 1.

The revised edition of the Section Guide to Observing Comets is now with the printers and will soon be available at BAA events or through the BAA Office. The new edition has significant changes, including revised sections on comet discovery procedures, observing very bright comets and electronic submission of observations. It also draws attention to some of the points made above.

Michael Oates has continued scouring the SOHO archives and has now discovered over 100 comets out of the SOHO total of 299. I am very pleased to be able to say that for this achievement the BAA is awarding him the Steavenson prize. This award is the Association's recognition of an outstanding contribution to observational astronomy. The citation for the award read: 'It is unusual for an amateur astronomer to discover a comet. It is unheard of for one to discover over 100 in the course of a single year! Michael Oates attended a meeting of the SPA at the beginning of 2000 at which Jonathan Shanklin told how he had discovered three comets in real time SOHO imagery. Michael was so enthused by this that within 48 hours he had reported a discovery of his own, although the comet had in fact already been reported. Nothing daunted he stuck to the task and soon made an independent discovery. This led him to develop processing techniques that he applied first to real time imagery and then to archive imagery, which lead to the discovery of large numbers of sun grazing comets that had been missed by the professional astronomers. His success has led other amateurs to develop the same systematic approach to scanning the images. These discoveries have together provided the foundation for a reappraisal of the flux of Kreutz group comet members and scientific papers are already being written as a result.

In every branch of observational astronomy it is essential to follow a methodical approach to the observing process and Michael's success sets a splendid example to all amateur astronomers. Such success does not come easy, it requires a tremendous investment of time and effort to acquire, process and scan the many images that are available. We believe that his approach, diligence and astounding success make Michael Oates a worthy recipient of the Steavenson Award.'

Since the last newsletter observations or contributions have been received from the following BAA members: Mark Armstrong, Sally Beaumont, William Davies, Len Entwisle, Mark Green, Werner Hasubick, Morton Henderson, Nick James, Geoffrey Johnstone, Albert Jones, Cliff Meredith, Martin Mobberley, Michael Oates, Gabriel Oksa, Jonathan Shanklin, David Storey, David Strange, John Vetterlein and Alex Vincent

and also from: Jose Aguiar, Alexandre Amorim, Alexandr Baransky, Sandro Baroni, Nicolas Biver, Reinder Bouma, Jose Carvajal, Matyas Csukas, Rafael Ferrando, Stephen Getliffe, Antonio Giambersio, Massimo Giuntoli, Bjorn Granslo, Michael Jager, Andreas Kammerer, Heinz Kerner, Martin Lehky, Rolando Ligustri, Pepe Manteca, Michael Mattiazzo, Maik Meyer, Antonio Milani, Andrew Pearce, Stuart Rae, Maciej Reszelski, David Seargent, Carlos Segarro, Giovanni Sostero and the Ageo Survey Team (KenIchi Kadota and Seiichi Yoshida) (apologies for any errors or omissions). Without these contributions it would be impossible to produce the comprehensive light curves that appear in each issue of *The Comet's Tale*.

Comets under observation were: 24P/Schaumasse, 41P/Tuttle-Giacobini-Kresak, 47P/Ashbrook-Jackson, 73P/Schwassmann-Wachmann 3, 74P/Smirnova-Chernykh, 110P/Hartley 3, 1999 K5 (LINEAR), 1999 K8 (LINEAR), 1999 T1 (McNaught-Hartley), 1999 T2 (LINEAR), 1999 U4 (Catalina-Skiff), 1999 WJ7 (Korlevic), 1999 Y1 (LINEAR), 2000 K2 (LINEAR), 2000 S1 (Skiff), 2000 W1 (Utsunomiya-Jones), 2000 WM1 (LINEAR) and 2001 A2 (LINEAR).

There is a proposal to drop the numeric suffix from periodic comets, so that for example 110P/Hartley 3 becomes 110P/Hartley. All comets are now uniquely identified, either by their periodic number or by their year designation and the suffix has become superfluous. The ICQ have already implemented this change and in future issues I may follow suit. Another change is that periodic comets of one apparition and period longer than 30 years are given a C/ designation rather than D/ or P/.

As part of a scheme to revise the format of the BAA meetings programme I am planning to hold a Section meeting on 2002 February 23. This will be part of a BAA Saturday meeting at Savile Row in London, with the Section meeting from 11:00 - 13:00, followed by lunch at Savile Row and the main BAA meeting in the afternoon. I will provide further details in the next newsletter.

Jonathan Shanklin

Tales from the Past

This section gives a few excerpts from past RAS Monthly Notices, and BAA Journals Sky.

150 Years Ago: Interestingly the first page of the November 1850 Monthly Notices proclaims the discovery of two new planets - Egeria and Victoria. There was some controversy over the name Victoria, the Roman goddess of victory rather than the British Queen, and it was noted "Some objection has been taken, though, we believe, only by one or two persons in the United States….". There were suspicions that this type of object was a different class

of planet to the classical planets and the analogy was made with Natural History where living things were classed into families. Mr G P Bond (son of the Director of the Cambridge (USA) Observatory) discovered a telescopic comet on August 29. Although he had detected seven or eight previously, this was the first to bear his name as in every other instance a prior discovery was recognised. The Council's report to the AGM noted "In addition to the comets of Peterson and Bond, we have to record the reappearance, under very gratifying circumstances as regards the prediction, of the periodical comet of Faye. Astronomers are indebted to Lieutenant Stratford for directing attention to this interesting body by the publication of an ephemeris, which enabled Professor Challis to discover and observe the comet with the Northumberland telescope in November last. The elements had been rigorously investigated by M. Le Verrier from the observations of 1843-4, and the perturbations due to planetary attraction having been calculated by the same mathematician, the perihelion passage was fixed for the 2d of April 1851. The observations taken by Professor Challis confirm, in the most striking manner, M. Le Verrier's prediction.

100 Years Ago: The November Journal has a six page paper describing observations of comet Borrelly-Brooks (1900 O1). Few observations refer to the comet's magnitude, but most recorded tail details. A few observations included complaints of light pollution from electric arc lamps! Comet notes in the April Journal include "Professor Kreutz has brought out an important treatise on the remarkable family of comets of 1680, 1843, 1880, 1882 and 1887. This family have similar orbits, and at perihelion approach extremely near the Sun, indeed almost grazing its surface." and "The Astronomische Gessellschaft has had means placed at its disposal by Mr A F Lindermann, of Sidmouth, for the purpose of accelerating the work of calculation of comet material from ancient times to the middle of the nineteenth century. About 5l. is offered for each definitive orbit computed. Intending computers should communicate with Dr Kreutz.". Even in 1901 the Journal still recorded the discovery of new planets

50 Years Ago: The Presidential address reviewed The Minor Planets and even 50 years ago 'minor planet' and 'planet' were used interchangeably. Interestingly the article notes as an aside that the name Pluto was used in America for a short time for 433 Eros. The March meeting noted that the comet section had been having a very quiet time, with activity in 1950 being below average. However a goodly part of the observations received were made by Albert Jones in New Zealand. Dr Merton gave a formula for the limiting comet magnitude under average conditions of $m_{lim} = 8.0 + 4 \log a$ [a the aperture in inches]. He also noted that a 20 minute exposure with an 8" fl f2.9 lens might record a 12^m comet. At the next meeting he had to say that within a few days of the previous meeting four new comets had been discovered. George Alcock had submitted some interesting drawings of Pajdusatkova [sic] 1951a. Pajdusakova apparently married Dr Mrkos shortly after the discovery!

GEORGE ALCOCK REMEMBERED

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The Meteor Years

The July 1931 Meteor Section meeting seemed to inspire George and marked the start of an extremely fruitful observing partnership between himself and Prentice. The intensive meteor partnership would last twenty productive years, interrupted only by the war years. But meteors were not George's only interest, he also enjoyed observing and sketching the planets, even if some BAA members were sceptical of what could be seen through a small refractor. George also independently discovered the white spot on Saturn, while using a friend's 4" refractor, on August 12th 1933, some 3 days after it's official discovery by Will Hay. However, he missed the spectacular Giacobinid meteor shower of October 9th 1933; it was not predicted and he was not outside at the time; remarkably his mother Jennie did observe it whilst waiting for a bus! Up to 450 meteors per hour were visible from dark sites.

On December 12th 1934, George might have discovered his first nova. Both he and Prentice had been out observing at their respective locations, but George had turned in at 1.30am (he started a new teaching job the next day) whereas Prentice had stayed out a while longer and, while stretching his legs after a long observing session, he spotted the 1st mag Nova Herculis 1934 (later classified as DQ Her). George could easily have spotted the newcomer himself, but it was not to be. Prentice telephoned the RGO and the Astronomer Royal and incoming BAA President, Sir Harold Spencer Jones, mentioned the discovery on the radio the next evening. The nova took 94 days to fade to mag 4.3. Some 57 years later, George would himself discover a nova in Hercules!

Comet 1948 L1 (Honda-Bernasconi).

With George now fully committed to meteor observing, after four years work with the BAA meteor section, he eventually found the funds to became a fully paid up BAA member and was elected to the association, in February 1936, at the age of 23. Some 15 months earlier, the 11 year old Patrick Moore had been elected.

George first met his future wife, Mary Green in 1936. Like George she was a teacher, some five years his senior. Fortunately, her extremely strict mother guaranteed that this new friendship would not interfere whatsoever with George's night time vigils!

George continued his mammoth meteor watches until his Second World War call up in December 1940. He even managed some meteor watches during his RAF service! He married Mary on June 9th 1941 during a months leave from the RAF.

While the marriage was a happy one, Mary suffered a fall in 1958 resulting in a particularly complex fracture of her (already weak) left leg. The leg never fully repaired and she eventually became virtually bedridden for the last twenty years of her life (she died in October 1991).

Following the distraction of the war, George was finally returned to civilian life in March 1946. His meteor work with Prentice continued and he was determined to see the next big Giacobinid shower, following his mother's chance observation of the 1933 event. But he was to be thwarted again - while Prentice enjoyed clear skies on the night of October 9th 1946 and saw a meteor storm, George was clouded out; sadly, he never did see a true meteor storm.

In November 1947 George and Mary moved to their own home, in the nearby village of Farcet in the Peterborough countryside. They named the new house "Antares" and it was numbered "no 55 Broadway, Farcet". With George to ultimately notch up 5 comet and 5 nova discoveries it would prove to be an appropriate number!

During the early 1950s it became increasingly obvious to George and to Manning Prentice that the value of their meteor observations was being eroded by the radar work being carried out at Jodrell Bank. This, however, did not stop George completing a record breaking Quadrantid watch on the night of Jan 3rd/4th 1951; a total observing time of 10 hours and 48 minutes! This was his last major meteor watch, though he still submitted occasional reports to the BAA for another 10 years to both Prentice and, from 1954, to Harold Ridley.
He had been the country's most dedicated meteor observer for almost twenty years!

The Comet Sweeping Years

With the value of his meteor work diminishing (in his eyes) George started looking around for other areas of Astronomy where he could really make a contribution. George was not that interested in submitting routine observations that simply added to a large database and may, or may not, be of some minor scientific use. He wanted his observations to be VERY useful and to fundamentally increase our understanding of the Universe. But, in George's own words "What could I, a single observer, with not much money, do, that would make a difference". The answer was obvious, but would involve a mammoth effort: he resolved to direct his energies into discovering a comet. On the 1st of Jan 1953 George made his only New Year's resolution; he would embark on a 5 year comet search with his 4" refractor, a telescope he had owned, on loan from the BAA, since 1938. (In 1958, without a discovery, he would resolve to carry on for another 5 years.) Two and a half years after his New Year resolution, in the summer of '55, he decided he would search for novae too. This latter challenge was a collossal undertaking, but one that George fully understood.

Comet 1955 O1 (Honda) drawn by Alcock on 1955 August 16.9

From his meteor work of the past twenty years, George could recognise about a thousand stars in patterns. This does not mean he could name them all, or that he could even draw the constellations down to mag 5 or so. It simply meant that his brain's pattern recognition centre could tell if a new star was breaking up the old pattern. Nevertheless, the idea of committing the Milky Way, as seen through binoculars, to memory was "preposterous" even to George - it implied memorising perhaps 20,000 or 30,000 stars!! But taking the easy way out was not an option for George...he would search for novae as well as comets.

George threw himself at the new challenge, spending hundreds of hours per year sweeping the sky for comets and then novae. A few other comet hunters were stealing comets from George in the first few years and George learned from "the ones that got away". The successes of Mrkos, Honda, Peltier, Burnham and others in the 1950s showed George that a comet could be discovered; it just needed infinite dedication and infinite patience!

There can be little doubt that George had the wrong equipment for comet hunting in the early years. His 4" refractor with a 1 degree field was not a comet sweepers dream instrument. In 1957 he borrowed Manning Prentice's delapidated 25x105 binoculars and immediately realised that he needed something similar. The breakthrough that, quite possibly, changed the course of British Astronomical history, occurred in January 1959; George's brother John spotted a pair of similar binoculars for sale at the 1959 Boat Show in London. Edward Marcus who owned a binocular & telescope shop close to Liverpool Street insisted that John took them back to George for a trial. After some modifications by Marcus, George was delighted with the astronomical performance of the binoculars and 150 pounds sterling changed hands! Not only did the binoculars have wide field eyepieces giving a 3 degree field, the eyepieces were inclined at 45 degrees. At a stroke, George's comet sweeping became comfortable and the field of view increased by nine-fold! History was about to be made.

