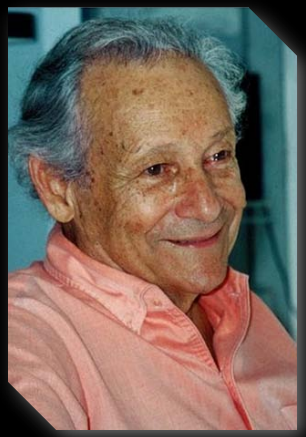
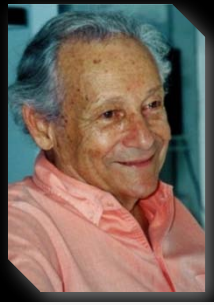


Víctor M. Blanco

CTIO under Víctor Blanco's Directorship in the years 1968-1977

Primera Reunión Anual Binacional entre la Asociación Argentina de Astronomía y la Sociedad Chilena de Astronomía

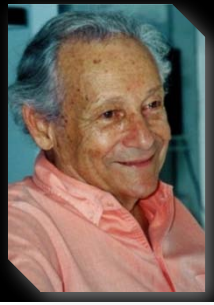
Homenaje al Dr. Víctor M. Blanco



Víctor M. Blanco

Memorial pages (NOAO)

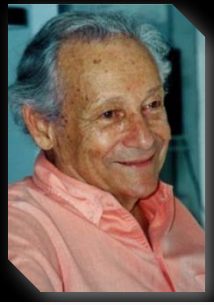
- Extraordinary humanity
- Understood the crucial importance of developing harmonious relations with the Chilean hosts
- Took risks hiring young scientists with little experience



Víctor M. Blanco

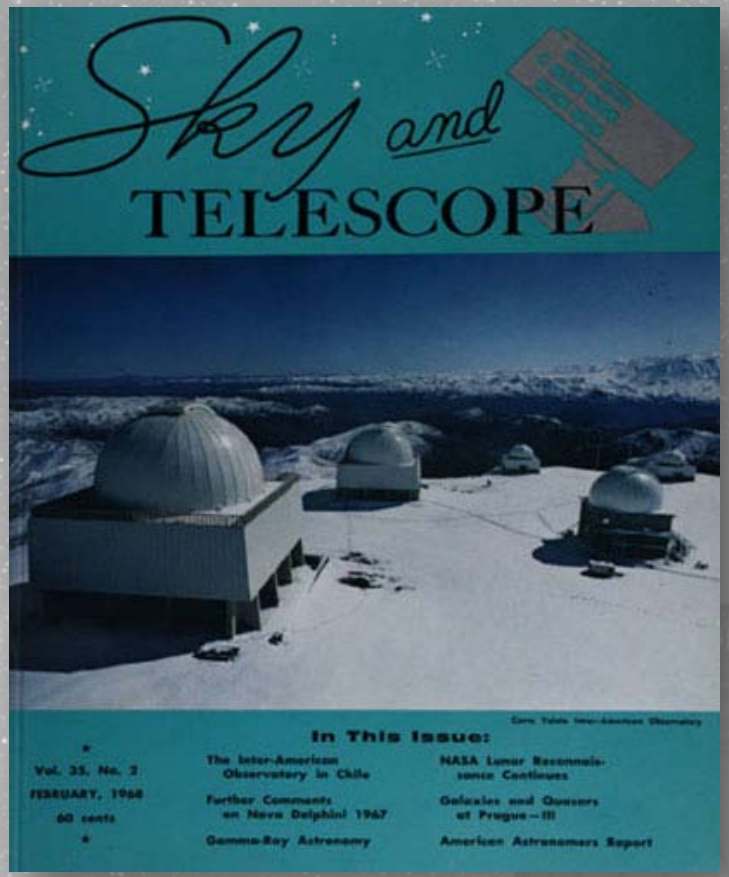
Memorial pages (NOAO)

- And he inspired them (and all the staff) with his vision that CTIO exists for the success of the visiting astronomers
- Without doubt the appropriate person to create the respected observatory we know today

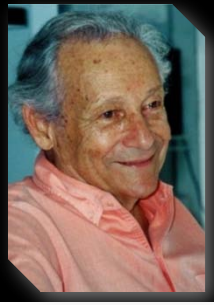


Víctor M. Blanco

Beginnings 1967-1968

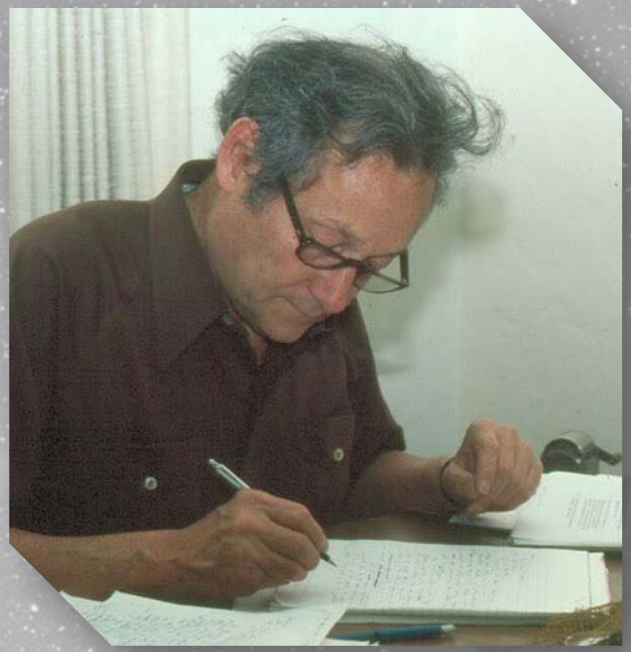


- Highly personal perspective
- Philadelphia December 1967
  - Physicist, 26 years old, specialized in laboratory astrophysics with strong desire to do observational astronomy
  - Offer of a free beer leading to…
  - A question…an introduction
- La Serena September 1968
  - Wife and 3 month old daughter
  - Beginning of 9 years with Víctor and his extraordinary direction for the creation of an observatory truly inter-American
  - Some lessons learned

