



DAVID DUNLAP DOINGS

VOL. 6, NO. 11

NOV. 27, 1973



NEWTON'S NEWTONIAN

(See Doug Paul's Article, p. 6)

EDITORIAL

Professor Larink and the Herstmonceux Chestnuts

Some of us have read recently an article in the Manchester Guardian Weekly of Oct. 27 in which Anthony Tucker rails against the British Astronomical establishment for frustrating Margaret Burbidge, snubbing Geoffrey, banishing Fred Hoyle and clinging to the country gardens of Herstmonceux when they should be moving the Isaac Newton telescope to Tenerife. Well, as Sidney van den Bergh remarked, there are probably some good guys in the establishment too. In any event, those Herstmonceux gardens *are* lovely.

I first saw Herstmonceux in 1955 when the British astronomers invited delegates to the IAU General Assembly in Dublin to visit the newly re-sited Royal Observatory en route. After seeing the telescopes I strolled in the gardens and to me the loveliest sight was the long avenue of enormous chestnut trees, their great buttresses hugging the ground as though daring the elements to try to dislodge them. I met an aged, stooped gardener and I asked him how old these trees might be.

"Well, sir," he replied, obviously pleased that I had asked, "we don't properly know. All we can say is that they are shown on a plan of the castle grounds dated 1440".

I walked on and was joined by Professor Larink of Hamburg University in whose home I had been a dinner guest the week before, a very genial little man with a whimsical sense of humour. I told him about the age of the chestnut trees and he was as amazed as I had been. At this point we met a group of American astronomers whom we knew and Professor Larink stopped them.

"Aha, my American friends! You see those chestnut trees?" and, as his excitement grew, his normally careful English became more Teutonic and his choice of words less accurate. "Vell, dey vere dere fifty years already before America vas *detected!*"

J. F. H.

OBSERVING

The Transit of Mercury

St. George

About fifteen people, including Dieter Brueckner and some students, were present to observe the last part of the Mercury transit from the roof of the Burton Tower early on Nov. 10. A group of five people from the RASC's solar observing group camped out on the fifteenth floor for the whole night, hoping to catch a glimpse of Comet Kohoutek as well as the Mercury transit. The group, armed with telescopes, video camera, short wave radio, food, hot tea, and sleeping bags conjured up fantasies of turn of the century diehard astronomers chasing off to some remote Arctic location to freeze and suffer for the thrill of seeing a once in a lifetime phenomenon. At first the transit was unfortunately obscured by clouds, but once the sun broke through, the battery of telescopes (2 small Tascos, 2 Questars, the 4" Unitron, the 8" Goto, and the Coelostat) swung into action. Most impressive perhaps were the observations with the video camera; combined with the beep of the time signal, the professional feel of the nearby coelostat, and the early morning lighting.

Scarborough

Undaunted by the threat of clouds along the south-eastern horizon, several members of Scarborough College mounted an expedition to the roof of the science wing at dawn on Saturday, November 10. Patience was rewarded about 8 a.m. when the sun finally rose above the cloud cover and an image of the disc about six inches in diameter was projected onto a viewing screen attached to the 8-inch Celestron telescope. The shadow of the planet could be clearly seen as a small sharp dot, about 1/16 of an inch in diameter, which slowly moved across the disc. Photographs were taken by Robert Roeder and Peter Martin. Precisely on schedule at 8:18 a.m., the small dot crawled off the disc, to the cheers of the observers, who, by this time, had a Questar in operation as well as the Celestron.

Those taking part in the "great transit expedition" included: Profs Boddington, Corben, Martin, Kronberg, and Roeder, and four students.

Dunlap

Don MacRae made the long journey from Observatory House to the Observatory and saw the transit with the six-inch along with observer-in-charge Gretchen Hagen and some of her friends.

Comet Kohoutek

Comet Kohoutek has been observed a number of times at Toronto and at Las Campanas. On October 27 Sidney van den Bergh obtained some excellent photos with the 48-inch Palomar Schmidt which have been reproduced in local papers and on TV.

Dieter Brueckner has been assigned the job of Comet public relations man and has been busy assembling a file of information and answering the questions of the media and the public.

COMINGS AND GOINGS

Derek Sida, Professor of Astronomy at Carleton University, is spending several months of his sabbatical leave in the Department.

Sidney van den Bergh spoke on "Recent Observations of Supernova Remnants" at Boston University on Nov. 7, at the University of California in Santa Cruz (Lick) on Nov. 8, and will talk on the same topic at the University of Michigan on Nov. 30. On Nov. 2 he was at Harvard to discuss the early detection of galactic supernovae and on Nov. 9 in San Francisco for a meeting of the Directors of the A.S.P.