After only 7 months sweeping with the new binoculars, on the 25th of August 1959, 3 days prior to his 47th birthday, George spotted an intruder in Corona Borealis. The next night, with a new star atlas, he checked the field again - the suspect had moved one degree. George had made his first discovery, Comet Alcock 1959e, the first comet discovered from Britain since Denning's final comet discovery in 1894.

After more than 6 years of sweeping, the second Comet Alcock was discovered only 5 days later (!), 2 days after his 47th birthday, on August 30th. Comet 1959f was discovered in the morning sky in Cancer. After a 65 year dearth of British comet discoveries (and not for the lack of people trying) the discovery of two British comets in a week was, and still is, a fairytale event. Over the years, many astronomers, including myself, have stood in the back garden of Antares and wondered if they were standing on sacred ground.

George was a well-known observer in the BAA prior to August 1959, but he would always be a legend after that month. It is sobering to speculate as to what might have happened if August 1959 had been a really cloudy month. George's third Comet was discovered in March 1963; how long would George have carried on without a discovery - we will never know.

George made his fourth comet discovery in September 1965. He would not discover his fifth for another 18 years; thus the 6 year period from 1959 - 1965 marked George's golden period of comet discovery.

The Nova Discovery Years

After 1965, George placed more emphasis on nova hunting; after all, he had a unique talent in that field, he had memorised the northern Milky Way! During the 1970s he became increasingly frustrated by the encroaching skyglow from Peterborough, making nova hunting, not comet hunting, the natural direction in which to continue.

As most TA members will be aware, The Astronomer started its life as The Casual Astronomer in April 1964, founded by John Larard and Jim Muirden. George was one of the strongest supporters of the magazine, right from the very start. It filled a number of voids not then covered by the BAA, and particularly attractive to an observer like George. Most importantly, rapid publication of observations and discoveries, especially of comets and variable stars, were its speciality. In today's Internet & CCD dominated world it's hard to imagine a world where observers had to wait months or years to see their observations in print. But that was quite often the case in the 1960s, until the Casual Astronomer appeared. George was a lifelong supporter of TA from its inception, and of Guy Hurst, who took over the magazine in 1975.

From 1967 to 1976 George used his memory of the northern Milky Way to full advantage, sweeping up 4 novae in an 11 year period. He had rivals in this field too, most notably the Japanese photographic patrollers. Once again, Honda was a major rival. But George was the only successful observer at that time who was searching visually. On clear nights he had a huge advantage over the photographers. Bright novae would be spotted almost instantly by him; there was no additional hassle of developing films, mounting negatives and stereo merging or blinking. He could also observe in an instant and between cloud banks, his visual approach had much more flexibility than photography.

Comet 1956 R1 (Arend-Roland) drawn by Alcock on 1957 May 2.9

His first nova success came on July 8th 1967 when he swept up Nova Delphini rising through 6th magnitude. At last, the 12 years of memorising the Milky Way through binoculars had paid off; it must have been a huge relief. George now had 5 discoveries to his credit: 4 comets and a nova. In the late seventies and eighties, US observers Peter Collins and Kenneth Beckman would follow George's example and memorise the Milky Way stars too, but George had shown the way.

Nova Delphini 1967, or HR Del as it became known, is still the only nova to have been discovered in Delphinus. It was the first British Nova to be discovered since Prentice discovered DQ Her in 1934. The nova rose to a peak of 3.5 on 1967 December 13th, dropped slowly, then peaked again at 4.2 on 1968 May 5th; an extraordinary object.

George's second nova was discovered a mere 9 months after the first and was a much faster nova. This one was in Vulpecula and was designated LV Vul. It was discovered on 1968 April 14th, rising to a peak of mag 4.8 a week later, on April 21st. Remarkably, with HR Del on the rise to it's final fourth magnitude peak, there were two British naked eye novae, only 15 degrees apart, in the April 1968 dawn sky!! George has often stated that the sight of those two novae together was "the greatest thrill of my observing career"

The proximity of LV Vul to the bright nova of 1670 was also of considerable importance to George. Two years later, George notched up his third and faintest (at mag 6.9) nova, in Scutum, V368 Scuti. Another 6 years would elapse before he bagged his fourth, on October 21st 1976, NQ Vul, a nova right next to the famous Coathanger Asterism. This was an especially important discovery for George as his morale was somewhat dented by 'missing' the 1st mag nova V1500 Cyg on August 29th 1975, the day after his 63rd birthday. George only missed the spectacular nova by a few hours and the loss nearly made him give up. I well remember hearing George describe his feelings towards Nova Cyg 1975 at a meeting of the JAS (now SPA) on April 29th 1978 at the Holborn Library in

London. I had walked 7 miles from Enfield to hear George (and Jocelyn Bell of Pulsar fame) give a rare talk - it was well worth the blisters! I would not see George again until the 1989 TA AGM.

Even for an observer as dedicated as George, comet and nova discoveries are generally separated by years, not days! One can only marvel at the mental stamina of the man, notching up literally thousands of fruitless hours of searching between discoveries as well as caring for his bedridden wife and teaching by day (up to 1977). Somehow George managed to find the strength to go on, year after year and retain his cheery disposition. It is simply mind-boggling!

The last two discoveries

The last two discoveries of George, his fifth comet and his fifth nova must have stretched even his patience, occurring after discovery gaps of 7 and 8 years, but the stories associated with them have gone down in astronomical history.
George swept up Comet 1983d (C/1983 H1) at 22h UT on 1983 May 3rd after putting his wife to bed. It was in Draco, already 6th magnitude and 12' in diameter. Unlike his previous 8 discoveries, this one was made from indoors (!) with George kneeling on the floor beneath the Antares landing window and using 15 x 80 binoculars. It ultimately transpired that Araki had spotted it fractionally earlier and the Infra-Red Astronomy Satellite (IRAS) had secured images of it as early as April 25th, but the team had failed to appreciate it's true significance. George was not happy that the TV report made it sound as if he was simply 'checking out' the IRAS discovery; he would definitely have been happier for the comet to have been named Araki-Alcock, with IRAS left out! This was the only time George had to share a comet discovery. IRAS-Araki-Alcock became the third closest comet flyby of all time, after Lexell (1770) and Tempel-Tuttle (1366). It passed within 3 million miles of Earth on May 11th and plunged 40 degrees in declination in one day! It was the brightest comet George had discovered and the fact he'd done it from indoors, aged 70, with hand-held 15x80 binoculars just added to the legendary status of the man.

Two years later, on Jan 30th 1985, George made the observation which he personally considered was his tenth discovery, he spotted an outburst of the recurrent Nova RS Ophiuchi, again while observing from indoors. Although not a new nova, George had missed the 1967 flare-up due to driving home after visiting Manning Prentice. So, although not a discovery of a new object, it was a satisfying success for George.

Comet 1956 R1 (Arend-Roland) drawn by Alcock on 1957 May 18.9

His final discovery, on 1991 March 25th, when George was 78 years old, was a remarkable one in many ways. Firstly, George had a strong feeling that he was going to be lucky that night, so strong in fact, that he was not at all surprised when he spotted the 5th magnitude intruder. Secondly, he was, once again, observing from indoors, through a downstairs double glazed window, using only 10x50 binoculars. Thirdly, the confirmation was itself, equally remarkable. At the time of the discovery, 0435 UT, nautical twilight had already arrived. From his satellite images he knew that Denis Buczynski in Lancashire was clear and phoned him with the details. Within minutes of the call, Denis was in the dome and his astrograph was being slewed to the right position, offsetting from Deneb, the ONLY star visible in the twilight sky! Astoundingly, Denis photographed the object and secured a position. An independent discovery was made by Sugano in Japan and the new object (V838 Her) was one of the fastest fading novae of all time, dropping 3 magnitudes in 2.8 days!

Tributes and awards

Although V838 Her was the last discovery for George he continued to search the sky from indoors and to sketch comets, like Hyakutake and Hale-Bopp, that came along. On September 1st 1991 I visited 55 Broadway, Farcet with Denis Buczynski and Glyn Marsh. Denis was a man George trusted and with Denis acting as an expert interviewer I secured 3 hours of footage, while George related his life story. It's compulsive viewing! Five years later, Kay Williams, inspired by a suggestion from Brian Marsden's wife Nancy, completed her excellent and meticulous biography of George's life. The book, "Under an English Heaven, the life of George Alcock" should be on every astronomer's bookshelf.
Only by reading that book and watching the TA video can the true quality of the man be appreciated.

In this tribute I have concentrated on the astronomical side of George's life, but this is only a tiny part of the story. George was an avid bird watcher, nature watcher, weather watcher and sky watcher. He loved cathedral and church architecture and was forever producing the finest sketches of buildings, flaura, fauna, wildlife, comets and planets. As Richard McKim, a fellow Peterborough schoolteacher and astronomer noted, observers generally have a good eye for fine detail or very sensitive night vision; George had both. His drawings of comet tails are in a league of their own.

George was also a schoolteacher with a difference; he was universally popular with his students, many of whom kept in contact with him for decades after their schooldays were over. Unlike so many people today, George was also a modest and kind man, never bragging about his colossal achievements and having no interest in broadcasting his opinions; his achievements spoke for themselves. He also wrote in the most exquisite "copper-plate" handwriting one could ever wish to see!

Buzzwords and spin had no place in George's life, for him actions spoke louder than words.

George was showered with accolades during his life. No other visual observer since Denning had discovered more than one object from the UK. Only Candy, Hosty and Panther (a friend of George since the 1940s) had discovered any others! He received the MBE, for services to astronomy in 1979, and was awarded the BAA Goodacre Award in 1976. The RAS awarded him the Jackson-Gwilt medal in 1963 for his first two comet discoveries.

He was the only triple recipient of the BAA Merlin medal in 1961, 1972 and 1992. George also received the first ever Astronomical Society of the Pacific's "International Amateur Achievement Award" in 1981 as well as 3 AAVSO plaques for all of his nova discoveries. In 1992 he was invited to be a member of the elite New York Academy of Sciences, which he accepted with pride. He was also recognised by Peterborough town council at a presentation in the Town Hall in 1997.

The last time I saw George was on August 15th 1999 at the International Workshop on Cometary Astronomy II at Cambridge, just after the Total Solar Eclipse. Many legendary figures were there including Don Machholz, Kesao Takamizawa, Bill Liller, Alan Hale and Brian Marsden. But only one man got a standing ovation and that was George, who had come to the meeting accompanied by his younger brother John (who spotted those crucial binoculars 40 years earlier at the 1959 boat show). George was an amateur astronomer's astronomer. A discoverer who actually went out in the cold and dark and used his eyes and brain to discover comets and novae. George was rarely beaten by any astronomical challenge, despite the disadvantages of searching from the cloudy skies of Britain. Candy stole a comet from him at Xmas 1960; Panther stole another at Xmas 1980; George lost the ultimate battle at Xmas 2000.

At the end of the TA video, Denis asks George how he would like to be remembered. After a pause, George replies "As an observer". And surely, that is how we will remember George Alcock.

The Ten Discoveries of George Alcock

Year	Object	Date found
1959	Comet 1959 Q1 (Comet Alcock 1959e)	August 24
1959	Comet 1959 Q2 (Comet Alcock 1959f)	August 30
1963	Comet 1963 F1 (Comet Alcock 1963b)	March 1
1965	Comet 1965 S2 (Comet Alcock 1965h)	September 26
1967	HR Del (=Nova Del 1967)	July 8
1968	LV Vul (=Nova Vul 1968 No 1)	April 15
1970	V368 Sct (=Nova Sct 1970)	July 31
1976	NQ Vul (=Nova Vul 1976)	October 21
1983	Comet 1983 H1 (Comet IRAS-Araki-Alcock 1983 d)	May 3
1991	Nova Herculis 1991	March 25

‘The Comet Man’ A. C. D. Crommelin, B. A., D. Sc., F. R. A. S.

John Fletcher
Mount Tuffley Observatory

This biography of A. C. D. Crommelin, written in 1992 April, all came about after I received a call from a most interesting lady aged 84 years who lives in Gloucester and only about a five minute drive from my home and private observatory in Gloucester, England. The lady's name is Sara Crommelin who married Peter the son of A. C. D. Crommelin, the comet man. Sara tells me she and Peter are the sole relatives of this famous astronomer who was famed for his computations of cometary orbits. Sadly his son Peter is in a nursing home at the moment and also Sara's own eyesight is not too grand she tells me. Sara also told me things about his private life including that of the great man’s sadness when he lost his eldest son and a daughter in a climbing accident.

Andrew Claude de la Cherios Crommelin was born in Chushendun, N. Ireland on 1865 February 6th and died in London on 1939 September 20th, some 9 months after he had been knocked down by a motor cyclist almost outside his home when on his way to church. He was the third son of the late Nicholas de la Cherois Crommelin, a descendant of Louis Crommelin, a Huguenot who was the founder of the linen trade in Ulster. He was educated at Marlborough College and then went on to Trinity College Cambridge, and graduated in 1886. In 1897 he married Letitia the daughter of Rev. Robert Noble, and had two sons and two daughters.

