



EDITORIAL

Another Anniversary this Month

This month marks the sixtieth anniversary of the great meteor procession of February 9, 1913, an event unique among recorded meteoric phenomena - with which our Department is closely linked.

On that evening shortly after 9 o'clock E.S.T. hundreds of people in western Ontario, Saskatchewan, New York State and on ships at sea as far south as Bermuda witnessed the passage of a slow "majestic procession" of 20 to 30 groups of extremely bright fireballs passing from north-west to south-east over a period of three minutes or more. C. A. Chant, though not having seen the phenomenon himself, began to collect written and verbal accounts from eye-witnesses, and in the course of a few months produced a lengthy and careful analysis of the phenomenon which was published in the J.R.A.S.C. (vol. 7, pp 145-201, 1913) and which has successfully stood the test of re-examination over the years. It was probably the first astronomical research paper of any account coming from this University. In the glass case in our library the original reports (nearly a hundred of them) are preserved in bound form, and in the Secretary's Office there is a framed painting of the phenomenon by witness Gustave Hahn, a well-known Toronto artist, on whose careful observation and depiction Chant placed particular reliance.

Chant concluded that the meteoroids followed a path from at least Moose Jaw to a point some 150 miles east of Bermuda (2500 miles) and nearly parallel to the earth's surface, at a speed less than twice the speed of a satellite in vacuum at the earth's surface.

Subsequently W. F. Denning of Bristol uncovered additional observations extending the path another 3300 miles to a point below the equator off the coast of Brazil, and other observations were found by W. H. Pickering, A. D. Mebane and John O'Keefe. None of these substantially changed Chant's interpretation, but a vigorous attack on that interpretation

was made by C. C. Wylie of Iowa who (particularly in a letter in Science 118, 726, 1953) sought to interpret the many observations as isolated manifestations of a more-or-less ordinary meteor shower. The only time I ever saw Dr. Chant angry was while he was reading Wylie's letter, particularly where the letter said that "a meteor man would have interviewed a few observers --- and determined a radiant"---". "Meteor man!" snorted Chant, "Why am I less a 'meteor man' than he?" However, La Paz and O'Keefe seem successfully to have disposed of Wylie's attempted put-down.

John O'Keefe of NASA, firmly committed to Chant's satellitic explanation of the procession, attempted (in Science 133, 562, 1961) to connect the observations with his views on the origin of tektites, particularly to show that a fall of tektites which fails to cover a whole circuit of the earth is not at variance with the idea of an atmospheric disruption of a single body on an elliptical orbit coming in fairly low at perigee - as Barnes, Urey and Kopal had contended. O'Keefe spent a few days here studying the reports collected by Dr. Chant, and he also carefully searched the newspapers from a band 22 degrees west of the Chant trace which would have been associated with a subsequent orbit 90 minutes later. He found not a single such observation; thus he concluded that the meteoroids had dropped to earth in a relatively restricted zone. He further calculated that if the orbit of the parent satellite had had eccentricity of about 0.02 and if the disruption had occurred at perigee on the next earlier passage to the one observed, then the daughter bodies, with eccentricities between 0 and 0.02, would have been spread out at perigee on the observed passage by about 3 minutes, of time, as observed.

O'Keefe has given the name Cyrrillids to these particular meteoroids - because they occurred on the feast of St. Cyril of Alexandria, and by way of following the precedent of "tears of St. Lawrence" for the Perseids. Somehow I can't think that Dr. Chant would have gone along with this terminology - a little too hagiolatrous for his taste, I imagine.

J. F. H.

P. S. It was only after completing this piece that I learned that Dr. Hogg had anticipated me by recognizing this anniversary in her "Star" column of February 10.

OBSERVING

At D.D.O.

Pleione, one of the stars under surveillance on Austin Gulliver's program of shell stars with the G 12 spectrograph, early this month signalled the beginning of a new shell phase which may duplicate the hitherto unique episode of 1939 and the early '40's. Broad absorption lines of FeII, CrII, CaII etc. are developing rapidly and, according to Dr. Garrison, this shell development has been detected at an earlier phase than the one in 1939.