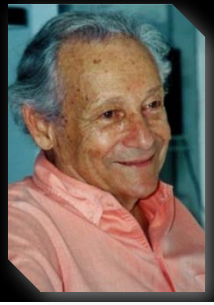


Víctor M. Blanco

Principal events-1 (ARAA 2001)

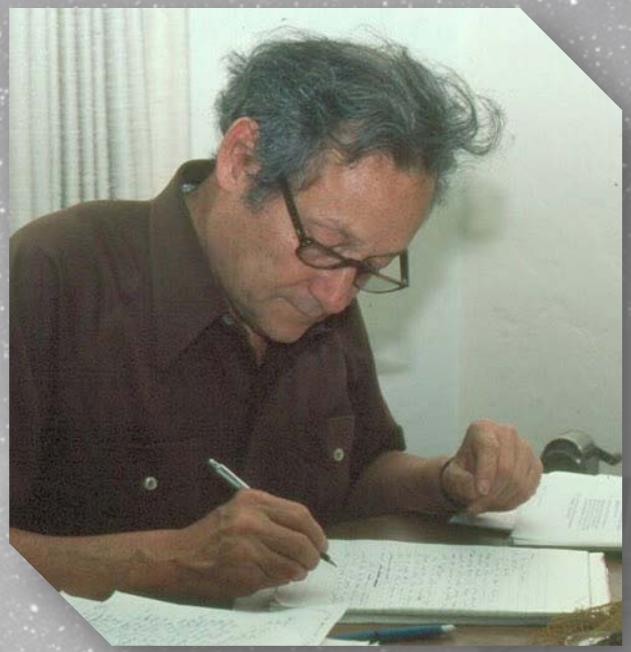


- (B) 10-03-1918 Guayama, Puerto Rico
- (D) 08-03-2011 Vero Beach, Florida
- Educated Puerto Rico
- 1939: Money earned as cabinet maker permitted him to enrol at U. Chicago for 1 quarter

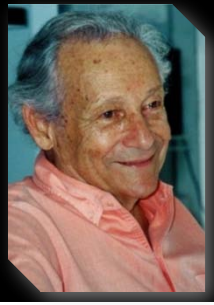


Víctor M. Blanco

Principal events-2 (ARAA 2001)

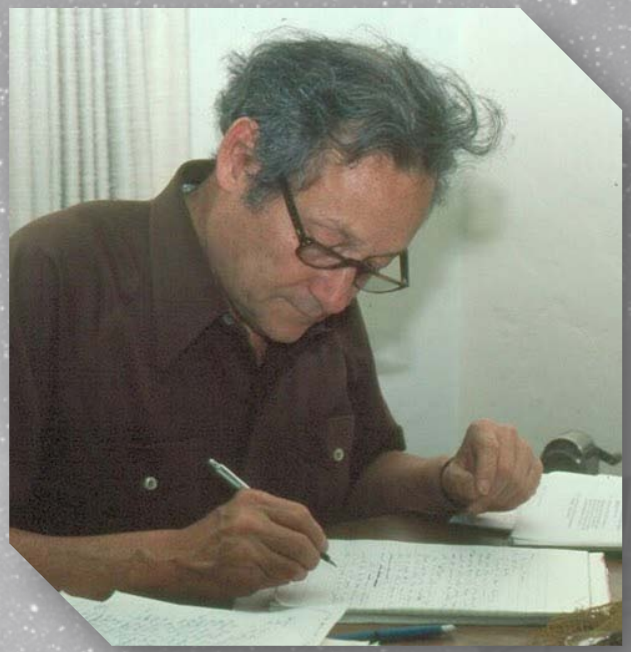


- Successful –received scholarship and worked off campus to continue
- 1940: drafted into army
  - Meteorologist in Pacific Theatre during WWII
- 1946 BSc U. Chicago, started postgraduate studies

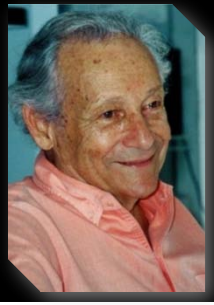


Víctor M. Blanco

Principal events-3 (ARAA 2001)

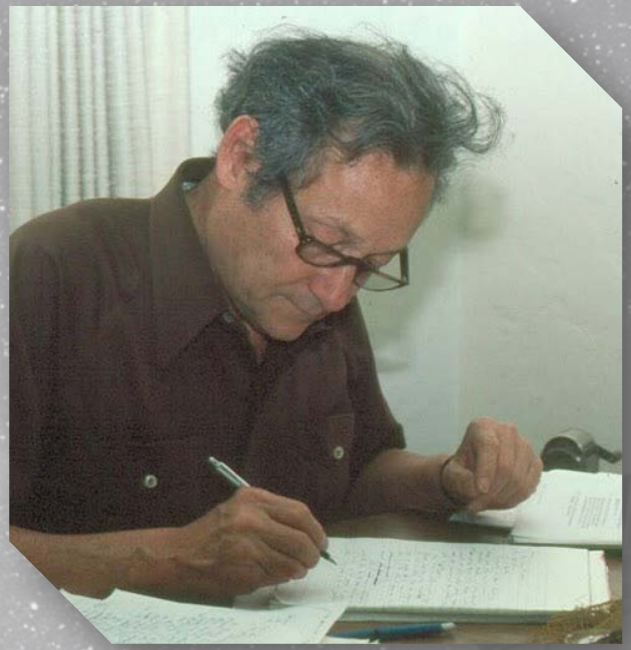


- Transferred to Berkeley
  - Robert Trumpler was PhD advisor
  - Thesis (1949) "Luminosity Function and Space Distribution of Ao Stars"
- Returned to U. of Puerto Rico to teach physics and astronomy, but the position was eliminated within the year due to budgetary shortfalls