After graduation he went to Lancing College on the teaching staff. Then he tried his hand at electricity but soon gave that up. He had always been throughout his childhood keen on watching the sky and observing the stars and at Cambridge was a keen observer of the stars and built up

a reputation for his knowledge of astronomy. He was elected into the Royal Astronomical Society before leaving the University in 1888. It was fortunate that in 1891 the appointment of an assistant at the Royal Observatory in Greenwich, was authorised by the Admiralty. Andrew sitting in competition with the late E. W. Brown secured the appointment. He joined the staff of the Royal Observatory on 1891 May 11th. He took his place among the members of the regular staff making routine observations with the transit circle and the Sheepshanks equatorial. He was also put in charge of the altazimuth instrument designed by Airy for observing the Moon. Observing the occultations of stars by the Moon, and comets was put in his care.

Crommelin's work was extensive at Greenwich and he was an expert in all his research as both observer and a computer. In 1911 he made an accurate determination of the Lunar parallax and prepared the ephemerides of both the Moon and outer planets including the path of Jupiter's eighth satellite. Crommelin went on many eclipse expeditions organized by the B.A.A. From Brazil Crommelin observed the 1919 Solar eclipse using a 4 inch refractor of 19 feet focus and secured some fine photographs, which determined there was a deflection of light in the gravitational field of the Sun beyond any question of doubt. He also determined the orbits of many comets and minor planets. This was recorded in an early number of the Journal of the British Astronomical Association.

Indeed for many years he was the director of the comet section of the British Astronomical Association and President between 1904 and 1906 and in the year 1937 he received the Goodacre Medal. He was also a fellow of the Royal Astronomical Society for over fifty years and served on their Council from 1906 to 1932. He was also was Secretary from 1917 to 1922 and became their President during the years 1929 and 1931. He wrote their annual reports on minor planets and from 1916 the reports on comets as well. Crommelin was also the President of the International Astronomical Union's sub commission on periodic comets from the year 1935 until his death.

The Memoirs of the British Astronomical Association, Vol XXVI, Part 2, Comet Catalogue (1925), prepared by A. C. D. Crommelin.

At a meeting of the Astronomical Union in Rome (May 1922) Crommelin expressed his desire to produce a sequel to Galle's Cometenbahnen to bring up to date and enter improved orbits of comets for the period of time prior to 1893. The work was carried out with the help of the computing section of the comet section of the British astronomical Society. The comet catalogue was later published in 1925. Throughout this work he had been under great pressure at work and with very little co-operation from colleagues. He did however acknowledged the help he received by Miss Mary Proctor, who copied the orbits given in Astronomische Nachrichten and the bulletin Astronomique. Crommelin included the results of Dr Cowell and himself of the ancient returns of Halley's Comet. He also included many predicted elements of periodic comets even in the case when the comet was not observed. For their work Crommelin and Cowell were awarded the Lindemann Prize of the Astronomische Gesellschaft and also both received a D. Sc degree at Oxford University.

According to the records from the British Astronomical Memoir, Crommelin and Cowell computed the details for the following apparitions of comet Halley: BC240 from China, AD141 from China, AD530, AD607 from China, AD684 from China, AD837 from China, AD1066 from China and Europe, AD1145 from China and Japan, AD1301 from China and Europe, AD1835 and AD1909 (first photo August 24th). Crommelin also computed orbits for comets: Grigg - AD1902 (J.Grigg & Crommelin), Lowe - AD1913 (M.Viljev & Crommelin), Encke - AD1924 (L.Matkiewicz & Crommelin) and Wolf - AD1925 (Crommelin & A.Kahrstedt).

Crommelin was famed for computing that comet Forbes 1928 (III), comet Coggia-Winnecke 1873 (VII) and comet Pons 1818 (1) were all the same object and he predicted that the same object would return in 27.4 years, which it did. In 1948 the International Astronomical Union changed the name of the comet from Pons-Coggia-Winnecke-Forbes to Crommelin. The history of these many separate discoveries goes like this. Crommelin's comet, not so named then, had been first observed by one of the greatest comet observers of all times, namely Jean-Louis Pons. Prior to sighting comet (1818 I) on 1818 February 23rd Pons had discovered no less than 16 out of the 17 comets observed during the beginning of the nineteenth century. The 1818 comet was skilfully discovered by Pons from his observing site (Marseille, France) at +40ºN when the comet was at -15º and only 54º to the Sun. It was slightly fainter than 7th magnitude. Pons was able to measure four positions of the comet but he could not determine an orbit. The comet was rediscovered later by Coggia also in Marseille and one day later by Winnecke in Strasbourg but very poor conditions allowed for only six days viewing. The comet of Pons and Coggia-Winnecke was not known to be the same comet at that time.

The orbital period of the comet had indeed remained unknown until Crommelin tackled the problem in 1928. In a long series of papers Crommelin had shown that Pons (1818 I), Coggia-Winnecke (1873 VII) and Forbes (1928 II) were three apparitions of the same comet. The 1845 and 1901 returns were sadly missed due to poor sky conditions. When it reappeared according to Crommelin's prediction in 1956 it was renamed after him. On this apparition it returned to perihelion only four days later than his prediction. Also in 1956, for the first time on record the comet displayed a short tail and it was favourably positioned for observation. It returned on schedule again in 1984 and this time again it was singled out for unusual attention. The International Halley Watch, while preparing to observe the most famous periodic comet of all (Halley) chose Comet Crommelin for a trial in preparation for the coming apparition of Halley's comet. The first visual sightings were from France on 1983

December 29th and of 12th magnitude. Only a few days later on 1984 January 3.8 it was of magnitude 10.5. It was observed in great detail especially in March 1984, even though the weather was poor for observing and the comet was not a dramatically bright object.

Nevertheless the comet has been very useful to science and indirectly contributed to the great success of the observations of Halleys comet. All this has greatly increased our understanding of comets in general (including of course Comet Crommelin). One of his most famous writings was "Essay On The Return Of Halleys Comet" in Publikation der Astronomischen Gesellschaft, No. 23 (1910), written with P.H.Cowell; and also the Comet Catalogue, Memoirs of the British Astronomical Association, 26, pt. 2 (1925), continued ibid., 30,pt.1 (1932).

Great astronomers like Crommelin must never be forgotten. It is their computing work (as it was called then) that has paved the way to our modern knowledge of astronomy. Crommelin's sequel to Galle's Cometenbahnen certainly advanced cometry science in his day.

I wish to thank Sara and Peter De La Cherois Crommelin, his daughter in law and son for the information I have received to make this account of the great astronomer A. C. D. Crommelin possible. I would also like to thank H. Ridley (Comet Section, British Astronomical Association) and P. G. Hingley (Librarian, Royal Astronomical Society). Also thanks to Patrick Moore for his encouragement, given to myself, to delve into the history of this great astronomer's life and work.

Professional Tales

Many of the scientific magazines have articles about comets in them and this regular feature is intended to help you find the ones you've missed. If you find others let me know and I'll put them in the next issue so that everyone can look them up.

Alan Fitzsimmons recently sent me reprints of a couple of his papers on the CCD photometry of distant Jupiter family comets. The observations show that most of these objects are a few kilometres in radius and have no more than 10% of their surfaces active. There are some exceptions: 9P/Tempel 1, 81P/Wild 2 and 87P/Bus seem more active. The output of 87P/Bus seems variable, whilst 65P/Gunn and 74P/Smirnova-Chernykh are active right round their orbits.

The following abstracts (some shortened further for publication) are taken from the Cambridge Conference Network (CCNet), which is a scholarly electronic network devoted to catastrophism, but which includes much information on comets. To subscribe, contact the moderator Benny J Peiser at <b.j.peiser@livjm.ac.uk>. Information circulated on this network is for scholarly and educational use only. The abstracts, taken from daily bulletins, may not be copied or reproduced for any other purposes without prior permission of the copyright holders. The electronic archive of the CCNet can be found at http://abob.libs.uga.edu/bobk/cccmenu.html

Astronomers Conducting Post-Mortem on Comet LINEAR [Office of News and Information Johns Hopkins University]

New analysis of observations of Comet LINEAR, a comet whose breakup in late July and early August made headlines worldwide, has shown that the comet might have been starting to come apart as early as the second week of June.

"The first hint of trouble for Comet LINEAR came from ground-based observations at the Lowell Observatory from June 10 to June 12, when significant variations in the comet's brightness were first detected," says Hal Weaver, a research scientist in the physics and astronomy at The Johns Hopkins University. [*…which is what I commented in the comet review in the last issue*]

These variations were originally attributed to rotation of the comet's nucleus, a common phenomenon known to change the brightness of comets. But when Weaver recently looked back at the data he began to suspect the change had links to the comet's eventual demise.

"Although no fragments were detected near the comet at that time, we now believe that this was the first indication that the comet was coming apart," says Weaver, who is reviewing the results on the recently deceased Comet LINEAR at the Division of Planetary Sciences Meeting in Pasadena, Calif., on October 26.

Observations early in July had suggested the comet was growing less stable. On July 7, Weaver and his collaborators used the Hubble Space Telescope to study the comet and captured pictures of a large chunk of the comet breaking away and moving down its tail, presumably being pushed away by jets of gas emanating from its surface. These jets are produced as sunlight boils ice on the comet directly into water vapour. The gas jets also eject small particles of dust into the coma, or atmosphere of the comet. Radiation pressure from the sun then sends this dust streaming behind the comet to form the comet's tail.

Extreme variations in the comet's brightness were detected by optical and radio telescopes during July 20-24, and astronomers observing the comet over the next 12 days complained that it looked like little more than a cloud of dust. Puzzled by what appeared to be a rapid disintegration of the nucleus, Weaver and colleagues decided to look more carefully at the comet using the Hubble Space Telescope. The Hubble images revealed a spectacular field of about a dozen mini-comets near the edge of the broad tail of dust seen in the earlier ground-based images. Each of the fragments had its own comet-like tail.

After a scramble to arrange time for follow-up observations, Weaver and his team observed the

comet again on Aug, 6 using the Very Large Telescope in Chile. Although its resolution was not quite as good as Hubble's, the VLT's mirror has 10 times the collecting area, and it was able to detect about 17 mini-comets.

When they went back to the comet on Aug. 9 with the VLT, they were surprised to find that the mini-comets had virtually disappeared. Poor atmospheric conditions made it difficult to determine if a real change had taken place, or if atmospheric turbulence was hindering their view. But observations on Aug. 14 under excellent conditions confirmed that the mini-comets had faded dramatically.

Weaver and his colleagues are continuing to analyze the data they gathered to see if they can find clues to how LINEAR came apart. A better understanding of the comet's breakup could lead to a better understanding of how it came together 4.6 billion years ago in the early days of the solar system.

"If the comet broke up by shedding small pieces, then it's possible that the most massive object remaining in the field of mini-comets could be identified as its original nucleus," Weaver says. "On the other hand, it may be that the destruction of the comet was so complete that it's pointless to search for the 'original' object, much like you wouldn't call any particular piece of a badly shattered glass the 'original glass.'"

Astronomers have seen many other comets fragment, Weaver says, but very few have done so as dramatically as LINEAR. Current cometary theory suggests a range of forces that could have torn the comet apart, most of which should manifest more strongly as the comet gets closer and closer to the sun. These may include sharp temperature and pressure differences between the sunward and dark sides of the comet, and sudden vaporization of internal pockets of ice.

"We still do not understand what caused this comet to come apart, and don't generally understand what causes fragments to break off comets," says Weaver. "By continuing to investigate the data from Comet LINEAR, and folding in everything we know about other comets as well, maybe somewhere downstream we can explain what happened with a detailed physical model."