John Percy attended the annual conference of the Science Teachers' Association of Ontario (S.T.A.O.) October 26-27 in Hamilton, where he conducted a session on "Practical Hints on Teaching Astronomy". The size and enthusiasm of the audience indicated both an interest on the part of teachers and a need for information and guidance. Dr. Percy has also published two articles on astronomy teaching in recent issues of Crucible: The Journal of the S.T.A.O.

Tom Bolton was at the University of Texas Nov. 15-16 to inspect their microdensitometer system and to consult with their staff and a Boller and Chivens representative about it.

Phillipp Kronberg left on Nov. 21 to spend eight days observing with the interferometer.

Helen Hogg was in Cambridge, Mass., on Nov. 6 to interview Dr. Fred Whipple for a forthcoming CBC TV program on Comet Kohoutek. The interview took place in the dome of the historic 75-inch refractor which went into operation in 1847, having been acquired largely as a result of public interest in the great comet of 1843.

Robert Roeder was at the Goddard Space Flight Centre in Greenbelt, Md., on Oct. 29 to attend a meeting of the Working Group to use the International Ultraviolet Explorer Satellite planned for launch in December 1976.

Don MacRae was in Ottawa Nov. 15-16 for another meeting of the Board of Directors of the CFHT.

SEMINARS

NOVEMBER As announced in DDD 6,10 except

Tues. 6th

D.D.O. none

Tues. 27th Dr. Eric Persson, Harvard Coll. Obs., "Observations
D.D.O. of Southern Radio Sources"

DECEMBER

Tues. 4th Dr. Morley Lipsett, Ministry of State for Science and
D.D.O. Technology, "What Would you Do if...?", followed at
2:30 4:10 by a panel discussion on the theme, "Astronomy,
is it Important to Canadian Society?"

Tues. 11th Gretchen Hagen, "Evolved Stars in Open Clusters"
4:10 D.D.O.

Tues. 18th CHRISTMAS COUNTDOWN

PAPERS SUBMITTED IN NOVEMBER

W.E. Harris & "The Integrated Colours of Globular Clusters".
S. van den Bergh

R.F. Garrison, J.R. Altoft, "Bibliography of Long Period Variable Stars"
Alice Hine, N.D. Hulkower.

LETTER TO THE EDITOR

Sir,

In the October 30 issue of the DDO Doings you mention the visit to Richmond Hill of Dr. Carlos Cesco, Director of the Felix Aguilar Observatory (the old Yale-Columbia Station) in Argentina.

Dr. Cesco has been director of the Felix Aguilar Observatory for many years. This Observatory is located in San Juan and is not connected with Yale-Columbia, other than by the collaboration we had with the University of Cuyo in San Juan. Nor has the Yale-Columbia Southern Observatory, which Dr. Cesco now also is directing, ceased to exist. After completion of the first epoch of the Southern Proper Motion Program in early January 1974, the Observatory will temporarily be operated by three Argentine universities (Cuyo, Cordoba and La Plata). Although Columbia University has lost interest in this project, Yale retains access to

part of the observing time and ownership of the astrograph.

I only mention these facts because of a widespread but incorrect belief in the astronomical community that the Yale-Columbia Southern Observatory in Argentina is now defunct.

Pierre Demarque, Chairman
Astronomy Department
Yale University

A Short Experience With Time Reversal

by Douglas Paul*

During the past summer my family and I took a long-awaited trip to Britain. Since for the past two years I have been involved in writing a series of physics books from an historical perspective, I wanted to see Michael Faraday's laboratory at the Royal Institution and Isaac Newton's telescope at the Royal Society. Unfortunately, I had made no preparations for either of these visits, but one afternoon, finding myself free in London, I decided to drop in unannounced to the Institution and Society.

At the Royal Institution (still at 21 Albemarle Street) I was greeted by a friendly hall porter who informed me that a museum of Faraday's work had recently been opened. Though it was not open for visitors that day, he offered to call the Institution's archivist, a Mr. Friday, and see if he could help me. I soon found myself being given an excellent personal tour of the Institution, libraries, reading rooms, main lecture hall (in which is still given a Christmas lecture, a custom initiated by Faraday), the museum containing a restoration of Faraday's laboratory, and the vault containing original manuscripts and notebooks.

One section from Faraday's notebook that impressed Mr. Friday as it did me was this passage written when Michael Faraday was seeking a unification of the forces of magnetism, electricity and gravity.

"All this is a dream. Still, examine it by a few experiments. Nothing is too wonderful to be true, if it be consistent with the laws of nature and such things as these, experiment is the best test of such consistency." 19 March 1849

Following this wonderful visit to the Royal Institution I walked towards Trafalgar Square and the new home of the Royal Society. Having heard stories of the aloofness of the Royal Society, I was not optimistic about their response to a visiting Canadian teacher's request to see the Newton telescope.