At Las Campanas

The observations made last November at the 24 inch by our Dr. Sanyal and Dr. Weller of CRESS with Dr. Stan Jeffer's Rapid-Scanning Image Intensifier Spectrometer have paid off with what appears to be a rapid and periodic variability of the spectrum of the WR star γ_2 Velorum. The variations were detected in the intensities of the emission lines of CII 4620, CIII-IV 4650, HeII 4686 and CII 6576 and the period is about six minutes. Confirmation of the phenomenon was indicated on a sequence of calibrated spectrograms, though the time resolution there is only one minute, compared to 10 seconds for the Jeffers instrument. The three investigators have still more tapes to reduce and are planning further checks on the phenomenon with narrow band interference filters now being made.

Dr. Racine reports that his observing run at Las Campanas in January was photometric on all but two of the 11 nights, when it was partly cloudy.

Dr. Garrison's Image Tube Spectrograph in Chile is performing very well, according to two recent reports. On January 16, Rick Salmon obtained a spectrum of the supernova in NGC 5253 (now 14.8 mag. photo-electric!) with an exposure of only 45 minutes. The spectrogram shows three very broad emission lines, the relative intensities of which have changed from spectra taken last fall. Also Dr. van den Bergh used the spectrograph to obtain an "adequate" spectrum of a 14th magnitude star. He indicated that the noise level was so low that a five hour exposure is possible without appreciable plate fogging. The classification spectrograph, designed by Dr. Garrison and built in the D.D.O. shops by David Blyth, is a grating instrument which uses lens optics and is equipped with an ITT fiber-optic electrostatically focussed image tube. The dispersions available are 67 Å/mm and 112 Å/mm. One of the special features is a unique plateholder design for bringing the plate into contact with the fibers. A slightly modified duplicate version, with moonlight eliminator for use on the 24-inch in Richmond Hill is nearly finished.

Another Space Program Selected

Dr. Garrison's extensive program of "Far Ultraviolet Spectral classifications" has been selected by NASA for their International Ultraviolet Explorer (IUE) Satellite to be launched in 1976. He has also been invited to participate as a member of the Users Group for the IUE Satellite program.

Radio Astronomy

Dr. Kronberg is collaborating with Dr. R. E. Strom of Leiden in a continuing program of making supersynthesis maps of extragalactic radio sources with the Westerbork radio telescope near Groningen. Dr. Strom has already supervised the first observations.

Polarization Studies

Dr. Peter Martin in November spent five nights at Kitt Peak on the 84-inch studying variation of circular and linear polarization over the surface of the Crab Nebula. He also discovered four new infrared stars with the circumstellar polarization.

In December he spent a week at Columbia University preparing software to operate Dr. Roger Angel's new rotating polarimeter. On January 26 he spoke to the Toronto Centre of the RASC on "New Methods of Determining the Composition of Interstellar Dust". From February 1-11 he used the 82-inch at McDonald Observatory to study UV circular polarization of the Crab Nebula and linear polarization of emission lines from its filaments; and from Feb. 12-17 he used the 36-inch to search for interstellar circular polarization in reddened stars, finding several new examples to add to the six known previously.

COMINGS AND GOINGS

Dr. MacRae was in Ottawa February 14-15 for another meeting of French and Canadian negotiators for the proposed Franco-Canadian 4-metre telescope. Last week the two groups proceeded to Hawaii for further talks involving American negotiators. Dr. and Mrs. MacRae are staying on in Hawaii for a brief winter holiday and are expected back tomorrow.

Early in November Dr. Martin gave a colloquium at Kitt Peak HQ in Tucson on "Circular Polarization of the Crab Nebula". On Nov. 17 he gave a paper on "Interstellar Circular Polarization - a New Approach to the Study of Interstellar Grains" at IAU Colloquium 26 on "Polarization" at Tucson.