The discovery of a faint glow of scattered sunlight from the dust trail of the Leonid parent comet 55P/Tempel-Tuttle. R. Nakamura, Y. Fujii, M. Ishiguro, K. Morishige, S. Yokogawa, P. Jenniskens, T. Mukai: ASTROPHYSICAL JOURNAL 540: (2) 1172-1176, Part 1 SEP 10 2000

A meteoric cloud is the faint glow of sunlight scattered by small meteoroids in the dust trail along the orbit of a comet as seen by an earthbound observer. While these clouds were previously only known from anecdotes of past meteor storms, we now report the detection of a meteoric cloud by modern techniques in the direction of the dust trail of comet 55P/Tempel-Tuttle, the parent of the Leonid meteor stream. Our photometric observations, performed on Mauna Kea, Hawaii, reveal the cloud as a local enhancement in sky brightness during the Leonid shower in 1998. The radius of the trail, deduced from the spatial extent of the cloud, is approximately 0.01 AU and is consistent with the spatial extent mapped out by historic accounts of meteor storms. The brightness of the cloud is approximately similar to 2%-3% of the background zodiacal light and cannot be explained by simple model calculations based on the zenith hourly rate and population index of the meteor stream in 1998. If the typical size of cloud particles is 10 μm and the albedo is 0.1, the brightness translates into a number density of 1.2×10^{-10} m^{-3}. The meteoroid cloud would be the product of the whole dust trail and not only the part that was crossed in 1998. © 2000 Institute for Scientific Information

A CATALOG OF OBSERVED NUCLEAR MAGNITUDES OF JUPITER FAMILY COMETS G. Tancredi, J.A. Fernandez, H. Rickman, J. Licandro: ASTRONOMY & ASTROPHYSICS SUPPLEMENT SERIES 146: (1) 73-90 OCT 2000

A catalogue of a sample of 105 Jupiter family (JF) comets (defined as those with Tisserand constants T > 2 and orbital periods P < 20 yr) is presented with our "best estimates" of their absolute nuclear magnitudes H-N V(1,0,0). The catalogue includes all the nuclear magnitudes reported after 1950 until August 1998 that appear in the International Comet Quarterly Archive of Cometary Photometric Data, the Minor Planet Center (MPC) data base, IAU Circulars, International Comet Quarterly, and a few papers devoted to some particular comets, together with our own observations. Photometric data previous to 1990 have mainly been taken from the Comet Light Curve Catalogue (CLICC) compiled by Kamel (1991). We discuss the reliability of the reported nuclear magnitudes in relation to the inherent sources of errors and uncertainties, in particular the coma contamination often present even at large heliocentric distances. A large fraction of the JF comets of our sample indeed shows various degrees of activity at large heliocentric distances, which is correlated with recent downward jumps in their perihelion distances. The reliability of coma subtraction methods to compute the nuclear magnitude is also discussed. Most absolute nuclear magnitudes are found in the range 15 - 18, with no magnitudes fainter than H-N ~ 19.5. The catalogue can be found at: http://www.fisica.edu.uy/~gonzalo/catalog/. © 2000 Institute for Scientific Information

MISSION OVERVIEW: ROSETTA'S PURPOSE [ESA web page]

The International Rosetta Mission was approved in November 1993 by ESA's Science Programme Committee as the Planetary Cornerstone Mission in ESA's long-term space science programme. The mission goal is a rendezvous with comet 46 P/Wirtanen. On its eight-year journey to the comet, the spacecraft will pass close to two asteroids, (Otawara and Siwa). Rosetta will study the nucleus of comet Wirtanen and its environment in great detail for a period of nearly two years, the near-nucleus phase starting at a heliocentric distance of about 3.25 AU, with far-observation activities leading ultimately to

close observation (from about one km distance).

Rosetta will be launched in January 2003 by an Ariane-5 from Kourou, French Guiana. To gain enough orbital energy to reach its target, one Mars and two Earth gravity assists will be required. The long mission duration required the introduction of extended hibernation periods.

COMA BERENICIDS, YES; COMET CONNECTIONS, NO
Brian Marsden

I was quite startled to read in the Jan. 11 CCNet, not only of the suggested association of a recently observed meteor shower with "the poorly observed Comet Lowe 1913 I", but also of the suggested identity of the 1913 object with another comet, "observed, again rather badly, in 1750".

The fact is that the 1913 object was recorded only by its discoverer, an "enthusiastic" Australian amateur astronomer, who on Jan. 7 of that year reported to the Adelaide Observatory _very_ rough (and initially quite erroneous) positional data obtained by him with a 3-inch telescope on four mornings during the previous week. Even when the data were amended and attempts made to compute an orbit, no observations by others came to light, which was a little surprising since the object should have been an easy object for northern-hemisphere astronomers at and before its alleged discovery. This situation is reminiscent of many that continue to arise at the IAU Central Bureau for Astronomical Telegrams, and perusal of the Lowe information preserved in the Astronomische Nachrichten and the Journal of the British Astronomical Association cannot help but place the existence of the object in doubt. Although the various orbits computed at the time by Viljev and Crommelin agreed on a nodal longitude of 300 to 305 degrees (and the possibility of a very close approach to the earth around Jan. 25 if the comet had come to perihelion some weeks later than indicated), there was disagreement as to whether the orbital inclination was 80 degrees or 120 degrees: if I wish to contend with residuals of well over a degree, I get an inclination of something like 110 degrees. Nevertheless, as stated in the introduction to the Catalogue of Cometary Orbits already in the 1972 edition, I felt it wise to exclude this comet from consideration, and it was not given a new-style designation when the comet-designation system was revised at the end of 1994.

What about the comet of 1750? The positional information was also provided by just a single observer, who saw the comet on three nights in January of that year. In this case the recorder was the distinguished astronomer and demographer and secretary of the Royal Swedish Academy of Sciences, Pehr Wargentin. The observations were made with the naked eye and two different telescopes, and the comet was also seen by a colleague. Given that this was in the days before comet hunting became a sport (with comets named for their discoverers), I have little doubt that the object existed and discussed it in my paper in the Astronomical Journal in 1973 on the orbit of the comet associated with the Perseid meteors. Interestingly, the nodal longitude is also around 300 degrees, and the inclination could be as low as 120 degrees. The orbit I actually published does in fact bear a superficial resemblance to some computed from Lowe's 1913 data, although the published perihelion distance, 0.2 AU, is only half that derived in 1913. Furthermore--as I actually remarked in my paper--if the 1750 perihelion distance were as large as 0.4 AU, the argument of perihelion would drop to 240 degrees, which is significantly less than the 280-degree value that best fits the 1913 data.

Even if one accepts the reality of the 1913 data, there is no reason to believe that the comet had a period as short as a century or two, and there is in any case no way to satisfy both apparitions of data with the same orbit. Given my predilection for the reality of the 1750 comet, one might wish to consider it a better candidate for the parent of the Coma Berenicid meteors. But it does not seem that the orbit of the 1750 comet comes particularly close to the earth. Although the date was close to the anticipated previous perihelion passage of the 1862 parent of the Perseid meteors, Wargentin's comet was clearly not it. My acceptance instead of Kegler's 1737 comet as "a far better candidate" and consequent prediction of the late-1992 return was of course later amply demonstrated.

So while I give Gorelli and McBeath credit for attempting a meteor-comet association, the least said about the 1913 and the 1750 events, the better.

MASS OF OORT CLOUD 10 TIMES SMALLER THAN THOUGHT? MEDIA RELATIONS OFFICE, JET PROPULSION LABORATORY

Recurring collisions between comets during the solar system's formation may have ground smaller comets to bits, leaving only big comets larger than 20 kilometers to survive, according to a new model developed by researchers at NASA's Jet Propulsion Laboratory, Pasadena, Calif., and the Southwest Research Institute, Boulder, Colo.

The finding, by Dr. Paul Weissman of JPL and Dr. Alan Stern of Southwest Research Institute, published in the February 1 issue of the journal Nature, demonstrates that previous models may have significantly overestimated the mass of the Oort cloud -- a region far beyond the planets populated by comets flung outward in the solar system's youth.

"We're introducing a new wrinkle in the process of how the Oort cloud formed," said Weissman. One result of the new finding, he said, is that "the cloud may be 10 times less massive than previously thought."

By studying comets of different sizes, the scientists predicted how the comets would collide with each other, and how the collisions would erode the comet's cores, dirty snowballs of dust and ice. Their model showed that comets with nucleus diameters smaller than 20 kilometers would have been destroyed in the early solar system's demolition derby. Previous Oort cloud formation models neglected the effects of these collisions.

Another apparent implication of this violent collisional

environment is that the comets in the Oort cloud could be smaller than previously thought, said the scientists. If comets were so eroded that they would never have left the region of the giant planets, then few of them would have survived to be ejected to the Oort cloud. Taking into account their new findings, Weissman estimates that typical comets in the Oort cloud may be about half as large across as compared with current best estimates.

The endurance lifetime of ice fragments in cometary streams Beech M, Nikolova S: PLANETARY AND SPACE SCIENCE 49: (1) 23-29 JAN 2001

The endurance lifetime against sublimation of meter- to decameter-sized ice fragments are calculated for typical cometary orbits. It is found that such bodies can survive for multiple perihelion passages. For fragments traveling along orbits similar to those of typical meteor shower producing comets, the sublimation mass loss rate drives radial variations equivalent to 1-0.5 m per orbit. We review the available data with respect to the possible presence of large objects within the Perseid, Lyrid, Leonid and alpha-Capricornid streams. Invoking cometary aging and surface fragmentation events as the mechanism for placing large meteoroids within cometary streams, we find no compelling reasons to doubt that large meteoroids are intermittently present in most, if not all cometary-derived meteoroid assemblages. © 2001 Elsevier Science Ltd.

STING IN THE TAIL: WITHOUT EVEN HITTING EARTH, A COMET COULD BE AS LEATHAL AS AN ASTEROID From New Scientist, 24 March 2001

AS GOVERNMENTS around the world prepare to spend millions studying the threat of nearby asteroids hitting the Earth, an astronomer in Northern Ireland is warning that comets might pose a greater danger. "We may be looking for a swarm of bees while standing on a railway line with the train coming," says Bill Napier of the Armagh Observatory.

Icy comets with their tails of gas and dust are much rarer than rocky asteroids, but they don't even have to hit the Earth to do damage. A giant comet evaporating under the Sun's glare would release billions of tonnes of dust into the path of the Earth, Napier has shown in a new study. If this dust rains down on Earth, it could blot out the Sun and trigger a new ice age.

Astronomers already know of four objects they believe are giant comets hundreds of kilometres across. And there may be as many as 2000 more lurking in the Oort Cloud far beyond Pluto. Such comets visit the inner Solar System so rarely that the risk of an impact is negligible. But Napier calculates that they could release millions of tonnes of dust into our atmosphere, which would linger for as long as 10,000 years, blocking out most of the Sun's light and heat.

Astronomers had thought that the amount of dust around the inner planets remains fairly constant because dust from the break-up of comets and asteroids is balanced by dust falling into the Sun. But this can be upset by just a single large comet.

Napier and his colleagues believe that the Earth has already suffered at least once from the effects of comet dust. Data collected in the 1980s shows an unexpectedly large amount of minute interplanetary dust particles, each with a mass of about a nanogram. The excess can be explained if a giant comet broke up in the inner Solar System around 70,000 years ago--the onset of the last ice age. "I think we should be looking for cometary dust in polar cores," says Napier.

Napier rates the chance of being swamped by comet dust as 1 in 100,000, the same as a chance of a collision with a near-Earth object. Others are more doubtful. "I don't know if we've discovered enough comets to do a statistical analysis," says Robert McMillan of the University of Arizona's Spacewatch project, which tracks near-Earth objects.

But David Williams of University College London, who served on the British government's Near Earth Objects task force last year, agrees with Napier that work needs to be done on the risks posed by comets. "This area is perhaps one that's opening up now," he says. "We thought it was too controversial for the report."

SEVEN ENCOUNTERS WITH MINOR BODIES IN THE NEXT 5 YEARS Daniel Fischer

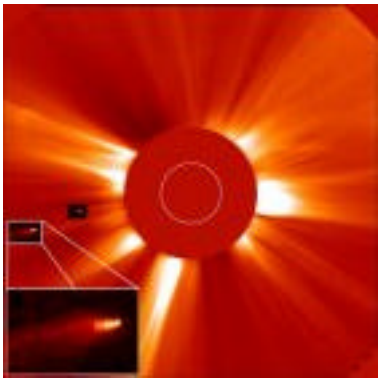
In the next 5 or so years there will be, if everything works out, no fewer than seven encounters of spacecraft with comets and asteroids. All the following missions are fully funded, though only 2 of the 6 have already been launched (the others will follow in 2002 to 2004):

2001	Sept.	22	Comet	Borrelly	Deep Space One (simple flyby)
2003	Nov.	12	Comet	Encke	CONTOUR (simple flyby)
2004	Jan.	1	Comet	Wild 2	Stardust (coma sample return)
2005	July	3	Comet	Tempel 1	Deep Impact (big mass impact)
2005	Sept.	XX	Asteroid	1998 SF36	Muses-C (sample return)
2006	June	18	Comet	S.-W. 3	CONTOUR (simple flyby)
2006	July	11	Asteroid	Otawara	Rosetta (simple flyby)

There are more scheduled flybys in 2008 (CONTOUR & Rosetta again) - and in 2011 we'll then have Rosetta as the first comet orbiter and eventually its RoLand as the first comet lander (though both might well be beaten by a clever Discovery mission - it's still 10 years to go).

All the missions listed above are funded by civilian space agencies (NASA, ISAS and ESA) - but there were also two NEA missions under consideration in the 1990's, Clementine 2 by the BMDO and NEAP by the company SpaceDev. The former seems to have disappeared completely after the 1997 death of its chief-scientist-to-be Gene Shoemaker, and the latter is apparently in limbo: NEAP will be launched "within the next 3-5 years", according to http://www.spacedev.com/missions/neap.htm .

SOHO analyses a kamikaze comet [ESA News release]

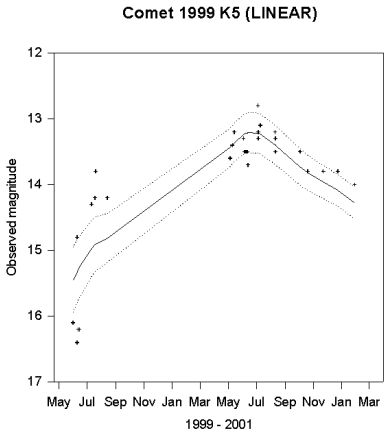


A comet that fell into the Sun on 7 February was tracked by two different instruments on the ESA-NASA SOHO spacecraft, enabling scientists to characterise it quite precisely. This was just one of nearly 300 comets discovered by SOHO since 1996, thanks mainly to the privileged view of the sky around the Sun given by the visible-light coronagraph LASCO. On this occasion SOHO's ultraviolet coronagraph UVCS also observed the comet repeatedly. It gave valuable additional information, both about the comet and about the solar wind close to the Sun.