I was met at the door by three porters to whom I explained my quest. It was suggested that perhaps the chief librarian could help me, and I was ushered into his office. I reiterated my request and was told that the Newton telescope was not on public view but that perhaps the assistant librarian could help me. He did,

by bringing from the basement the telescope in its glass case. After a few minutes of contemplation through the glass, it was suggested that I might examine it better if I took it out. I rather nervously agreed. (This instrument is actually the second telescope Newton made and was presented to the Society in 1671. I do not know the location of the first, which was made three years earlier.) Upon removing it we found a small metal parabolic mirror in the bottom of the case. We then proceeded to dismantle the telescope to set the mirror back in the base but discovered that it was merely an extra mirror, and that the original was still in place. Little did I contemplate actually dismantling the instrument when I originally thought that I would like to see it!

Eventually I found myself walking through St. James Park, towards Buckingham Palace and the 20th century, having spent the previous four hours on a short journey back in time, thanks to some most gracious hospitality.

* *Doug Paul (B.Sc. 6T2), North York Bd. of Ed. sometime demonstrator in Astronomy in the Department, co-author of H.S. texts on physics and astronomy.*

P O T P O U R R I

Wildlife at Las Campanas

Chris Smith has reported the following fauna: a condor nesting near the 100-inch telescope, a puma seen on the mountain and the appearance on La Serena TV of Allan Sandage in his cowboy hat.

Singers Sought

Martin Duncan having finished his M.Sc. and being about to leave the Department, the Departmental Quartet will be needing a new member. Anyone interested please apply to Chris Pritchett, Gretchen Hagen or Bill Harris - before the Christmas countdown if possible.

Jesse Ketchum Dies

The friends of Jesse Ketchum were grieved to hear of his death at 88 in Toronto on Oct. 25. Mr. Ketchum, great grandson of the famous Toronto educator of the same name, was a long-time member of the R.A.S.C. who instructed countless members in telescope making and who, along with Mrs. Ketchum, faithfully attended the Saturday evening public nights for many years.

Letter from John Roger

Former grad student John Roger has written to the Department from Qua Iboe Mission Secondary School, P.O.B.41, Etinan, S.E.S., Nigeria where he is on a teaching assignment for CUSO. John, when you read this accept our thanks for the interesting long letter and our salute to you for what you are doing.

Mammoth Contest Announced

Nominations are invited for the first annual Sirgay Awards. The Sirgay Awards are meant to honour particularly humorous events and monumental goofs that have taken place during the past twelve months within the astronomical community. In cases of exceptional merit nominees from outside the astronomical community will be accepted. Nominations should be submitted to Tom Bolton by December 7. Winning entries will be announced in the David Dunlap Droppings or at the Christmas countdown. There will be no prize or honorarium given, it being felt that the prestige of the award is sufficient honour.

Visitor

Anne Cowley of Michigan was here in mid-October to measure plates and to confer with Tom Bolton.

ARO Committee to Meet here

The NRC Programming Committee for ARO will meet at Scarborough College on Dec. 10.

Talks

Helen Hogg spoke to an evening group at Timothy Eaton Memorial Church Toronto, Nov. 20, on "Astronomy, Old and New".

Phillipp Kronberg gave a colloquium at York U's CRESS, Nov. 21, on "The Structure of Extragalactic Radio Sources".

Jack Heard spoke to the R.A.S.C. Toronto Centre, Nov. 23, on "Spectroscopic Binaries Today".

Robert Roeder is to give a lecture on "Comet Kohoutek" Dec. 4 at Scarborough College.

FINAL ITEM

Thomas Edison and those Damned Chickens

It all began with the total solar eclipse of 1878. The new science of astrophysics was burgeoning then, and ideas concerning the solar corona were rudimentary indeed. It had been only a few years since astronomers had convinced themselves that the corona was not some sort of scattering phenomenon in the earth's atmosphere, and many were planning fundamental observations to find its true nature. Among them was Samuel Langley, director of the Allegheny Observatory, then beginning his extensive studies of solar infrared radiation. He was anxious to make infrared observations of the corona at the 1878 eclipse, but realized that the insensitive thermopiles available to him would be inadequate for the job. Accordingly, he wrote to invoke the help of the world's most famous inventor, Thomas A. Edison.

Edison, although then only 31, was already at the height of his career. Working at all hours, he directed a twelve-man laboratory at Menlo Park, New Jersey, turning out amazing inventions almost day-by-day. He already held 89 patents in telegraphy alone, had invented the stock-ticker and the carbon-button telephone, and was just that year announcing the phonograph and the incandescent light-bulb, although the latter was still a year from completion. This was typical of Edison, who never hesitated for a moment when it came to making seemingly wild and certainly premature announcements. All in all he was a forceful and brash young man, and the popular press just loved him for it. To judge from the space accorded him in newspapers of the day, he must have had a reporter at his side almost continuously.