Dr. Hogg gave a seminar on "Canadian Observations of Variable Stars in Globular Clusters" at the Dominion Astrophysical Observatory on February 13 and a public lecture on "Beautiful Satellites of Our Galaxy" at the University of Victoria on February 15. She spent the week visiting old friends in Victoria including Dr. Jean Petrie and Dr. and Mrs. J. A. Pearce.

Dr. van den Bergh observed at Las Campanas January 29 - February 10 and visited U.B.C. and Simon Frazer University Feb. 12-14. He was in Ottawa Feb. 18-20 for meetings of the Grants Selection Committee and gave a talk on Feb. 22 to the Ottawa Centre of the R.A.S.C. on "Supernova Remnants".

Dr. Racine visited the University of Ottawa on Feb. 13 and the Department of Physics at the University of Montreal on Feb. 14, speaking at both on "Star Clusters and Cosmology". On Feb. 7 he addressed the Hamilton Centre of the R.A.S.C. on "Astrophotography: Optical Design and Performance". On Feb. 26 he visited Westinghouse in Elmira, N.Y. to discuss low-light-level TV systems.

SEMINARS

FEBRUARY - As announced, except that today's talk by Dr. Yen is cancelled.

MARCH

Tues. 6th Robert Deupree, - title to be announced.
DDO 4 P.M.

Thurs. 8th Prof. Werner Israel, University of Alberta, "Spin and
McL. 4 P.M. Gravitation". (Joint with Physics.)

Tues. 13th Prof. Eric Forbes, University of Edinburgh, "The Red
DDO 4 P.M. Shifts of the Solar Spectral Lines".

Tues. 20th Prof. Robert D. McClure - Yale University, "Abundances
DDO 4 P.M. of Disc Population Stars from Photometry of K-Giants".

In the ROM lecture series entitled "Nature: Cosmic and Earth-bound", Dr. Frank Drake of Cornell will speak on "The Search for Extra-terrestrial Intelligent Life", in the Planetarium Lecture Room March 14, 8.30 p.m. Free admission.

PAPERS SUBMITTED FOR PUBLICATION

N. R. Walborn "On the Nature of the Luminous Central Objects
in NGC 3603 and 30 Doradus".

S. van den Bergh "The Role of Schmidt Telescopes in the Study of
External Galaxies".

E. R. Seaquist, "An Investigation of the Frequency Dependence of
P. C. Gregory, Circular Polarization in Three Compact Radio
F. Birand & Sources".
T. R. Clarke

Katherine Madore "Light Variations in HD 217312".
and J. R. Percy

MISCELLANEOUS

Double Birthday Party

The graduate students were hosts to the staff at a party on February 17 recognizing the common birthday of our late colleague Nicholas Copernicus and our extant colleague Donald MacRae. The party was held in the apartment of Barry and Kathy Madore on Huron Street and, as a party-

goer from 'way back, the writer declares this one a stand-out. The now famous quartet of tenors Hagen and Duncan and basses Pritchett and Harris sang a new arrangement of "Happy Birthday Dear Nicholas" and encored with their favorite "Vive la Compagnie". Astrologer Dieter Bruckner read a brilliant horoscope of Dr. MacRae and hinted at interesting configurations in the solar chart of Mrs. MacRae.

Appointments

Elizabeth Barnes has been appointed Assistant Departmental Secretary. Elizabeth is a graduate of 6T9 and has been doing secretarial work in the Great Lakes Institute.

Dr. Hogg has been appointed to the Environmental Study Committee of the Board of Bell Canada.

Dr. Heard has been appointed to the Task Force charged with the transfer of nursing education from the two schools of nursing in North York to Seneca College.

Resignation

We all regret the resignation of Mrs. Kathleen Turner, assistant in the departmental secretary's office, effective this week.

Passes Oral

Austin Gulliver was successful in his Ph.D. general oral examination on February 23.