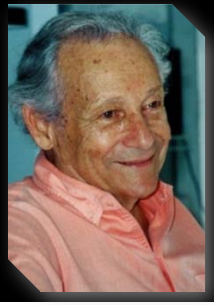


Víctor M. Blanco

Principal events-4 (ARAA 2001)

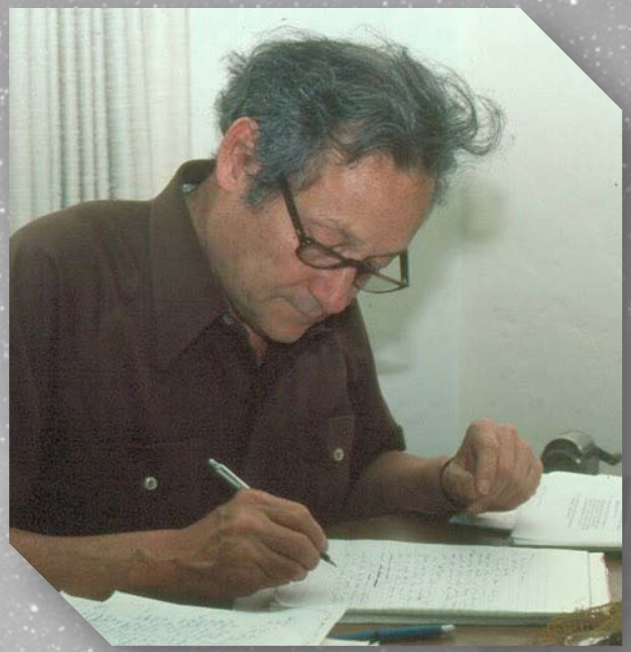


- Joined faculty Case Institute of Technology, Cleveland (1950)
- Developed deep knowledge of the distribution of late type stars in the Milky Way (with Jason Nassau)
  - 24/36-in Burrell Schmidt with objective prism
  - Discovered that central region of Milky Way is rich in M-type giants and poor in carbon stars, while in the anticentre direction both types occur in similar numbers
  - At Tololo extended this research with Betty Blanco, Martin McCarthy, Jay Frogel

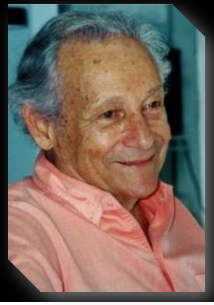


Víctor M. Blanco

Principal events-5 (ARAA 2001)



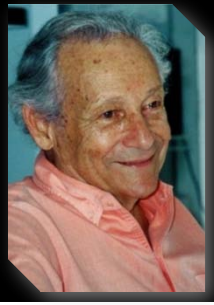
- 1960: Bosscha Observatory (Indonesia): commissioned their Schmidt telescope (provided by Jan Oort and U. Leiden)
- 1965: Director, Division of Astronomy and Astrophysics of the US Naval Observatory (met Betty Mintz)
- 1967: Director CTIO, responsible to the Director Kitt Peak with a shortwave radio and teletype for communication



Víctor M. Blanco

Why the south?

Roger Smith/NOAO/AURA/NSF

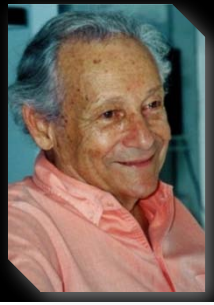


Víctor M. Blanco

CTIO 1961-1967

6 -11-1967 the Chilean President spent the night at Tololo

- 1961: When CTIO was founded only 10% of telescopic collecting area was in the southern hemisphere
- 1967: Chilean President, Eduardo Frei M., presided over the inauguration of Tololo
  - 1.5m construction was nearing completion
  - NSF and Ford Foundation committed to the construction of a 4m telescope
  - That constituted a powerful magnet for young astronomers like me



Victor M. Blanco

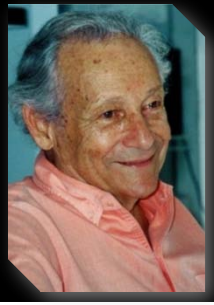
The 4m Telescope

First visit: 4- 10 -1968

22-3-1969

11-1969

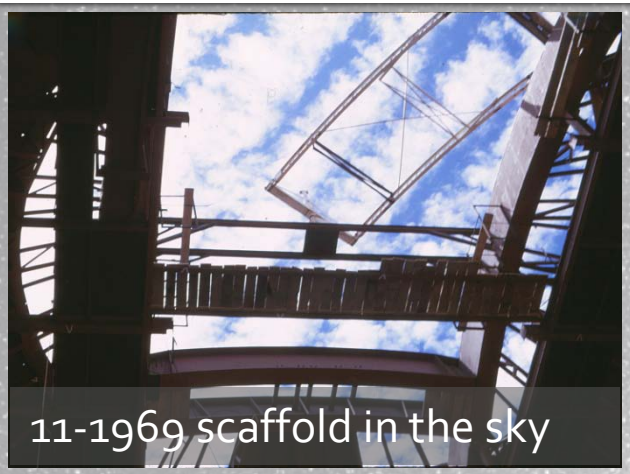
Victor en Cushman



Víctor M. Blanco

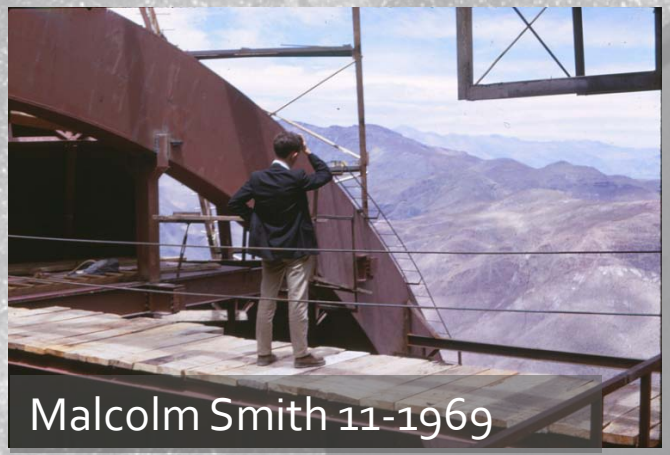
El 4 Metro

11-1969

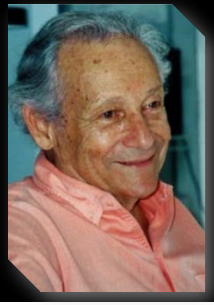


11-1969 scaffold in the sky

Someone else (holding on for dear life)