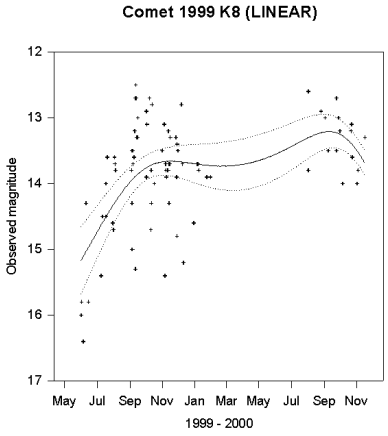
The picture shows, superimposed on a LASCO visible-light image, two of the ultraviolet images obtained by Michael Uzzo of the UVCS team at the Smithsonian Astrophysical Observatory (SAO) in Cambridge, Massachusetts. They were timed about an hour apart, when the comet's head was 2.7 and 1.6 million kilometres from the Sun's surface. The blow-up of the first image shows a wide and well-defined gas tail more than 500 000 kilometres long. The white ring on the LASCO coronagraph mask, which shields the instrument from the glare of direct sunlight, denotes the size and position of the visible Sun. Sebastian Hoenig in Germany and Xing Ming Zhou in China discovered the comet on 6 February in the LASCO images that are available every day to comet hunters via the Internet. Data from successive observations, supplied by the LASCO team, enabled Brian Marsden at SAO to compute the comet's orbit and to make the discovery official on behalf of the International Astronomical Union by designating it as Comet C/2001 C2 (SOHO). Like most of the comets found by SOHO it belonged to a family of small "sungrazers" that are believed to be fragments of a large comet that broke up long ago. For C/2001 C2 (SOHO) the encounter with the Sun was fatal. The UVCS images show ultraviolet light from hydrogen atoms, made by the break-up of water vapour released from the comet by the Sun's heat. John Raymond of SAO estimates that the comet was letting off steam at about 100 kilograms per second, and that the comet nucleus was only 10-20 metres wide. In large objects like Halley's Comet the nucleus is measured in kilometres. At 2.7 million kilometres out (as in the first of the two UVCS images) the comet was flying through a relatively tenuous solar wind but, closer in, the density seems to have increased almost tenfold. This is interpreted as an effect of the comet passing out of the region of a fast solar wind into a slower windstream of higher density. Further analysis may refine all of these estimates.

Review of comet observations for 2000 October - 2001 March

The information in this report is a synopsis of material gleaned from IAU circulars 7506 – 7606 and The Astronomer (2000 October – 2001 March). Note that the figures quoted here are rounded off from their original published accuracy. Lightcurves for the brighter comets are from observations submitted to The Astronomer and the Director. A full report of the comets seen during the year will be published in the Journal in due course.



1999 K5 LINEAR. Michael Mattiazzo and Andrew Pearce continued observing the 14th magnitude comet until the end of January. 32 observations give an aperture corrected preliminary light curve of 5.3 + 5 log d + 8.8 log r

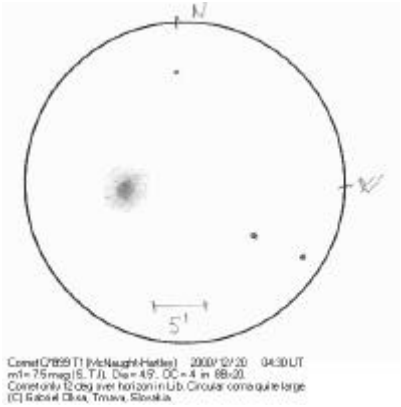


Scattered observations of **1999 K8 LINEAR** continued until mid November, with observers estimating it at around 14th magnitude. 85 observations give an uncertain corrected preliminary light curve of -0.2 + 5 log d + [15] log r

1999 T1 McNaught-Hartley D. Schleicher, Lowell Observatory, reports that he obtained eight sets of narrowband photometry of comet C/1999 T1 on 2000 Dec. 28 and 2001 Jan. 2 with the Hall 1.1-m telescope at Lowell Observatory, yielding the following averaged results: log Q(OH) = 28.67; log Q(CN) = 26.10; log Af(rho) = 3.06 (cf. IAUC 7342). The equivalent log Q(water; vectorial) is 28.76. No significant temporal or aperture variations were observed. [IAUC 7558, 2001 January 9]

N. Biver, D. Bockelee-Morvan, and J. Crovisier, Observatoire de Paris-Meudon; D. C. Lis, California Institute of Technology; and H. Weaver, Johns Hopkins University, report: "The CO J(3-2) line at 345.8 GHz has been detected on Jan. 5.7 UT at the Caltech Submillimeter Observatory (CSO) with a line area of 0.17 +/- 0.03 K km/s in main-beam brightness

temperature. During Jan. 5-7 at CSO, we also detected the HCN J(3-2) line (0.19 +/-0.01 K km/s) and CH_3OH lines at 307.2 (0.23 +/- 0.02), 304.2 (0.16 +/- 0.02), and 241.79 GHz (0.17 +/- 0.03 K km/s). The average production rates relative to water, using the water-production rate from Schleicher et al. (cf. IAUC 7558), are: CO, 40 percent; CH_3OH, 5 percent; HCN, 0.11 percent. This is until now the highest mixing ratio of CO observed in a comet that is relatively close to the sun." [IAUC 7559, 2001 January 11]



1999 T1 drawn by Gabriel Oksa on December 20

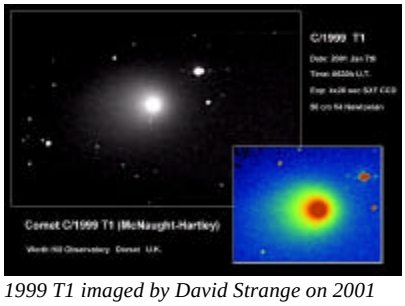
M. J. Mumma, N. Dello Russo, and M. A. DiSanti, Goddard Space Flight Center, NASA; K. Magee-Sauer, Rowan University; R. Novak, Iona College; and A. Conrad and F. Chaffee, W. M. Keck Observatory, report: "Water and CO were detected simultaneously near 4.67 microns on Jan. 13.7 UT in observations made at the NASA Infrared Telescope Facility (+ CSHELL). Three lines in the 1-0 band of CO (R0, R1, and P2) and two lines in the nu_3-nu_2 band of H_2O yielded production rates (x 10**27 molecules s**-1) of 14 for CO and 82 for H_2O. On Jan. 14.7, C_2H_6 (nu_7, nine Q-branches), CH_3OH (nu_3 Q-branch and other lines), and OH 'prompt' emission were detected using NIRSPEC at the W. M. Keck Observatory. The water-production rate derived from OH 'prompt' emission (P12.5 1- and 1+, near 3042 cm**-1) was 160 (calculated using g-factors from comet C/1999 H1), and other production rates were 2.7 for CH_3OH and 1.1 for C_2H_6. A residual 2-sigma signal was seen at the expected position of CH_4 R0 (nu_3 band), and this is formally consistent with a 3-sigma upper limit of 2.5 for CH_4. The mixing ratios are then H_2O:CO = 100:17 on Jan. 13.7, and H_2O:CH_3OH: C_2H_6:CH_4 = 100:1.7:0.65:(<1.6) on Jan. 14.7. A rotational temperature of 70 K was adopted for all species on both dates. Multiple lines of HCN and C_2H_2 were detected on Jan. 14, and quantitative analysis is in progress. The CO mixing ratio in this comet is similar to that found for native CO in comets C/1996 B2 and C/1995 O1, but it is much higher than those found for comets C/1999 H1 and C/1999 S4. Abundances of C_2H_6 and CH_3OH are similar to those in comets C/1996 B2, C/1995 O1, and C/1999 H1." [IAUC 7578, 2001 February 2]

D. K. Lynch, R. W. Russell, and D. Kim, The Aerospace Corporation; and M. L. Sitko and S. Brafford, University of Cincinnati, report 3- to 14-micron spectroscopy of this comet on Jan. 31.62 and Feb. 1.7 UT using BASS at the Infrared Telescope Facility: "The spectrum on the first night showed a silicate emission feature extending about 12 percent above the continuum defined by a blackbody fitted to the 8- and 13-micron points. Two prominent emission features at 10.3 and 11.2 microns appeared above the silicate band, the latter seemingly indicative of crystalline olivine. The 8- to 13-micron color temperature was 260 +/- 10 K, about 10 percent above the blackbody radiative equilibrium temperature of 235 K. The magnitude at 10.5 microns was [N] = 3.0 +/- 0.1. On the second night, the two prominent emission features were absent, although the silicate emission feature maintained its trapezoidal shape with breaks at 9.5 and 11.1 microns." [IAUC 7582, 2001 February 13]

1999 T1 imaged by Martin Mobberley on 2000 December 31.23

C. E. Woodward, J. E. Lyke, and R. D. Gehrz, University of Minnesota (UM), report 7- to 23-micron photometry of this comet on Feb. 21.51 UT at the Mt. Lemmon Observing Facility 1.52-m telescope (+ UM bolometer + IRTF narrowband 'silicate' filters). No evidence for strong silicate emission (cf. IAUC 7582) was observed at 11 microns; a blackbody fit to the observed spectral energy distribution yields a color temperature of 270 +/- 20 K. Observed magnitudes: [7.9 microns] = 3.19 +/- 0.25, [8.8 microns] = 3.24 +/- 0.22, [9.8 microns] = 2.93 +/- 0.27, [10.3 microns] = 2.91 +/- 0.12, [11.7 microns] = 1.68 +/- 0.12, [12.5 microns] = 2.05 +/- 0.22, [18.3 microns] = 0.42 +/- 0.23, and [23.0 microns] = 0.62 +/- 0.30. [IAUC 7594, 2001 March 6]

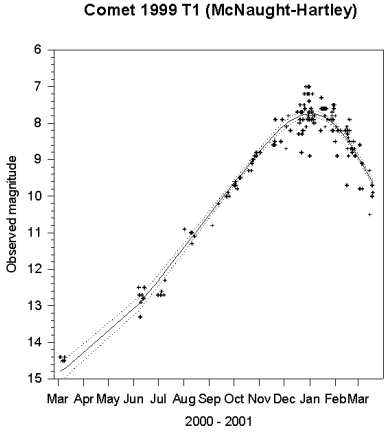
E. A. Bergin, Harvard-Smithsonian Center for Astrophysics (CfA); D. A. Neufeld, Johns Hopkins University; and S. C. Kleiner, Z. Wang, and G. J. Melnick, CfA, write: "The 1(10)-1(01) transition of water vapor near 557 GHz was detected toward comet C/1999 T1 by the Submillimeter Wave Astronomy Satellite. During the periods Feb. 2.01-11.06 and 23.01-28.95 UT, the average integrated antenna temperatures were 0.58 +/- 0.02 and 0.39 +/- 0.03 K km s**-1, respectively, within a 3'.3 x 4'.5 (FWHM) elliptical beam. For a spherical outflow model with an assumed water lifetime of 7.3 x 10**4 s and an assumed water ortho-para ratio of 3, the inferred total water production rates (x 10**28 molecules/s) are 5.7 and 4.4, respectively." [IAUC 7596, 2001 March 13]



1999 T1 imaged by David Strange on 2001 January 7.27

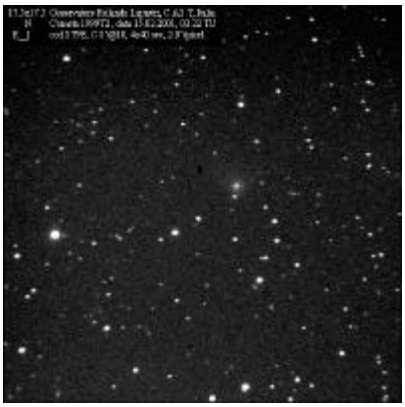
I was able to observe the comet from the Falkland Islands on November 19 and 20. A gusty wind and ever brightening sky made observation difficult, however I located the 8th magnitude comet in my short focus 90mm refractor, noting a

distinct central condensation in 4' diameter coma. I viewed it again from the UK on January 23.20 when it was an easy binocular object at 7.9. An observation in bright moonlight on February 12.09 put it at 8.2 in 20x80B. By early March it had become much more diffuse and was around 9th magnitude, fading to 10th magnitude by the end of the month.



160 observations give an uncorrected preliminary light curve of 6.2 + 5 log d + 8.8 log r

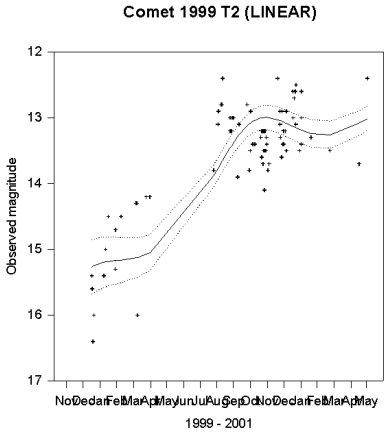
1999 T2 LINEAR. Observers have kept the comet under observation, with estimates around 13th magnitude.



