



DAVID DUNLAP DOINGS

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Pure de hervilhas
à Portuguesa
Filetes de Linguado fritos
C/arras de Marisco e
hervilhas guisadas, Salada Mista
Costeletas de Vitela fritas ou
Madeira Sauce servido C/ Batatas
assadas e sei fão corde

Menu for the June Institute Dinner

(see p. 3)

OBSERVING

In Chile

Barry Madore, on his recent return from Chile has reported as follows:

I am the first of a caravan of Toronto astronomers to return from a Canadian take-over of Cerro Tololo. Stan Jeffers, René Racine and I flew down to Chile to begin observing on June 14. On the mountain we were met by Harvey Richards (UBC) and later joined by Bill Weller (York). Of my ten nights on the 60" and Yale 40" I had 7 1/2 perfectly photometric nights setting up photoelectric sequences for an unusual southern galactic cluster which Sidney van den Bergh and I are analysing.

When I left Tololo René had just returned from a side trip to Campanas between telescope changes. At Campanas all is very well and Chris Smith is anxiously preparing to return home after an unprecedented streak of clear weather. He and Bill Weller worked almost every one of the last three weeks - at a time when the nights are 12 hours long and there is no second-half observer to take over. Fortunately the weather has been mild, upper thirties and lower forties for most nights and only when I left had the clouds come in and the wind increased.

COMINGS AND GOINGS

Donald MacRae was in Ottawa July 16 and 17 for the second meetings of the now officially constituted Board of the CFHT. Approval was given for the awarding of contracts to a French firm for the mechanical parts of the telescope. While in Ottawa Don also learned that he now has the authority, as Chairman of the NRC Associate Committee, to issue the invitation to the IAU to hold the August 1979 General Assembly in Montreal.

Don Fernie and John Percy attended the General Assembly of the RASC in Winnipeg June 28 - July 1. Don was elected President for the ensuing year and John second Vice-President.

John Percy and family are now in England renewing acquaintances in Cambridge and enjoying some holidays in other parts of the country.

DDD's apologies to Helen Hogg for somehow omitting her name from the list of those who attended the CAP/CAS meeting in St. John's Nfld June 9-13. Also to René Racine for mis-reporting his Chile observing session in June; he observed at Cerro Tololo, though he did drop in to Las Campanas for a visit. As we go to press René reports that he observed June 14-19 on the Tololo 36-inch and June 24-July 1 on the 60-inch and that he gave a colloquium on June 20 on "Current Globular Cluster Photometry at DDO" to the La Serena staff.

Sidney van den Bergh attended the NATO Summer School at Erice, Italy, again June 23-29, giving lectures on Stellar Populations, the Magellanic Clouds, Evolution of the Galaxy and the Hubble Constant. Following this he enjoyed two weeks holidays in Spain and Holland.

Christine Coutts left on July 22 to attend IAU Symposium No. 67 in Moscow July 29 - Aug. 3. Travelling by way of Leningrad, she will spend a few days in Samarkand before the Symposium and will return to Toronto Aug. 10.

Helen Hogg spent two days in Brantford attending official events July 25-26 for the celebration of the Centennial of Alexander Graham Bell.

SEMINARS

JUNE INSTITUTE

In spite of the rainiest few days of a wet early summer the Annual June Institute, June 18-21, was again a great success from our point of view and we hope also from that of the registered guests who attended, as Dr. MacRae noted, from as far east as Iceland and as far west as Victoria.

The scientific program worked out very well, providing a good variety for all tastes. Between Stephen Strom on the observational aspects of star formation and Pierre Demarque on theoretical aspects of late stages of stellar evolution there might have been little common ground for dialogue; actually there was a great deal. Barry Turner's four lectures on interstellar molecules constituted an excellent review of this important topic, and Bill Bidelman's four talks on wide-ranging topics provided food for serious re-thinking of some neglected aspects of observation and interpretation.

As has been happily the case for some years now, our students arranged most of the social events, and particular thanks are owing to Dave Hanes for the well-attended welcoming party at 496 Huron St., to Simon White and Chris Pritchett for the party at Croft Chapter House and to Bruce Campbell for the arrangements at Octavio's Portugese restaurant on Augusta Street for the closing dinner. Betty and Don MacRae were gracious hosts, as always, at Observatory House following the evening visit to the Observatory. Our secretaries, Esther, Elizabeth and Joan cheerfully and efficiently performed the many secretarial and coffee-party tasks.

Notwithstanding these and other supporting roles, it is John Percy whom we have particularly to thank for his smooth and competent planning and supervision both before and throughout.

JULY As announced in DDD 7/6.

AUGUST None announced as of this date.