Malcolm Smith 11-1969

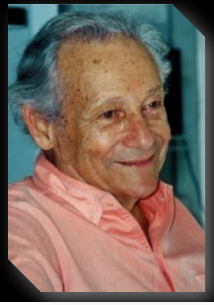


Víctor M. Blanco

Building a team: Astronomers

A serious young team: Bill Kunkel, Pat Osmer, Barry Lasker, Jim Hesser, John Graham, Victor Blanco

- Thanks to Víctor we enjoyed extraordinary liberty to benefit from opportunities, assume responsibilities, and grow intellectually
- 1968-69: Serge Demers y Merle Walker (Lick)



Víctor M. Blanco

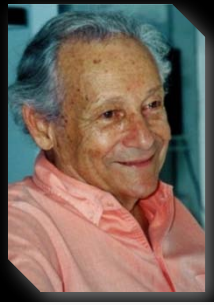
Building a team: Astronomers

- Barry Lasker: the pioneer in computers for observational astronomy

Passport: "may not leave without equipment with which to measure the brightness of the stars"

13 -12-1968:
Arriving at Pudahuel

Monitoring the unloading: Frank Guzzone, AURA importation office, and Barry

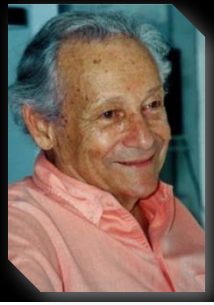


Víctor M. Blanco

Building a team: Engineers

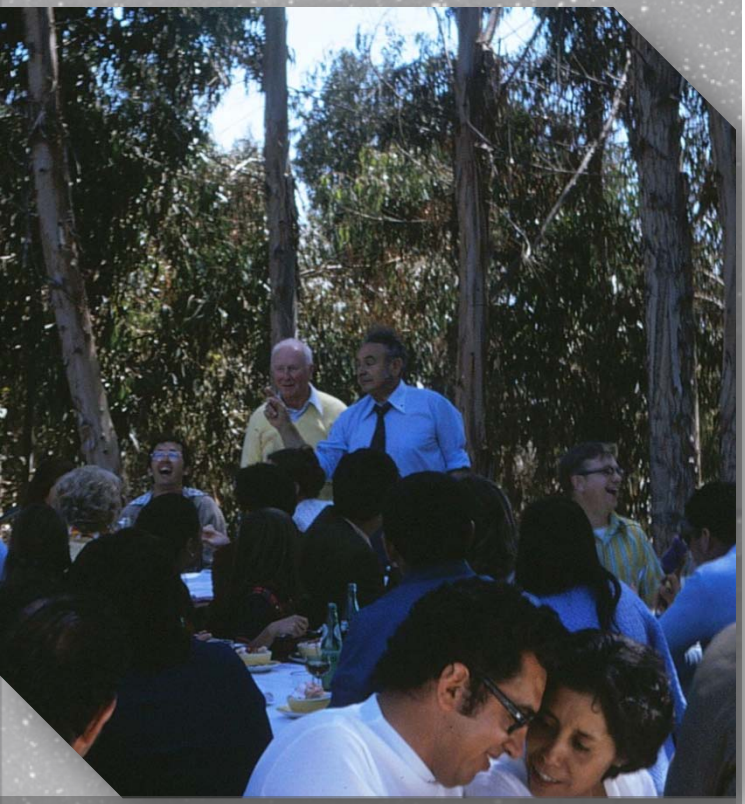
La Ligua, 11-07-1969

- Red (Dwight) Ludden
  - Shop teacher in St. Louis; worked summers at Lick Observatory with Bill Baustian, Mountain superintendent
  - At times drove us crazy…
  - But he was Victor's loyal disciple: "we are here to serve the visiting astronomers"



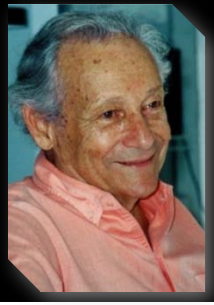
Víctor M. Blanco

Building a team: Support personnel



Red, Don Miro Glasinovic Dec. 1973

- Victor deeply believed in the concept of one team with respect between foreign and Chilean staff, between astronomers and support staff
- Formed a bond between foreign and Chilean staff through parties where Red and Don Miro translated for each other (neither spoke the other's language)



Víctor M. Blanco

Challenging years

25 de octubre de 1970 9 - 24 LAS PORTADAS DEL EL MERCURIO

EL MERCURIO

PRIMER CUERPO

Proclamado por Congreso Pleno.-

ALLENDE PRESIDENTE

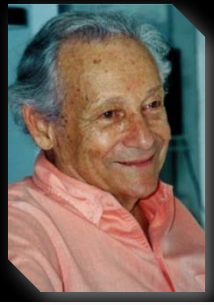
153 Votos a Favor,
35 Votos Alessandri,
7 Votos en Blanco

Emoción y Alegría En Casa de Allende

Leve Mejoría del General Schneider

INFORMACION PAGINA 6

- CTIO operated apolitically under an agreement with Chile
  - Víctor maintained excellent relations with 3 very distinct federal governments and with regional governments…and vice versa
- Unidad Popular (1970-1973)
- The dictatorship (>11-09-1973)