1999 T2 imaged by Rolando Ligustri on 2001 February 15.14

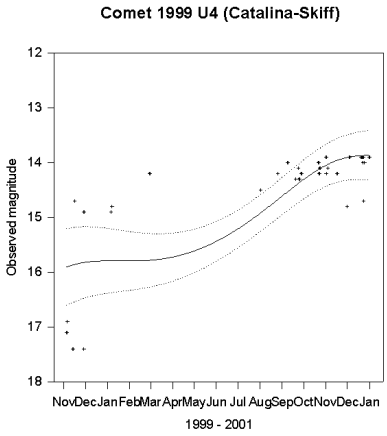
84 observations give an uncorrected preliminary light curve of 6.4 + 5 log d + 8.5 log r

1999 WJ7 P/Korlevic Pepe Manteca imaged the comet at 16th magnitude in March, rather brighter than its expected magnitude.



1999 U4 Catalina-Skiff. Visual observers estimated the comet at around 14th magnitude in November and December.

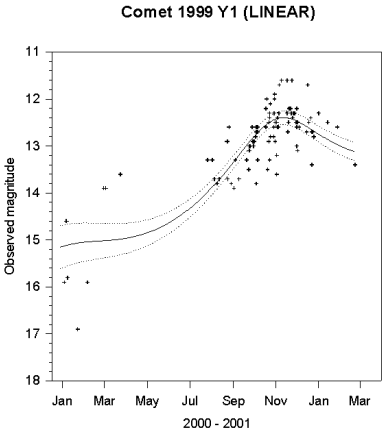
34 observations give a corrected preliminary light curve of -1.3 + 5 log d + 14.1 log r



1999 Y1 LINEAR Observations of the 13th magnitude comet continued until February. It is currently in solar conjunction, but Southern Hemisphere observers will be able to observe it when it emerges from the solar glare in May.

1999 Y1 imaged by Geoffrey Johnson on 2000 November 26

104 observations give a corrected preliminary light curve of 5.5 + 5 log d + 7.4 log r



Martin Mobberley imaged **Comet 24P/Schaumasse** on February 13 and estimates the CCD magnitude as around 15 - 16. I observed on February 14.8 with the Northumberland refractor and immediately saw a diffuse object in the expected position, which I estimated at 13.6. This is rather brighter than the CCD magnitude and will need further confirmation. A further observation on March 12.8 put the comet at 13.2 and further observations show it brightening, but about a magnitude fainter than expected.

24P/Schaumasse imaged by Martin Mobberley on 2001 March 13.83

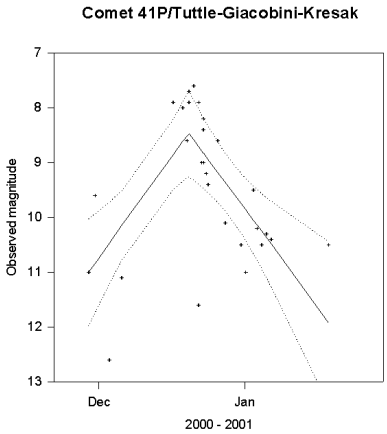
Comet 41P/Tuttle-Giacobini-Kresak. The comet appears to be in outburst, as indicated by the following visual m_1 estimates: 2000 Nov. 27.53 UT, 10.2: (A. Hale, Cloudcroft, NM, 0.41-m reflector); 28.83, 10.5 (Y. Nagai, Yamanashi, Japan, 0.32-m reflector); Dec. 1.82, 10.4 (M. Tsumura, Wakayama, Japan, 0.32-m reflector). [IAUC 7536, 2000 December 5]

The comet appears to be continuing its rapid brightening (cf. IAUC 7536), as indicated by the following m_1 estimates: Dec. 5.82 UT, 11.1 (S. Yoshida, Ibaraki, Japan, 0.25-m reflector; visual); 6.52, 11.4 (A. Hale, Cloudcroft, New Mexico, 0.41-m reflector; visual); 15.83, 8.7 (K. Kadota, Ageo, Saitama, Japan,

0.18-m reflector + CCD; 3' coma and 16' tail). [IAUC 7543, 2000 December 15]

41P/Tuttle-Giacobini-Kresak imaged by Rolando Ligustri on 2000 December 22.17

28 observations give a preliminary light curve of 6.1 + 5 log d + 0.1148 * abs(t - T - 17.9)



A few further observations of **Comet 47P/Ashbrook-Jackson** were made during November and December, when the comet was around 13th magnitude.

10 observations give an uncorrected preliminary light curve of m = 6.2 + 5 log d + [15] log r.

Comet 73P/Schwassmann-Wachmann 3 A. Nakamura, Kuma, Ehime, Japan, reported that a CCD image taken low in the morning sky by K. Kadota (Ageo, Saitama, 0.18-m reflector) on Nov. 4.84 UT shows this comet unexpectedly bright at m_1 = 13.2, with coma diameter 0'.5 and a 0'.8 tail in p.a. 310 deg. [IAUC 7518, 2000 November 10] Recent observations suggest that three nuclear components of comet 73P are now visible: what appear to be components B and C from the observed 1995 outburst and splitting (IAUC 6246, 6274, 6301) and an apparent new component (E). Assuming that component C (T = 2001 Jan. 27) is the primary nucleus, components B and E are separated by Delta(T) = +0.27 and +0.74 day, respectively. Component E was observed by K. Kadota (Ageo, Japan, 0.18-m reflector + CCD) on Nov. 28.84 UT and by M. Jaeger (Puchenstuben, Austria, 0.3-m reflector + Technical Pan film) on Dec. 1.19 and 2.20 -- the latter indicating that it is about 28' tailward from, and about 1.5-2 mag fainter than, component C. Observations by Jaeger and earlier by A. Galad and P. Koleny (Modra, 0.6-m reflector + CCD) on Nov. 19.19 indicate that component B is about 2.5-3 mag fainter than component C. Jaeger adds that component C has a 20' tail in p.a. 296 deg. Total visual magnitude estimates (cf. IAUC 7523) for component C: Nov. 25.51 UT, 11.9: (A. Hale, Cloudcroft, NM, 0.2-m reflector; low altitude, zodiacal light); 28.84, 11.4 (S. Yoshida, Ibaraki, Japan, 0.25-m reflector). [IAUC 7534, 2000 December 2] In addition to the above observations Seiichi Yoshida and Nicolas Biver also observed the comet at around 10th magnitude in December and January.

Visual estimates put **Comet 110P/Hartley 3** at around 14th magnitude in November and December.

11 observations give an uncorrected preliminary light curve of m = 6.8 + 5 log d + [15] log r.

2000 K2 LINEAR. Martin Lehky and Werner Hasubick reported further observations of the 14th magnitude comet in October and November.

22 observations received give a rather uncertain corrected preliminary light curve of m = 5.1 + 5 log d + 15.7 log r.

2000 S1 P/Skiff. Martin Lehky and Werner Hasubick reported the comet at 15th magnitude in October and November.

2000 S4 LINEAR-Spacewatch. The IAU Committee on Small Bodies Nomenclature has given the name LINEAR-Spacewatch to comet P/2000 S4. [IAUC 7553, 2000 December 31]

2000 SV74 An apparently asteroidal 18th mag object reported by LINEAR on two nights in September (first observation on September 24.34), and published on MPS 19881 under the designation 2000 SV_74, has been found to be cometary (diffuse with 16" coma and 20" tail at p.a. 150 deg) by M. Tichy on CCD images taken on Oct. 19.8 UT with the 0.57-m f/5.2 reflector at Klet. [IAUC 7510, 2000 October 19] The comet could reach 14th magnitude in the summer.

2000 SO253 Anderson-LINEAR An apparently asteroidal 20th magnitude object discovered by LINEAR on September 24.35 (MPS 20197, 21370; discovery observation below) has been found to be cometary (highly condensed 5" coma and a 15" tail in p.a. 45 deg) on 300-s R-band CCD exposures taken on Nov. 24.3 UT by C. W. Hergenrother and A. E. Gleason with the Steward Observatory 1.54-m reflector. Additional observations and orbital elements (T = 2001 May 2.1 TT, q = 1.694 AU, i = 3.7 deg, P = 7.04 yr) are given on MPEC 2000-W39. [IAUC 7524, 2000 November 25]
S. Nakano, Sumoto, Japan, reports his identification of comet P/2000 SO_253 (cf. IAUC 7524) with P/1963 W1 = 1963 IX (cf. IAUC 2013), which had been recorded on four Palomar Schmidt plates taken 1963 Nov. 22-25. The resulting orbital elements for the earlier apparition are T = 1963 Oct. 28.5 TT, q = 1.985 AU, i = 4.5 deg, P = 7.89 yr. The comet made approaches of 0.10 and 0.40 AU from Jupiter in 1961 Aug. and 1985 Apr., respectively. [IAUC 7548, 2000 December 23]

2000 T2 P/Kushida-Muramatsu S. Nakano, Sumoto, Japan, reported the recovery by T. Oribe of comet P/1993 X1 (= 1993t = 1993 XIX) on CCD frames obtained with the 1.03-m reflector at Saji Observatory on Oct. 3.72 and 4. The images were clearly cometary with coma diameter 10". The indicated correction to the prediction by B. G. Marsden on MPC 31663 was Delta(T) = -0.04 day, but neither Nakano nor Marsden was able to obtain a link to the 1993-1995 data without dramatically systematic residuals, particularly in declination. Oribe

later found faint images of the comet on frames obtained on Sept. 26. C. E. Delahodde, European Southern Observatory, independently recovered the comet (as a pointlike object measured by A. Maury) with the Danish 1.54-m reflector on Oct. 8. A further orbit computation by Marsden indicated that it was possible to link the 2000 data to the observations made after the 1994 conjunction. This computation revealed that single-night candidates for the comet found by C. W. Hergenrother, Lunar and Planetary Laboratory, with the 2.3-m Steward Observatory reflector at Kitt Peak in Sept. and Nov. 1999 indeed belong to the comet, which showed a possible 5" tail in p.a. 270 deg on the first occasion. Orbital elements satisfactorily linking the 49 observations during 1994 Dec. 8-1995 June 23 and 1999 Sept. 13-2000 Oct. 8 are given on MPEC 2000-T45, together with the 1999-2000 observations. [IAUC 7507, 2000 October 14]

2000 U5 LINEAR A 17th mag object with unusual motion that was reported as asteroidal by the LINEAR survey on October 29.38 and posted on the NEO Confirmation Page has been found to be cometary by other observers. The object seemed diffuse with a 14" coma and 18" tail in p.a. 170 deg on CCD images obtained by J. Ticha and M. Tichy (Klet) on Oct. 30.0 UT. Images taken on Oct. 30.2 by D. A. Klinglesmith III (Socorro, NM) show slight diffuseness and a tail about 20" long in p.a. 220 deg; images by Y. Ikari (Moriyama, Japan) also show a tail in p.a. 220 deg on Oct. 30.6. J. Biggs (Perth Observatory) notes that images of C/2000 U5 were larger than nearby stars and elongated toward the south-southwest on Oct. 31.6. D. T. Durig (Sewanee, TN) found a tail about 25" long in p.a. 170 deg on Nov. 1.4 images. [IAUC 7515, 2000 November 1]

2000 U6 P/Tichy An 18th mag object found by Milos Tichy on images taken at Klet with J. Ticha and M. Kocer on Oct. 23.08, originally reported as asteroidal, was subsequently noted to be diffuse on Klet images taken during Oct. 28.9-29.2 UT; Tichy also noted a 10" coma on Oct. 29.8 images. Images obtained on Nov. 1 by S. Sanchez and M. Blasco at Mallorca and by D. T. Durig at Sewanee also showed diffuseness. MPEC 2000-V03 contains the available astrometry and orbital elements (T = 2000 Oct. 4.6 TT, i = 19.3 deg, q = 2.150 AU, P = 7.3 yr). [IAUC 7515, 2000 November 1]

A/2000 VU2 An interesting asteroid 2000 VU2 = 2000 VW55 was announced on MPEC 2000-W29. This has an 18.4 year period with a perihelion at 3.1 AU. The circular said: Reports of the stellar nature of 2000 VU2 have been received from T. B. Spahr on CCD images obtained on Nov. 20 UT with the 1.2-m Mount Hopkins reflector and C. W. Hergenrother on CCD images obtained on Nov. 23 and 24 with the 1.5-m Catalina reflector. [2000 November 24]

2000 W1 Utsunomiya-Jones On November 19, S. Nakano, Sumoto, Japan, reported the visual discovery on November 18.82 by Syogo Utsunomiya (Aso, Kumamoto; 25x150 binoculars) of a possible 9th magnitude comet with coma diameter 5' moving rapidly southeastward in Vela. Attempts by several observers (including A. Hale, D. Seargent, J. Biggs, T. Urata, and J.Kobayashi) to confirm the object, at the request of Nakano and the Central Bureau, were unsuccessful. On November 25, A. C. Gilmore (Mount John University Observatory) reported the visual discovery of an apparent 8th magnitude comet by Albert F. Jones (Nelson, New Zealand, 0.078-m f/8 refractor, 30x) while observing the variable star T Aps at dawn on November 25.64; Jones reported the comet as being diffuse with coma diameter about 4' in morning twilight. The possibility that Jones' object might be the same as that reported by Utsunomiya was explored by the Central Bureau, and a search ephemeris from plausible parabolic orbital elements fitted to the November 18 and 25 approximate positions was circulated to numerous southern-hemisphere observers. Confirming CCD astrometry was made by Gilmore with the 1.0-m f/7.7 reflector at Mt. John. [IAUC 7526, 2000 November 28] This is Albert Jones' second comet discovery; the first was discovered in 1946!