He now took up Langley's challenge, and in no time at all had succeeded in constructing an instrument orders of magnitude more sensitive than the thermopile. He called it a tasimeter, a name that took him more time and worry to invent than the instrument itself. Its basis was the carbon-button, already invented as a transducer for telephones. The infrared radiation was focussed onto a vulcanite rod, heating it and causing it to expand and press against the button of powdered graphite. Since the electrical resistivity of powdered carbon is extraordinarily sensitive to pressure, the output of the instrument was read as a deflection of a galvanometer incorporated in an electrical circuit with the button. The thing certainly worked. Naturally there were demonstrations for the press, and Edison liked to show how easily the tasimeter could detect the heat from a person's hand thirty feet away, while one correspondent found it to be so sensitive "that let a person come into the room with a lighted cigar, and it will drive the little animal wild". Edison claimed it could detect a temperature change of 0.000001 °F.

Poor old Langley, however, could get nowhere with Edison. It was already the spring of 1878, with the eclipse due over Wyoming and Colorado on July 29, and Edison was simply ignoring Langley's requests for a tasimeter to try out. Langley's repeated appeals ended on July 4 with a terse telegram: "Send by express to Allegheny. I leave Monday." It too was ignored. This was, at least in part, due to Edison's decision to accept an invitation from Henry Draper to accompany his expedition to the eclipse and make observations with the tasimeter himself. Not that Edison cared much about the results; he saw the trip mainly as a vacation.

One can hardly see it as a congenial party. Edison left from the Pennsylvania Railroad depot in New York, declaiming to a large party of devout reporters the virtues of the tasimeter, which resulted in the *Daily Graphic* devoting its entire front page to him that evening. For their part, the other members of the expedition had to put up with similar scenes at almost every stop en route West. Edison was cheered by railroad telegraphers at every point (he was travelling free, and had all his messages sent free), while local reporters wrote the most absurdly laudatory stories about him. The other members of the expedition found their most junior and amateurish partner described as "Professor Edison, accompanied by a party of scientists...." Their feelings may be judged from the fact that the Naval Observatory's 500 page report on the eclipse does not mention Edison's name once. For his part, Edison's abrasiveness extended to a thinly veiled contempt for his companions. He disliked academics ("I wouldn't give a penny for the ordinary college graduate... filled up with Latin, philosophy, and all that ninny stuff." As for theoreticians, "I can hire mathematicians at \$15 a week but they can't hire me."). He was

scornfully amused at the precise latitude and longitude determinations made at the eclipse site: "It seemed to take an immense amount of mathematics. I preserved one of the sheets which looked like the timetable of a Chinese railroad."

Out of this kind of background came the wonderful story of the chickens:

When Edison stepped off the train at Rawlins [Wyoming, population 800] he found the professional astronomers already ensconced in the best rooms of the only hotel and already in possessive claim of the more protected places from which to observe the coming eclipse. All that remained for the tasimeter was a dilapidated hen-house, and in its doorway Edison set up his telescope and equipment. In the afternoon of 29 July, as totality neared, a brisk Wyoming wind arose, filling the darkening sky with dirt and debris. These conditions made the balancing of the tasimeter... especially difficult, and with the onset of darkness at second contact, the tasimeter was still not adjusted. Only two minutes of totality remained. Feverishly he worked, but alas! With the sun covered and sky dark, the chickens came home to roost, through Edison's observatory door, past the telescope, in, around, and over the frantic inventor. Uninitiated in astronomy, he had failed to allow for a fundamental eclipse phenomenon.

What degree of credence one can place in this story is highly uncertain; one suspects a good deal of gleeful embellishment with the passing years. What is certain, though, is that Edison did observe the corona with his tasimeter, and found himself undone by his own inventiveness: the wretched thing immediately swung off-scale and stayed there! Thus ended the short, sharp career of Thomas Edison, infrared astronomer.

As for the tasimeter itself, its fame and fortune faded into obscurity rather rapidly. For a while there was talk of commercial applications (ice-berg detector on ships, navigator's sun-finder in cloudy weather, etc.), but it proved to be a slow, non-linear, poorly-repeating, and highly unstable device. In short, great for qualitative demonstrations, but useless for quantitative measurements. Edison got in a parting shot by dedicating it without patent to 'the dilettantes in the higher branches of science'.

Samuel Langley had his revenge by inventing the bolometer to do the job at which the tasimeter had failed. Not, I suppose, that Edison cared. Ninny stuff.

(More in two papers by John Eddy, JHA 3, 165, 1972, and Sky & Telescope, 45, 340, 1973).

J. D. F.