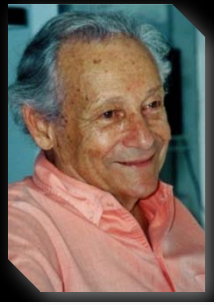


Vicky M. Blanco

Challenging years

Sharon, Zephryn, Barry Lasker
15-07-1971

- Concerns/worries
  - Lack of all types of products
  - 'Tomas' and risk of a diplomatically unsettling incident
  - Growth of the US embassy
- Newspaper – "gringos installing rockets in Tololo"
  - A soft touch: organized a visit by the provincial governor to Tololo



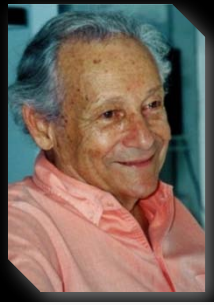
Víctor M. Blanco

Challenging years

Betty, Rebecca, Gillian Hesser
26-08-1971

- Presented opportunities, too
  - Increase Chilean participation in the management of Tololo
  - Improve relations among the mountain staff (foreign, Chilean)
  - For Chilean staff to represent (and be seen to represent) the Observatory

Juanita Muñoz, Jaime Palacios,
Enrique Figueroa, Elba Alfaro, (George Ingram)

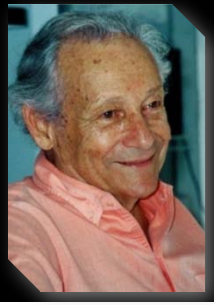


Víctor M. Blanco

Challenging years

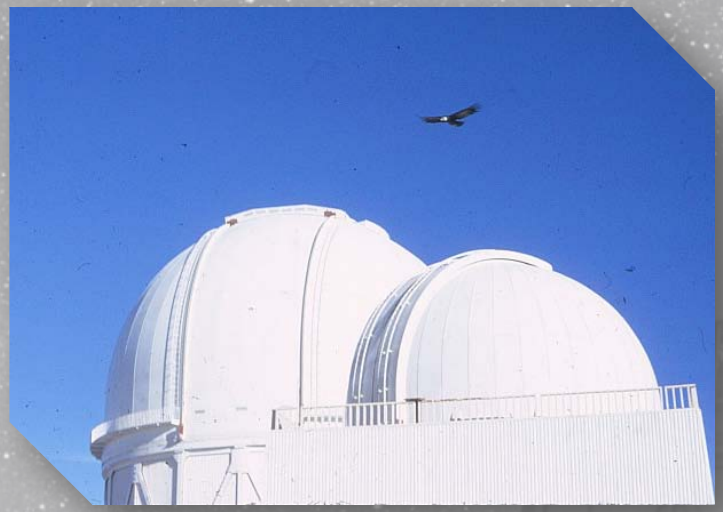
Claudio Anguita: U. Chile, Victor's respected advisor

- 1972: open heart surgery in Houston – 2 interventions – nearly died
  - John Graham, acting director : very grateful for the confidence Leo Goldberg (director Kitt Peak) showed in his judgment
- Víctor returned prematurely to Chile able to speak only in a whisper
  - Preoccupied whether had capacity to continue without his voice, especially given the situation in Chile more difficult every day
  - After weeks, without warning, his voice returned

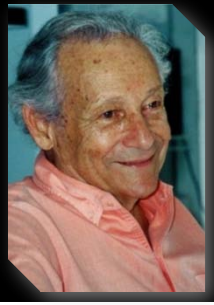


Víctor M. Blanco

Challenging years



- As assistant director (1972-1974) I participated in many difficult discussions and decisions
- 1973:
  - A key decision: send the mounting of the 4m telescope to Chile or put it in storage?
  - August: as acting director always had a portable radio (walkie talkie) with me to be able to call Elba Alfaro (and her the police) en case of a "toma"

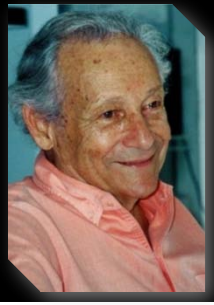


Víctor M. Blanco

A vote of confidence in Chile's future

Prudential Sea Jet: 4 weeks in transit from Everett, WA 86 crates, 500 tonnes

- 11-06-1973: 4m telescope mounting arrived in Coquimbo's port
- Extremely difficult to find and rent functioning heavy transport due to the deteriorating situation
- We were fortunate: a week of perfect weather between two winter storms