This is how the comet was discovered:
On November 18 UT Japanese comet hunter Syogo Utsumoniya saw a possible comet in Vela, very low in his southern sky. Utsunomiya watched the eighth magnitude comet through his 25 x 150 mm binoculars for 40 minutes as dawn approached. During that time the comet moved southeastward about 10 minutes of arc, one third of a full-moon's diameter. Utsunomiya passed the information onto the International Astronomical Union's Central Bureau. They asked a few southern hemisphere observers (none in NZ!) to confirm the discovery. They were unable to locate the comet.

A week later, on Sunday morning Nov. 26 NZ date, Albert Jones of Nelson found the sky had cleared. He got out his 78 mm refractor with the 30x eyepiece and aimed it at the variable star T Apodis. He had intended to observe T Aps two mornings earlier but "ran out of dark sky" before he got to it. Just 50' northwest of the variable Albert saw a hazy spot which he instantly recognised as a comet. He made position and magnitude estimates as dawn came up and phoned them to the University of Canterbury's Mt John Observatory. We immediately emailed Albert's discovery position to the IAU Bureau.

At the Bureau Brian Marsden and Dan Green surmised that the two fast-moving eighth magnitude comets were one and the same object. Brian fitted a parabolic orbit to the two positions and emailed search ephemerides to a few southern hemisphere observers. (The Bureau is very cagey about a suspected comet lest an unscrupulous person 'discovers' it.)
As luck would have it, Mt John had a CCD camera on its 1m telescope. Glen Bayne was taking direct images of Magellanic Cloud eclipsing binary stars as part of his PhD project. (The same CCD is in frequent use on the 1m but attached to a large spectrograph, not available for direct picture taking.) Glen was happy to get pictures of the comet in the twilight.

Using a 15 cm finder 'scope on one of Mt John's other telescopes, Alan Gilmore located the comet in the twilight. This allowed

quick setting of the 1m onto the comet and CCD images to be taken. Alan measured these and sent the results off to the IAU Bureau. Three hours later another set of CCD images were obtained by Glen and Alan and the futher positions sent off.

Brian Marsden was then able to fit a semi-accurate orbit to the three nights' observations and show conclusively that the comets seen by Utsunomiya and Jones were indeed the same object. IAU Circular 7526 appeared a few hours later, announcing the discovery and designating the comet 2000 W1. Numerous CCD measurements over the next four days allowed a more accurate orbit to be calculated. This appeared in Minor Planet Electronic Circular 2000-W62 on Nov. 30.

At 80 years old, Albert Jones is the oldest person ever to discover a comet. The next nearest was Lewis Swift who was 79 when he found his last comet in 1899. Albert also holds the record for the longest interval between comet discoveries. His previous comet, also found in a variable star field, was 1946 P1 found in October 1946.

At discovery Comet Utsunomiya-Jones was about 50 million km from earth, hence its rapid movement across the sky. Perspective slows the apparent movement as the comet moves directly away from us and on toward the sun. The angle between the comet and the sun will shrink, causing the comet to sink into the south-west evening twilight. Counterbalancing this, to a greater or lesser degree, is the comet's expected increase in brightness as it nears the sun. So nobody can predict how long the comet will remain visible. It is likely to have disappeared by December 22 when it will be just 19 degrees from the sun.

Comet Utsunomiya-Jones passes closest to the sun on December 26.6 UT. It will remain hidden in the sun's glare till mid January when it will start climbing up the dawn sky. If it behaves like a 'normal' comet then it should have a total magnitude (m1) around nine, visible in medium-sized telescopes.
-- Alan Gilmore & Pam Kilmartin

Albert described his discovery thus:
On the morning of November 26, I was up early (as I do on clear mornings) observing variable stars before dawn, then as I was pointing the telescope to view a faint variable star south of the Southern Cross and Pointers, I noticed a fuzzy object that was new to the region and recognising that it was a comet and not permanent celestial scenery like a nebula, star cluster or galaxy, I noted its position and other details. Then I phoned Alan Gilmore at the Mount John University Observatory (by Lake Tekapo) and told him about it and asked he if he knew about it and its name, but he had no information about it so he e-mailed a message to the International Central Bureau for Astronomical Telegrams (CBAT) at Cambridge, Mass. USA. At breakfast that morning Carolyn wondered why I did not get back to bed before bright daylight - I replied that I had been on the phone to Alan about a comet asking about whether it was a known one. After breakfast a message came from the CBAT saying that it might be the same object that a Japanese comet hunter had seen a week beforehand but which had not been seen again because it was moving south so fast and was thus unconfirmed Using the Japanese positions for the comet and mine, they determined that it was the same object to be known as Comet 2000 W1 Utsunomiya-Jones It has quickly moved towards the west and is moving north again. December 5 was the last evening that I saw it, as it was too low in the sky and behind trees the next night. Next January when the comet's motion brings it into the eastern sky before dawn, it will be much fainter as it races away to the outer reaches of the Solar System. Over 50 years ago, I spent some time looking for unknown comets, and now I find one while pointing the telescope to a variable star ! The moral of the story is to keep looking and you never know what you might see. You just need to be lucky enough to look at the right place at the right time ! By the way, I am told that I am the oldest person to have discovered a comet.

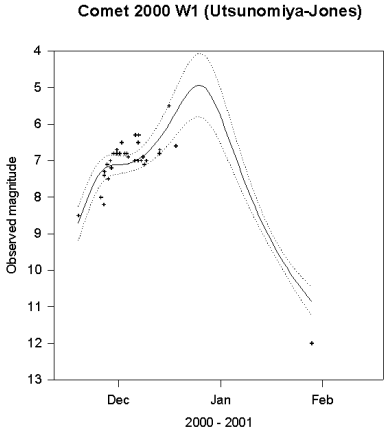
C. W. Hergenrother, Lunar and Planetary Laboratory, reports that this comet has undergone a rapid fading, with R-band photometry showing m_1 about 16.5 for a 1'.7 coma on a co-added 2400-s CCD exposure taken on Feb. 12.6 UT with the Catalina 1.5-m reflector. No nuclear condensation was visible to a limiting mag of 21.0. Earlier visual m_1 estimates: Jan. 17.86, 10.1 (Y. Nagai, Yamanashi, Japan, 0.32-m reflector); 22.88, 10.5 (K. Yoshimoto, Yamaguchi, Japan, 0.25-m reflector); 28.77, 12.0: (M. Mattiazzo, Wallaroo, S. Australia, 0.20-m reflector); 30.28, 11.6 (P. M. Raymundo, northwest of Salvador, Brazil, 0.25-m reflector). [IAUC 7586, 2001 February 22]

Further to the report on IAUC 7586, A. C. Gilmore reports that 3-min unfiltered CCD images taken on Mar. 3.61 UT with the University of Canterbury's Mount John Observatory 1-m f/7.7 telescope showed only a diffuse parabolic glow at the comet's expected position. The glow was brighter and about 1' across at the 'head' end. The 'tail', in p.a. 80 deg, was at least 10' long and widened to about 2' across at the frame's edge. No stellar central condensation was found, though anything brighter than red mag 20 should have been detected. [IAUC 7594, 2001 March 6]

Michael Mattiazzo observed it with 7x50B on November 28.52, estimating it at 7.0, DC4, diameter 5'. It displayed a faint ion tail in 25x100B. I was in the Southern Ocean on board the RRS Ernest Shackleton and made several attempts at observing the comet. These were generally foiled by bright skies or cloud, but I successfully glimpsed it in 10x50B on December 6.09 when it was 6.3 and again the following night.

The comet had a perihelion distance of 0.3 AU, but was intrinsically faint and was therefore not expected to survive perihelion passage. The comet transited the SOHO LASCO C3 field at the end of December and early January, and it was significantly fainter than indicated by the visual light curve. Michael Mattiazzo did make a final post perihelion observation on 2001 January 28.77 when he estimated it at 12.0 and very diffuse.

32 observations received give a corrected preliminary light curve of m = 10.5 + 5 log d + 12.6 log r.



2000 WM1 LINEAR An apparently asteroidal 18th mag object with unusual motion reported by the LINEAR team on Dec. 16.07 was posted on the NEO Confirmation Page. Subsequent astrometry permitted a linkage to another set of observations by LINEAR on Nov. 16.14 and 18, designated 2000 WM_1 on MPS 22800. An observation of 2000 WM_1 by T. B. Spahr (Smithsonian Astrophysical Observatory 1.2-m reflector at Mt. Hopkins) on Dec. 20.148 UT shows the object to have a 10" coma and a broad, faint tail some 10"-20" long in p.a. 45 deg: [IAUC 7546, 2000 December 20]

Brian Marsden notes on MPEC 2001-D29 [2001 February 21], which gives the latest orbit for the comet, that 'The "original" and "future" barycentric values of 1/a are +0.000510 and -0.000256 (+/- 0.000041) AU**-1, respectively.' The original value is greater than 10E-04, hence the comet is probably not a new arrival from the Oort cloud and has made at least one previous visit to the inner solar system.

The comet does not reach perihelion until January 2002 when it could reach 4th magnitude. It should be possible to pick it up from the UK in late July 2001 and we should see it as a naked eye object in November. It will be too far south at perihelion, but will return to northern skies and will be visible until August 2002. Several CCD imagers already have it under observation, reporting it around 17th magnitude.

2000 WT168 (LONEOS-LINEAR) After the publication (MPS 23043) of the initial observations of the apparently asteroidal 17th mag object 2000 WT_168 by LONEOS on November 25.44 and LINEAR on November 27.37, linkage to further observations (including prediscovery data) showed the orbit to be cometary, although observations did not show cometary activity in December (cf. MPEC 2000-Y21). CCD exposures taken with the 1.5-m reflector at Catalina on 2001 Feb. 13.3 UT by C. W. Hergenrother, however, do show the object to be cometary (highly condensed 9".7 coma with red mag 16.3 and 8".0 tail in p.a. 110 deg). Confirmation of cometary activity has been obtained in CCD observations by J. Ticha and M. Tichy at Klet on Feb. 16.9 (0.57-m reflector; 9" tail in p.a. 155 deg and faint asymmetric coma) and by M. Hicks and B. Buratti at Palomar on Feb. 17.2 (1.5-m reflector; faint teardrop-shaped tail about 15" long in p.a. 60 deg). The comet has a 7.7 year period, with perihelion at 1.76 AU on 2001 March 23. [IAUC 7584, 2001 February 17] It is not clear at this time what, if any, name the comet will receive.

R. M. Stoss, Starkenburg-Sternwarte, Heppenheim; and R. H. McNaught, Siding Spring Observatory, report the identification with P/2000 WT_168 of two asteroidal trails appearing on U.K. Schmidt plates taken by M. R. S. Hawkins and P. R. Standen on 1978 Mar. 6 and 1986 Mar. 14. Astrometric measurements by McNaught, M. Read, and Stoss appear on MPEC 2001-F17, together with orbital elements by B. G. Marsden from 190 observations spanning 1978-2001 (T = 1978 Jan. 21, 1985 Oct. 22, 1993 July 18, and 2001 Mar. 23). [IAUC 7600, 2001 March 20]

2000 Y1 Tubbiolo R. S. McMillan, Lunar and Planetary Laboratory, reports the discovery by Andrew F. Tubbiolo of a faint 19th mag comet with the 0.9-m Spacewatch telescope at Kitt Peak on December 16.18. The object showed a 20"-30" tail on December 16 and 17. Parabolic orbital elements (T = 2001 February 6, i = 138 deg, q = 7.97 AU) are given on MPEC 2000-Y06. [IAUC 7544, 2000 December 18]

2000 Y2 B. Skiff, Lowell Observatory, reports the discovery of a 17th magnitude comet by the LONEOS program on December 27.34. Confirming CCD images by L. Wasserman (1.07-m Lowell Observatory telescope) show a coma diameter of about 9" and a tail about 14" long toward the southwest. [IAUC 7549, 2000 December 27] The comet is in a distant parabolic orbit and will not get much brighter.

2000 Y3 Scotti J. V. Scotti, Lunary and Planetary Laboratory, reports his discovery of a 19th magnitude comet with the 0.9-m Spacewatch telescope on December 30.16. The comet shows a coma diameter of 7" and a 0'.93 tail in p.a. 269 deg; he also measures m_2 = 19.7. [IAUC 7552, 2000 December 30]
Additional astrometry, including prediscovery observations by LINEAR on Nov. 29 and Dec. 21 identified by B. G. Marsden, appear on MPEC 2000-Y47, together with the following orbital elements showing this to be a short-period comet. The elements indicate an approach to within 0.05 AU of Jupiter in Sept. 1998. Further to IAUC 7552, J. V. Scotti notes that the comet showed a 7" coma and a 1'.16 tail in p.a. 270 deg on a Spacewatch CCD image taken on Dec. 31.174 UT. An image obtained at Klet on Dec. 30.79 shows a coma diameter of 8" and m_1 = 17.5. [IAUC 7553, 2000 December 31] The comet will fade.