FINAL ITEM

Le Gentil: Astronome Extraordinaire

Unlike their British counterparts, who seem to have spent a good deal of time keeping a stiff upper lip, the French observers of the eighteenth century transits of Venus kept eloquent journals of their adventures. And what adventures! One thinks of Chappe hunting down his guides at gunpoint through frozen Siberian forests, and then almost lynched by the people of Tobolsk who thought his meddling with the sun had caused the nearby river to thaw and flood the town. (In round two of 1769 Chappe elected to go to Baja California rather than be involved in any more Siberian winters; he died there of a tropical disease.) Or Pingré, who finally reached his island site after a whole variety of maritime adventures, only to be left stranded by a British vessel which triumphantly carried off Pingré's ship and supplies as the booty of war. But few of the hard times could match those of Guillaume-Joseph-Hyacinthe-Jean-Baptiste le Gentil de la Galaisière. For sheer bad luck he was almost unequalled, even among astronomers.

Le Gentil, then 34, was sent by the Academie des sciences to observe the 1761 transit from Pondichery on the south-east coast of India. After a relatively uneventful voyage of nearly four months he was at Isle de France (now Mauritius) in the southern Indian Ocean, but thereafter the monsoons blew the ship severely off-course ("...we wandered around for five weeks in the seas of Africa..."). When almost within sight of their goal they encountered a Moorish ship and were told that Pondichery had been taken by the British. The French captain decided to return to Isle de France, and from mid-ocean Le Gentil had a perfect view of the transit. But since the only available timekeepers were pendulum clocks the observation was of no scientific value.

Le Gentil elected to stay on for a year or two, wandering around the islands of the Indian Ocean doing useful geographic and natural history work, until he eventually decided he might as well hang on for the next transit. Inbetween bouts of sickness ("...a sort of violent stroke [problems] in my optic nerve...") he had concluded that although Pondichery was back in French hands, Manila in the Phillipines would be a better site. After a long voyage ("...it had its difficulties and its wearinesses.") he made it to Manila, only to encounter severe hostility from the Spanish Governor there, who blandly told him that his letters of introduction must be forgeries. This, together with opposition from the Academy over the change in site, decided him to return to Pondichery for the transit.

After yet another nightmarish voyage he was back in Pondichery, where he was given an observing site on top of an ammunition dump ("sixty-thousand weight of powder in the basement"). The weather during the months before the transit was beautiful, the evening before superb, but when he awoke for the 6 a.m. transit "... I saw with the greatest astonishment that the sky was covered everywhere....I felt doomed, I threw myself on my bed...". By mid-morning - too late - it was brilliantly clear, as indeed it had been for the whole event in Manila!

Frustrated and dispirited, Le Gentil met continuing misfortune. He fell seriously ill, and had difficulty getting passage home. So sick was he that he broke his voyage at Isle de France yet again to try and recover. After many months he was on another ship which was all but shipwrecked in a storm and blown back to the island. Hostility from the island's Governor ended in his travelling the last 8000 miles home on a Spanish ship.

So, after more than eleven years he again set foot in France, only to find that because he had long been presumed dead, his heirs were busily dividing up his estate and he had lost his seat in the Academy. Although he died not unhappily, one can understand the line in his obituary: "His face did not prejudice one in his favour...[and] in his sea voyages he had contracted a little unsociability and brusqueness...". Perhaps he was reflecting on Voltaire's remark that "en ce bas monde il vaut mieux être gastronome qu'astronome".

(More in Harry Woolf's "The Transits of Venus", Princeton University Press, 1959, and in Helen Hogg's "Le Gentil and the Transits of Venus", J.R.A.S.C. 45, 37, 89, 127, 173, 1951.)

Waterloo to Appoint another Astrophysicist

Dr. Pim FitzGerald has asked that the following notice appear in DDD.

UNIVERSITY OF WATERLOO

DEPARTMENT OF PHYSICS

Applications are invited for an appointment at Assistant Professor level in Astrophysics (preferably theoretical) effective September 1, 1973. A Ph.D. in astrophysics with a physics background is required. The appointment will include teaching at the undergraduate and graduate level and research.

Applications must be filed by April 1, 1973 with:
Dr. J. W. Leech, Chairman, Department of Physics, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1.