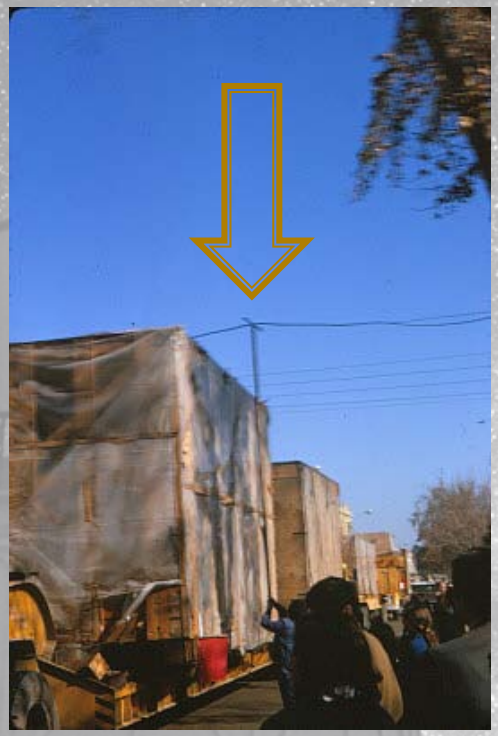


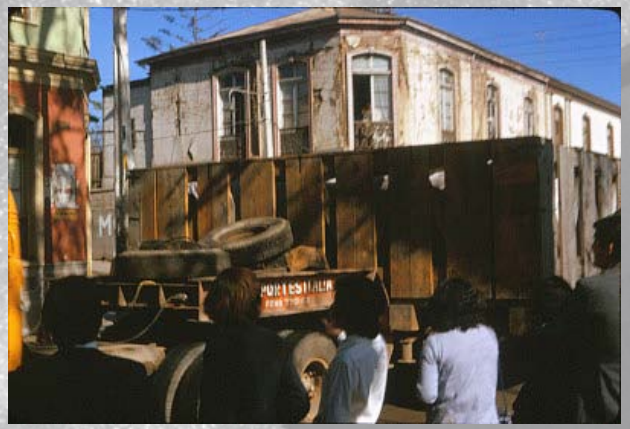
Víctor M. Blanco

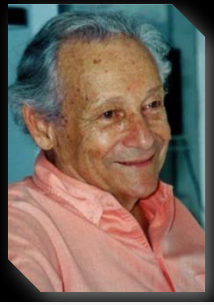
Voto de confianza en Chile

12-6-73: Leaving the Port of Coquimbo

- 12-06-1973: 4m mounting transiting La Serena



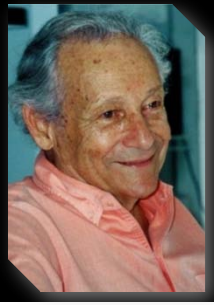




Víctor M. Blanco

The Military 'Pronouncement'

- New operating conditions
  - Visiting astronomers fearful of coming to Chile
  - Strictly enforced curfew
- In spite of it all, we took decision to transfer Yale U.'s 1-m telescope toTololo



Víctor M. Blanco

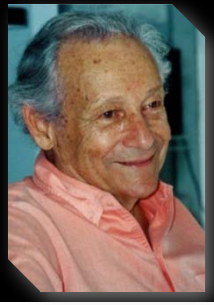
Yale 1-m Telescope

- From the cloudy skies of Connecticut to Tololo
  - 3 months observing in open air
  - Responsible for ensuring the precise N-S alignment of pier before concrete poured
  - Designed the best dark room on Tololo (?what's a dark room…?)

1974 January

1974 February

1974 **April**

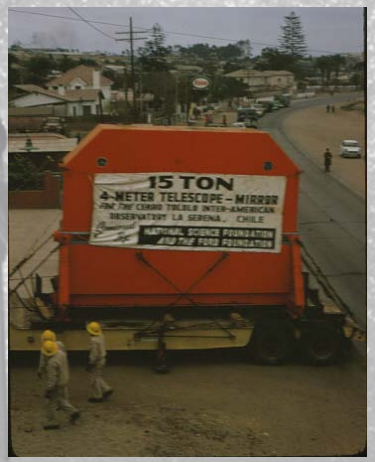


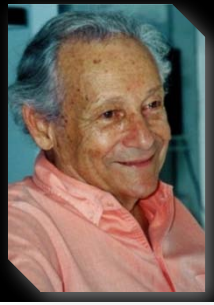
Víctor M. Blanco

Arrival of 4m mirror

1974 Sept.: steel mirror container welded to the central structure of the ship (centre of gravity), surrounded by bales of wool: - insured for $1M

- 3-06-1974, Tucson optical shop : experts (among them Víctor y John Graham) pronounced it "excellent"
  - Arrived 09-1974

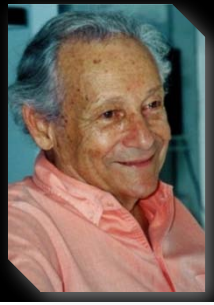




Víctor M. Blanco

4m commissioning

- By middle October scientifically useful plates were being obtained
- Optical collimation was extremely challenging but Víctor (with John, Khairy Abdel Gawad) were successful
- 8-9 Nov. 1974: informal ceremony of 1st light at prime focus
- 11-1975: secondary mirror installed
- 01-1976: 4m opened for use by visiting astronomers

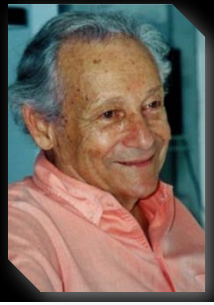


Víctor M. Blanco

An evolving Tololo

- New staff
  - Astronomers
    - Olav Hansen, Nolan Walborn, Alistair Walker, Jay Elias, Francoise Schweitzer, Olin Eggen…
  - Engineers
    - Bernt Grundseth, German Schumacher, Bruce Atwood and many more

German Schumacher 1978



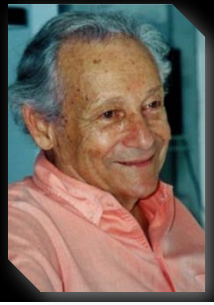
Víctor M. Blanco

Returning to research

- Víctor returned to his studies of late-type stars and their populations in the Galactic bulge and the Magellanic Clouds

Betty Mintz Blanco

Martin McCarthy



Víctor M. Blanco

Exploiting the 4m for his research

letters to nature

Nature **271**, 638 - 639 (16 February 1978); doi:10.1038/271638a0

Carbon and M-type giant stars in the Magellanic Clouds

B. M. BLANCO*, V. M. BLANCO* & M. F. MCCARTHY†

*Cerro Tololo Inter-American Observatory, La Serena, Chile
†Vatican Observatory, Vatican City State

THE late M- and C-type giant stars are of special interest in studies of stellar and galactic evolution as they are found at the extreme low temperature limit which stars first reach after evolving away from the main sequence, and also because they show remarkably different galactic distribution. Because of the pronounced strength of absorption bands of molecular oxides and of the carbon and cyanogen molecules in the spectra of these stars, extremely small dispersions can be used. Modern large telescopes equipped with Ritchey–Cretien optics allow relatively large fields to be surveyed to faint limiting magnitudes. Thus stars can be segregated and classified whose distance moduli are 22 mag and more. Now stellar populations can be sampled and surveys made of the distribution of the stars in space in the Magellanic Clouds and in the less obscured regions near the galactic centre. Three such surveys are described here. They indicate that unsuspected differences in the mixture of C and late M giant stars exist in the nuclear bulge of the galaxy and in various regions of the Magellanic Clouds. Such studies also yield new information concerning the intrinsic luminosities of C and M giant stars in these three galactic systems.