2000 Y6 SOHO 2000 Y7 SOHO Further to IAUC 7565, D. Hammer reports his measurements for two comets (initial observations given below) that appear to be two components of an earlier single comet. C/2000 Y6 and C/2000 Y7 were found by M. Meyer and by S. Hoenig, respectively, in C2 coronagraph data on SOHO website images. D. Biesecker provides V magnitudes for C/2000 Y6: Dec. 20.463 UT, 7.8; 20.504, 7.8; 20.580, 7.5; 20.588, 7.6; 20.604, 8.0; 20.646, 8.3. The reduced observations and parabolic orbital elements (T = 2000 Dec. 20.85 TT, q = 0.025 AU, Peri. = 88-89 deg, Node = 229 deg, i = 87-89 deg) by B. G. Marsden, together with a search ephemeris for groundbased

observers, are given on MPEC 2001-B08.

2000 Y10 P/Mueller 4 S. Nakano, Sumoto, Japan, reports the recovery of P/1992 G3 (= 1992g = 1992 IV) by T. Oribe (Saji Observatory) on CCD images taken with a 1.03-m reflector. The comet is faint and of stellar appearance on 2000 Dec. 22.85 (m_2 = 20.5). The indicated correction to the orbital elements on MPC 31663 (ephemeris on MPC 41213) is Delta(T) = +0.23 day. [IAUC 7577, 2001 February 1]

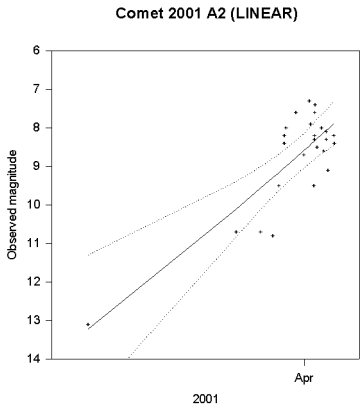
SOHO Kreutz group comets
1996 L1 SOHO (IAUC 7606, 2001 April 2)
1997 M5 SOHO (IAUC 7606, 2001 April 2)
2000 A2 SOHO (IAUC 7562, 2001 January 14)
2000 H3 SOHO (IAUC 7572, 2001 January 25)
2000 H4 SOHO (IAUC 7572, 2001 January 25)
2000 H5 SOHO (IAUC 7572, 2001 January 25)
2000 J6 SOHO (IAUC 7467, 2001 January 19)
2000 J7 SOHO (IAUC 7572, 2001 January 25)
2000 K7 SOHO (IAUC 7467, 2001 January 19)
2000 K8 SOHO (IAUC 7467, 2001 January 19)
2000 L6 SOHO (IAUC 7572, 2001 January 25)
2000 T1 SOHO (IAUC 7506, 2000 October 10)
2000 T3 SOHO (IAUC 7508, 2000 October 16)
2000 T4 SOHO (IAUC 7508, 2000 October 16)
2000 U1 SOHO (IAUC 7514, 2000 November 1)
2000 U2 SOHO (IAUC 7514, 2000 November 1)
2000 U3 SOHO (IAUC 7514, 2000 November 1)
2000 U4 SOHO (IAUC 7514, 2000 November 1)
2000 V1 SOHO (IAUC 7520, 2000 November 17)
2000 V2 SOHO (IAUC 7520, 2000 November 17)
2000 W2 SOHO (IAUC 7548, 2000 December 23)
2000 W3 SOHO (IAUC 7548, 2000 December 23)
2000 W4 SOHO (IAUC 7562, 2001 January 14)
2000 W5 SOHO (IAUC 7562, 2001 January 14)
2000 X1 SOHO (IAUC 7562, 2001 January 14)
2000 X2 SOHO (IAUC 7562, 2001 January 14)
2000 X3 SOHO (IAUC 7562, 2001 January 14)
2000 X4 SOHO (IAUC 7562, 2001 January 14)
2000 X5 SOHO (IAUC 7562, 2001 January 14)
2000 X6 SOHO (IAUC 7562, 2001 January 14)
2000 X7 SOHO (IAUC 7562, 2001 January 14)
2000 Y4 SOHO (IAUC 7562, 2001 January 14)
2000 Y5 SOHO (IAUC 7567, 2001 January 19)
2000 Y8 SOHO (IAUC 7567, 2001 January 19)
2000 Y9 SOHO (IAUC 7567, 2001 January 19)
2001 A3 SOHO (IAUC 7567, 2001 January 19)
2001 A4 SOHO (IAUC 7573, 2001 January 27)
2001 B3 SOHO (IAUC 7573, 2001 January 27)
2001 C2 SOHO (IAUC 7580, 2001 February 7)
2001 C3 SOHO (IAUC 7582, 2001 February 13)
2001 C4 SOHO (IAUC 7582, 2001 February 13)
2001 C6 SOHO (IAUC 7601, 2001 March 21)
2001 F2 SOHO (IAUC 76xx, 2001 April xx)
were discovered with the SOHO LASCO coronographs and have not been observed elsewhere. They were sungrazing comets of the Kreutz group and were not expected to survive perihelion.

2001 A1 LINEAR M. Blythe reports the discovery by LINEAR of a new comet on January 7.47. Following posting on the NEO Confirmation Page, several other CCD observers confirmed the object's cometary nature: M. Dawson (Luxembourg) found the object to be diffuse with a 9" coma on Jan. 13.0 UT; Jan. 14.2 images taken by L. Kornos and P. Koleny (Modra) and by L. Sarounova (Ondrejov) showed coma diameters of about 15" (m_1 = 16.3) and about 20" (m_1 = 16.4), respectively; and images taken on Jan. 14.9 by J. Ticha and M. Tichy (Klet) showed a diffuse coma of diameter 17" and a faint 30" tail in p.a. 200 deg. [IAUC 7561, 2001 January 14] The comet will fade.

2001 A2 LINEAR An apparently asteroidal object discovered by LINEAR on January 15 and posted on the NEO Confirmation Page has been found to have cometary appearance on CCD images taken by P. Pravec and L. Sarounova (Ondrejov; 0'.3 coma on Jan. 16.0 UT) and by M. Tichy and M. Kocer (Klet; diffuse, 10" coma on Jan. 16.9; m_1 = 17.2). The object also links with one observed on Jan. 3.31 and 5. [IAUC 7564, 2001 January 16] The comet will reach perihelion at 0.8 AU towards the end of May.

2001 A2 observed by Pepe Manteca on March 25.8.

This comet has apparently undergone a rapid brightening. M. Mattiazzo, Wallaroo, South Australia, notes that the total visual magnitude has brightened by about 2.5 mag in the 24 hr ending Mar. 30.5 UT, with the comet becoming noticeably more condensed in the same period. [IAUC 7605, 2001 March 30]



David Seargent reported a visual observation at 13.1 on March 14, a little brighter than expected. It rapidly brightened, reaching mag 8 by the end of the month. It is uncertain if this level of activity will be sustained, but if it is, the comet could be 5th magnitude when it returns to northern skies at the beginning of July.

2001 B1 LINEAR M. Blythe, Lincoln Laboratory, reports the discovery by LINEAR of an apparent 17th magnitude comet on January 22.08. Additional observations have been received following posting on the NEO

Confirmation Page. [IAUC 7570, 2001 January 24] The comet is in a distant parabolic orbit which reached perihelion last September and it will fade.

2001 B2 NEAT E. F. Helin, S. Pravdo, and K. Lawrence, Jet Propulsion Laboratory, report that their CCD images of this comet taken on Jan. 24.6 and 25.6 UT with the 1.2-m NEAT telescope at Haleakala show a coma diameter of about 29"; there is no convincing evidence for a tail, though some images suggest a certain asymmetry toward the northwest. Additional astrometry is reported on MPEC 2001-B47 [IAUC 7573, 2001 January 27] The comet is distant, but should brighten a little as it does not reach perihelion until June.

2001 BB50 LINEAR-NEAT S. Pravdo, K. Lawrence, and E. Helin, Jet Propulsion Laboratory, reported the discovery of aN 18th mag comet on Mar. 20 CCD images taken with the NEAT 1.2-m reflector at Haleakala, the object showing a short eastward tail, a nuclear condensation of size < 3", and a coma diameter of about 10". T. B. Spahr, Minor Planet Center, linked this object first with an object reported as asteroidal by LINEAR on Mar. 18 (m_2 = 19.5) and then to the LINEAR object 2001 BB_50, observed on Jan. 21 and 26 (MPS 25734). Following posting on the NEO Confirmation Page, C. Jacques, Belo Horizonte, Brazil, also reported a 10" coma and m_1 = 18.6 on CCD images taken on Mar. 21 (0.3-m reflector). Full astrometry and the orbital elements appear on MPEC 2001-F26. [IAUC 7601, 2001 March 21] The comet has a perihelion distance of 2.35AU and is intrinsically faint. Its period is 13.6 years.

2001 C1 LINEAR L. Manguso, Lincoln Laboratory, reports the discovery of an apparent 19th mag comet by LINEAR on February 1.48. Confirming CCD observations by G. Hug (Eskridge, KS) reveal a condensed coma and a suggestion of a faint, broad tail in p.a. about 325 deg. [IAUC 7578, 2001 February 2] The preliminary orbit suggests that the comet is in a distant parabolic orbit and will not come within visual range.

2001 C5 SOHO Michael Oates discovered a 6th mag non Kreutz object on C2 images on February 14. The reduced observations and retrograde parabolic orbital elements (T = 2001 Feb. 13.3 TT, q = 0.026 AU, i = 166.3 deg) by B. G. Marsden appear on MPEC 2001-D07 [2001 February 18], though Marsden notes "The above retrograde orbit solution seems more problem than a direct one." The comet could reach an elongation that would permit observation by large telescopes by the end of February.

Further to IAUC 7582, D. Hammer reports his measurements for a comet found by M. Oates on SOHO website images. C/2001 C5 was visible in both the C3 and C2 coronagraphs, and D. Biesecker provides the following post-perihelion V magnitudes from the C2 data (the C3 data being poor due to vignetting): Feb. 13.854, 5.4; 13.896, 5.0; 13.938, 5.0; 13.979, 4.9; 14.021, 4.9; 14.064, 4.9; 14.104, 5.3; 14.146, 5.6; 14.163, 6.3; 14.188, 7.4. [IAUC 7585, 2001 February 20]

2001 CV8 P/LINEAR A 19th mag object that was reported as asteroidal by LINEAR on February 1.35, and given the designation 2001 CV_8, has been found by other CCD observers to show cometary activity. M. Hicks, Jet Propulsion Laboratory, reports that nonphotometric images (with imperfect tracking) obtained with the 0.61-m f/16 reflector at Table Mountain Observatory by D. Esqueda, A. Esqueda, and T. H. Ha on Feb. 4 indicate this object to be diffuse without condensation but with a faint, 5" fan-shaped tail toward the west. Images taken by D. T. Durig (Sewanee, TN; 0.3-m f/5.8 Schmidt- Cassegrain telescope; moonlight and tracking problems) on Feb. 6 show the object to be more diffuse than nearby stars. Observations by J. Ticha and M. Tichy at Klet (0.57-m f/5.2 reflector) on Feb. 10 show the object to be diffuse with a 9" coma and a faint 15" tail in p.a. 270 deg. Additional astrometry, orbital elements and an ephemeris by B. G. Marsden appear on MPEC 2001-C24. The elements indicate that the comet passed about 0.14 AU from Jupiter in Nov. 1998 and has a period of 7.8 years with perihelion at 2.12 AU. [IAUC 7581, 2001 February 10]

2001 E1 SOHO Michael Oates discovered a faint non Kreutz object on C2 images on March 15.

2001 F1 P/NEAT E. F. Helin, S. Pravdo, and K. Lawrence, Jet Propulsion Laboratory, report the discovery of a mag 20 comet with a faint tail about 40" long toward the west-northwest on CCD images taken with the NEAT 1.2-m reflector at Haleakala on March 24.42. Additional observations, together with orbital elements (T = 2001 Jan. 21, q = 4.3 AU, i = 19 deg, P = 15.4 yr) by B. G. Marsden, are given on MPEC 2001-F51. The object appears diffuse on Mar. 28.5 UT CCD images taken by G. J. Garradd, Loomberah, N.S.W. (0.45-m f/5.4 reflector). CCD observations by M. Tichy and M. Kocer at Klet (0.57-m f/5.2 reflector) on Mar. 29.0 show a diffuse 10" coma. P. G. Comba, Prescott, AZ, reports that CCD images taken with a 0.46-m f/4.5 reflector on Mar. 29.3 show a tail in p.a. 285 deg. [IAUC 7604, 2001 March 29] The comet will fade.

2001 G1 An apparently asteroidal 17th mag object discovered on CCD images taken with the LONEOS 0.59-m Schmidt telescope on April 1.20 and posted on the NEO Confirmation Page has been found by other astrometric observers to be cometary on their CCD images. The object was reported as being diffuse by J. Ticha, M. Tichy, and P. Jelinek at Klet (Apr. 1.9 and 2.9 UT; 9" coma on Apr. 2.9) and by C. E. Lopez and M. R. Cesco at El Leoncito (Apr. 2.2), and as having a 10" coma by M. Busch and S. Kluegl at Heppenheim, Germany (Apr. 1.9) and by J. Broughton, Reedy Creek, Queensland (Apr. 2.5). Additional astrometry and very uncertain parabolic orbital elements are given on MPEC 2001-G03. [IAUC 7606, 2001 April 2] The comet is very distant and will fade.

For the latest information on discoveries and the brightness of comets see the Section www page:
http://www.ast.cam.ac.uk/~jds
or the CBAT headlines page at
http://cfa-www.harvard.edu/cfa/ps/Headlines.html