PAPERS SUBMITTED IN JULY

- M.J. Clement *On the Solution of Poisson's Equation for Rapidly Rotating Stars*
- J. R. Percy *A Linear- Non-Adiabatic Pulsation Analysis of Models of Dwarf Cepheid Variable Stars.*
- R. C. Roeder *Apparent Magnitudes, Redshifts and Inhomogeneities in the Universe.*
- E. Seaquist,
et al *Highly Polarized Radio Outburst from Cygnus X-3*
- R. Racine, &
Wm. Harris *A Photometric Study of NGC 2419*
- T. Bolton &
C. Martin *An Astronomical Test of the Dimensional Stability of Photographic Film*
- S. van den Bergh *Stellar Populations in the Galaxy*
- " *Stellar Populations in the Magellanic Clouds*
- " *Stellar Content and Evolution of Old Stellar Systems*

P O T P O U R R I

Ph.D. Oral

Phil Teillet was successful in his Ph.D. General Examination on July 3.

New Students

Gilles Menard, (B.Sc. U de M), enrolling for an M.Sc. program here, has begun working with Phillip Kronberg. Gardar Myrdal of the University of Iceland is also working with Phill until August.

Chris Rogers, a U. of T. undergraduate, is working on the 16-inch globular cluster program for Helen Hogg. Roel Hurkens, an old hand, is working again for Jack Heard for the summer. Nancy Geffken (undergraduate at Smith College) and Chester Rak (U of T) are working for Tom Bolton for the summer, Chris McAlary (U of T) for Don Fernie, Jim de Roux (Erindale) for Rene Racine, John Perkins (Erindale) for John Percy, and Krystyna Repetowicz (U of T) for Bob Garrison and in the Library.

Resignations and Appointments

Inge Zilkalns, assistant secretary at the Observatory resigned as of June 30, and has not yet been replaced.

Margaret Gallagher has replaced Carol Boyd as of mid-May as part-time assistant secretary at the Departmental office.

Carol Morrison resigned from the position of librarian at the Observatory as of mid-July to take a position in the U. of T. Science and Medicine Library. On July 16 there was a farewell party and presentation in the Library to thank Carol for her excellent work during the past year. Carol's replacement is Ruta Caune, a recent graduate of the U of T School of Library Science.

Degree Awarded

Roslyn Shemilt was awarded the degree of M.Sc. in astronomy at the spring convocation.

All in the Family

Martin Duncan (M.Sc. 1973) now in Texas, was married July 6 to Kathy Barnett, sister of Kay (Mrs. Bruce) Campbell.

New Title for HSH

The title of Helen Hogg's position has been changed from Professor and Research Associate to Research Professor.

Alumnus Promoted

David Hogg (Ph.D. 1962) has been promoted to Associate Director, National Radio Astronomy Observatory and has moved back to Charlottesville, Va. from Green Bank W. Va.

Summer Party

A party hosted by Ada and Bob Garrison and supported by GASA was held at the Garrisons' on July 26 to say goodbye to Carol Morrison and departing students and post-docs and hello to Ruta Caune and arriving students.

Alumnus Award

Orest Dubas (M.Sc. 1967) has been awarded a contract on behalf of the Ministry of State for Science and Technology for an analytical study of methods to popularize science and technology.

STOP PRESS

The microdensitometer has arrived, and at this moment on July 24 is being lowered by crane down the back basement stairs.

FINAL ITEM

The Remarkable Dr. Janssen

To say that scientists are born and not made is to use a cliché. It has probably been made a cliché by historians of science who are continually confronted by an endless and fascinating array of examples illustrating how little training, background, or even hard work often have to do with a person's scientific achievements. Intuition, insight, and living in the right time at the right place are usually much more important. After a while the historian comes to see scientists as fitting into a definite spectrum, ranging from people like poor old Hierononymus Schröter, who worked like a dog and hardly ever got anything right, to people like - well, like Pierre Janssen, the father of French astrophysics.

Janssen was born in Paris in 1824 of a cultivated family of musicians and architects. Since he was lame from birth, his parents never sent him to school, and instead he received a rather indifferent education at home. Even this was incomplete, as financial difficulties in the family forced him out to work as a bank clerk at an early age. Studying part time, he finally earned his baccalaureate when he was 25, when he gave up clerking for the doubtful improvement of being a substitute school teacher. This soon drove him to apply for a scientific job involving geomagnetic measurements in Peru, but a near-fatal attack of dysentery brought him home to be a tutor to the children of a steel mill owner. Here, at the unusually late age of the mid-thirties, his scientific potential began to show itself.

Watching the molten steel being poured from the furnaces one day, Janssen was struck by the fact that while he could feel his face burning from the heat of the furnace, his eyes seemed almost unaffected. Typically, he immediately went home and began to work on this phenomenon, which he attacked with such force that it became a doctoral thesis.