THE ASTROPHYSICAL JOURNAL, **242**:938–964, 1980 December 15

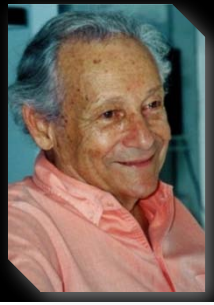
CARBON AND LATE M-TYPE STARS IN THE MAGELLANIC CLOUDS

V. M. BLANCO
Cerro Tololo Inter-American Observatory[1], La Serena, Chile
M. F. MCCARTHY, S. J.
Specola Vaticana, Vatican City State[2]
AND
B. M. BLANCO
Cerro Tololo Inter-American Observatory[1], La Serena, Chile
Received 1980 March 24; accepted 1980 May 12

ABSTRACT

Identification charts, coordinates, and *R* and *I* photometric measurements are presented for 320 carbon stars and 107 giant M stars later than type M5 found in five sample (0.12 square degrees) areas in the two Magellanic Clouds. The carbon stars are found to be far more abundant relative to the M giants in the SMC than in the LMC, and they show a single-mode luminosity distribution with a mean *I* magnitude of -4.6. The differences in mean *I* magnitudes between the clouds suggest a distance modulus difference of 0.51 ± 0.03.

Subject headings: galaxies: Magellanic Clouds — stars: carbon — stars: late type

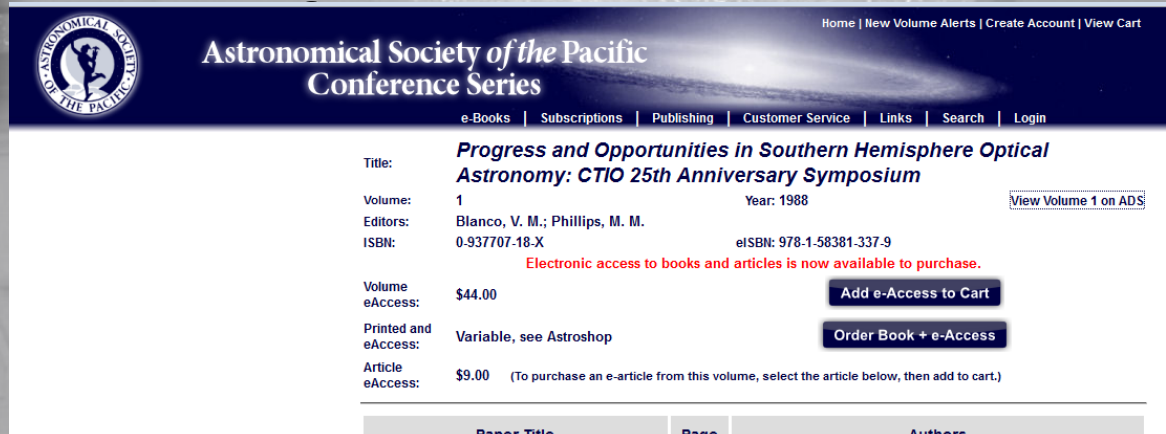


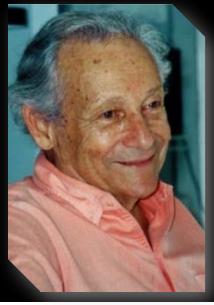
Víctor M. Blanco

25th anniversary symposium--1988

Bill Kunkel, Jim Hesser, Victor Blanco, John Graham, Barry Lasker, Pat Osmer (Malcolm Smith absent)

- Organized by Víctor and Mark Phillips
  - Bears witness to the notable success of Tololo
  - Was the 1st volume in ASP's Conference Series





Victor M. Blanco

Unexpected results of a free beer in Dec. 1967

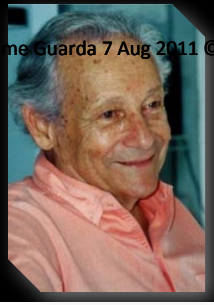
Barry, Victor, Jim
Guanaqueros beach Feb. 1970

Nadja's birthday –
Tololo 06-1969

UCH La Serena 09-1969

Rebecca 18-09-1977

Gillian 18-09-1977

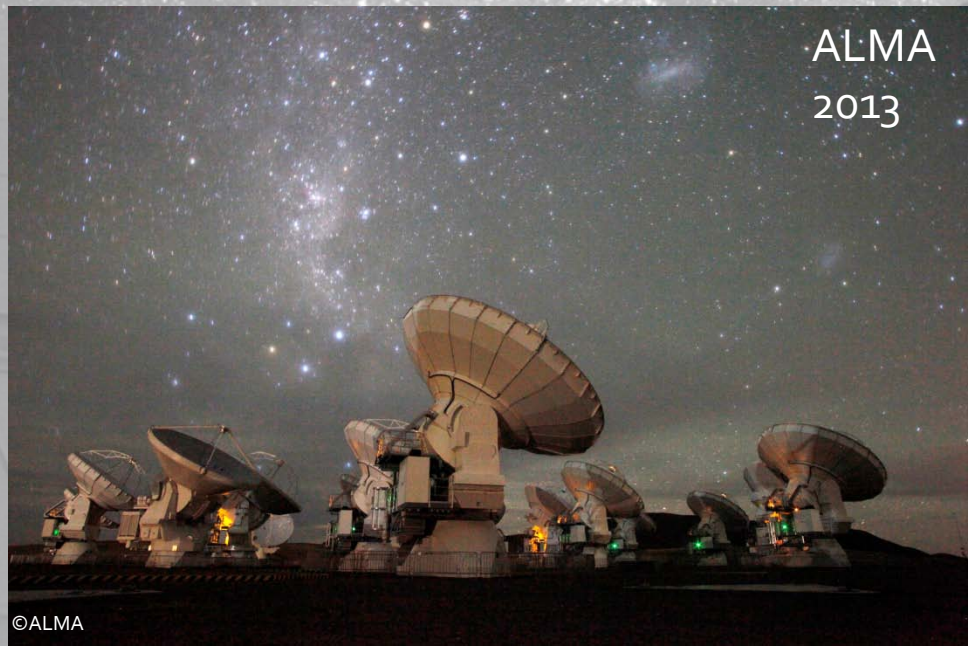


Víctor M. Blanco

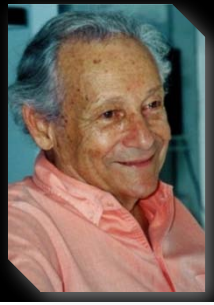
Unexpected results of a free beer in Dec. 1967

La Tirana 07-1976

Father LePaige 07-1976 San Pedro de Atacama

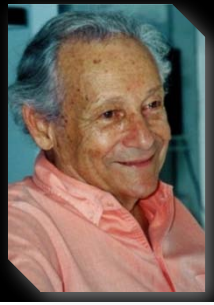


ALMA 2013



Víctor M. Blanco

Condors



Víctor M. Blanco

ZZ Ceti

THE ASTROPHYSICAL JOURNAL, 163:L89–L93, 1971 February 1

HIGH-FREQUENCY STELLAR OSCILLATIONS. VI. R548, A PERIODICALLY VARIABLE WHITE DWARF

BARRY M. LASKER AND JAMES E. HESSER
Observatorio Interamericano de Cerro Tololo, La Serena, Chile
Received 1970 December 4

ABSTRACT

The white dwarf R548 is a periodic variable with a dominant period of 212.864 ± 0.031 sec and a secondary period of 273.0 ± 0.6 sec. The amplitude of the former is 0.01 mag, while that of the latter fluctuates between 0.001 and 0.01 mag on a time scale of $\lesssim$24 hours. Light curves are given for both variations.

This star and the other confirmed periodically variable white dwarfs, HL Tau 76 and G44−32, lie near the lower junction of the DA boundary and the blackbody line in the [$(U - B)$, $(B - V)$]-diagram, but other stars in this region of the two-color plane appear quiescent. The variations of these white dwarfs cannot be readily interpreted as pulsations, and the need for other physical models is discussed.

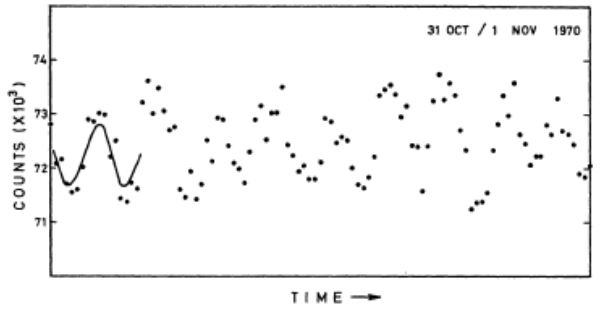


FIG. 1.—A data sample of consecutive 20-sec integrations in white light from the night of 1970 October 31–November 1, which shows the 213-sec variation clearly. For the first 1.5 cycles, an approximate light curve for $T = 213$ sec is sketched. The sky level, which has not been subtracted, was at about 10^4 counts per integration.

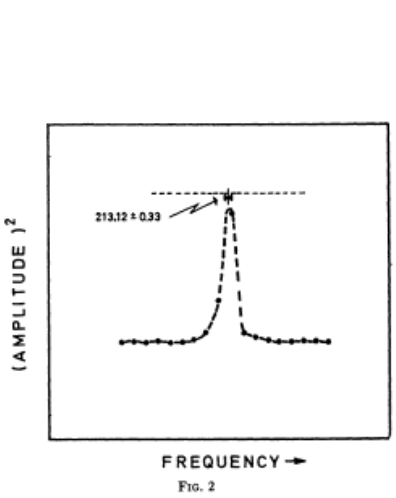


FIG. 2

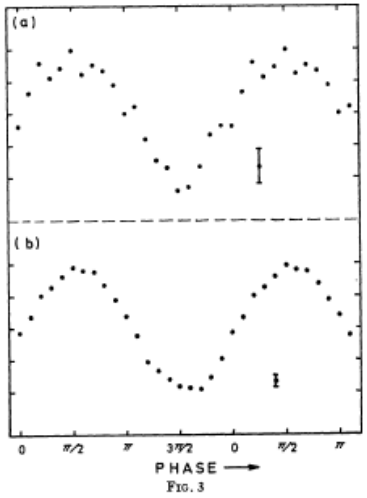
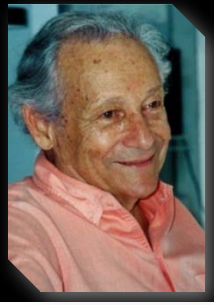


FIG. 3

FIG. 2.—Power spectrum in the vicinity of 213 sec for data from 1970 November 23/24. Dotted line corresponds to the power associated with a 0.01-mag peak variation in light. When present with strength the appearance of the 273-sec peak is similar to that displayed here for the 213-sec variation.

FIG. 3.—(*a*) Light curve for the 273-sec periodicity, generated from the November 1/2 data. (*b*) Light curve for the 213-sec variation generated from the November 23/24 data. Errors shown are 1 σ in each direction, and the amplitudes are given in Table 1.

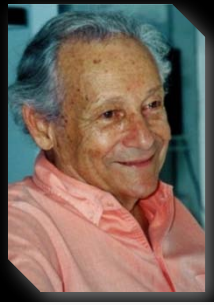


Victor M. Blanco

Final remarks

9-1995: Dedication ceremony

- My career benefitted enormously from experience acquired under Victor's directorship
  - His capacity to:
    - Take risks and difficult decisions
    - See opportunities in rapidly changing circumstances
  - Importance of humanity, of respect and of inclusion in the formation of effective teams
  - Above all, a clear vision of the mission (of the Observatory or ….)



Víctor M. Blanco

Tololo aerial view

NOAO/AURA/NSF