In the early 1860's Janssen was distracted from medical optics by Kirchhoff's announcement of terrestrial elements in the solar spectrum, and with characteristic vigour he immediately took up and solved a problem of thirty years standing: the nature of certain dark lines in the solar spectrum. In a beautiful series of experiments, remarkable for their simplicity, yet showing Janssen's innate grasp of physics, he observed from Alpine mountains and across Swiss lakes to show that the lines were due to telluric [a name he invented] water-vapour.

The recognition he received for this made him part of a French expedition to observe the total solar eclipse of 1868 from India. While making spectroscopic observations of the eclipse he suddenly realized how the spectroscope could be used to study the chromosphere out of eclipse, and promptly wrote up a simple, clear description of the first spectrohelioscope. Curiously, the same idea occurred to Norman Lockyer from England at the very same eclipse, and the two thereafter became close friends. Janssen's conclusions from his observations as to the nature of the chromosphere, published in the Comptes Rendus for 1869, read like something out of a modern textbook. Yet they were written at a time when other, more established experts were still arguing about the very existence of the chromosphere and corona as true solar phenomena.

This interest in solar eclipses led to what became the most famous story about Janssen. He had planned to observe the 1870 eclipse from Algeria, but as the date approached he found himself unable to leave Paris, the city being under siege by the Prussians. Nothing daunted, he made a hair-raising escape by balloon out of the city, calmly inventing a new aeronautic compass as he was buffeted about by violent winds. This has always seemed to me to be carrying devotion to duty a bit far, but intriguingly a recent biography of Norman Lockyer casts a new light on the incident. Lockyer, who had connections with the British War Office, had managed with some difficulty to arrange an official pass out of Paris through the Prussian lines for Janssen, and was understandably annoyed when his friend made this dangerous if spectacular balloon flight instead. Many years later it transpired that Janssen had been carrying secret French documents to the government outside Paris when he made his escape, and his sense of honour prevented his using the official Prussian pass while doing this. There may just have been an entire aspect of Janssen's career that, understandably, has never been brought out. The eclipse, incidentally, was clouded out.

Janssen was so impressed with his balloon flight that he later made several others; once, for example, to observe the November Leonids from above Europe's clouds. In 1900 he wrote: "The application of balloons to astronomical observations is destined to render to this science services whose extent is difficult to measure today."

He was an enthusiastic prophet of heavier-than-air flight, and back in the 1880's declared: "...the twentieth century ... will see the terrestrial atmosphere navigated by apparatuses ... to establish among nations communications and relations that will take continents, seas, and oceans in their stride."

For one of such ability, and accorded such respect, Janssen had a difficult time finding a base for operations. He was refused

permanent quarters at the Paris Observatory because its director, Le Verrier, regarded the latter as his personal property and apparently didn't like Janssen. Eventually in 1874 the French government decided to establish a separate observatory for astrophysics, with Janssen as its director. As a site he was offered either the former residence of Empress Josephine or the ruined estate of Meudon; he chose the latter, and so founded that great observatory. Not that the government was much help. He had to pay for the restoration of the buildings out of his research funds, and until 1906 could only afford one assistant astronomer. Times have since changed considerably at Meudon.

Despite his perilous finances, Janssen firmly believed in going to observe from the best sites, and in his sixties set out to observe from Mont Blanc. Because of his age and lameness he was carried up the mountain in a bizarre sling arrangement of his own design, leaving him possibly even more exhausted than his porters. Nevertheless, his observations solved for him the problem of the telluric oxygen lines, and he was so enthused that he decided to build a proper observatory on the mountain. He designed a fifteen ton observatory made out of pieces each less than about sixty pounds, and had the whole lot carried to the summit of the 15,700 ft. mountain. In his seventies, despite a broken leg, he was on another Mont Blanc expedition to determine the solar constant.

One could write at length about Janssen's many non-astronomical accomplishments, his work on commercial lighting problems, or his prescient recommendations about soundproofing the apartment buildings of his day, but let me conclude with his interest in the transits of Venus.

Scientifically, the 19th century transits were mainly distinguished from the 18th century ones by the application of photography. For the 1874 transit Janssen designed a form of camera which would allow him to take a rapid series of sequential photographs of the planet on the sun's disk. As usual, everything worked beautifully, but it was a pity Janssen didn't carry his idea just a few steps further: he was very nearly the inventor of cinematography, which had to wait another twenty years instead.

Janssen was 83, and still going strong, when he finally bowed before an attack of pulmonary congestion in late 1907. He had ranged the world and accomplished much, not least the respect of his contemporaries. I doubt he thought his career anything special, for he wrote: "There are very few difficulties that cannot be surmounted by a firm will and a sufficiently thorough preparation." True. But to earn the respect of history a scientist needs something more, and Pierre Janssen had it.