

EXITED STATES & SPONTANEOUS TRANSITIONS

Pieter C. van der Kruit

Pieter C. van der Kruit
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October 18, 2024



Met dank aan:

- ▶ Het **Kapteyn Instituut**.
- ▶ Het **Koninklijk Natuurkundig Genootschap**.
- ▶ Speciaal **Léon Koopmans**, **Martine ter Wal** en het **Kapteyn secretariaat**.
- ▶ **Inga Kamp** en het **KNG bestuur** en **technici**.
- ▶ De **sprekers** en ...





Terschelling symposium 2005 – Challenges symposium 2009 – JCKbio presentatie 2014

- ▶ Eline Tolstoy voor de organisatie en alles eromheen.
- ▶ En het was niet de eerste keer!

Journal of Astronomical History and Heritage, 26(1), 203–251 (2023).

**EXCITED STATES AND SPONTANEOUS TRANSITIONS:
ASTRONOMER, LECTURER, ADMINISTRATOR,
BIOGRAPHER**

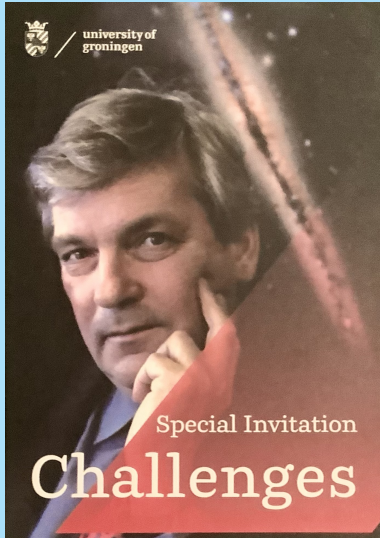
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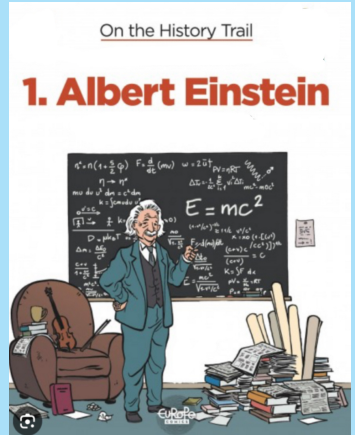
- ▶ Title of this talk same as my invited, **autobiographical article** in the **Journal of Astronomical History and Heritage** in **2023**.
- ▶ This addresses four aspect of my career: **research**, **teaching**, **administration**, **history**.
- ▶ Presentations this afternoon followed same aspects plus **popularisation**, specifically KNG.



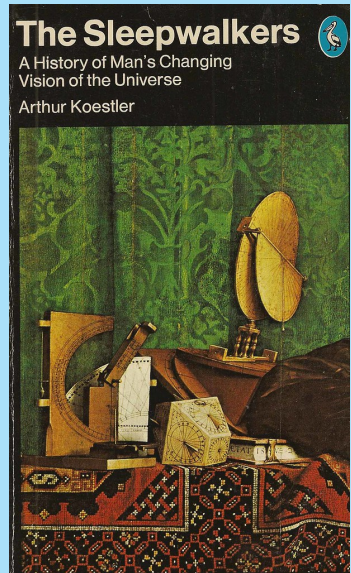
- ▶ Challenges mini-symposium almost exactly 15 years ago (13-10-2009).
- ▶ Focus then was on research and new facilities.
- ▶ Today's topics concerned career challenges.
- ▶ This presentation about my work on the history of astronomy.

History of astronomy

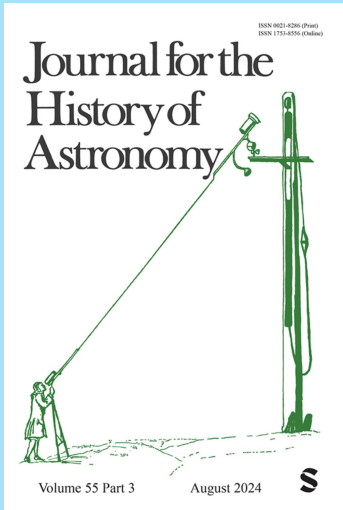
- ▶ But first a brief review of my involvement with history of astronomy.



- ▶ I first read this book in the 1960s; it invoked my deep interest in history of astronomy.
- ▶ I gave my PhD students a copy after their thesis defense.
- ▶ Owen Gingerich showed *Revolutionibus* by Copernicus was widely read.
- ▶ Still very inspiring book.

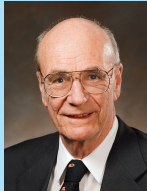
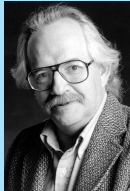


Journals on the history of astronomy.

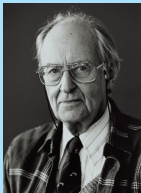


- ▶ Most important publication has originally been the **Journal for the History of Astronomy**.
- ▶ Founded by **Michael Hoskin** in **1970**.
- ▶ **1975** Kapteyn Laboratory library.
- ▶ Later came the **Journal of Astronomical History and Heritage**.
- ▶ Founded in **1998** by John Perdris and Wayne Orchiston.
- ▶ Since **2010** **electronic only** and **Open Access**.

These are my most notable historians of astronomy



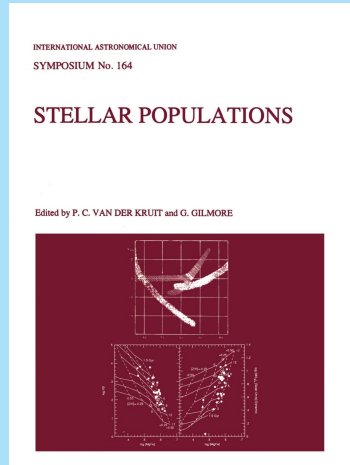
Michael Hoskin, Owen Gingerich, David DeVorkin, Don Osterbrock, Virginia Trimble



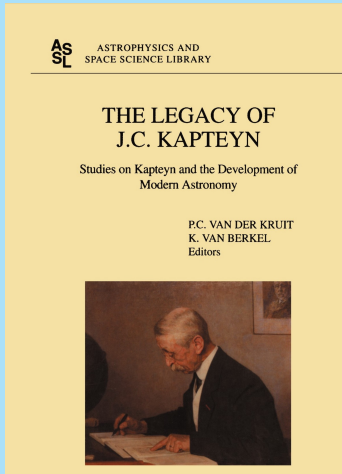
Robert Smith, Adriaan Blaauw, Woody Sullivan, Wayne Orchiston, Ken Kellermann

1994 As part of the IAU General Assembly in Den Haag.

- ▶ With **Gerry Gilmore** I organized a full IAU symposium on **Stellar Populations**.
- ▶ I proposed this because it was the **50-th anniversary** of **Walter Baade's** seminal paper.
- ▶ Half-day **historical session**.
- ▶ Speakers were **Owen Gingerich**, **Don Osterbrock**, **Adriaan Blaauw**. Also **Nancy Roman**.
- ▶ Proceedings quickly sold out, reprinted in **1999** in **Astrophysics and Space Science** with update-notes.



1999 In conjunction with 385th anniversary of the RUG.



- ▶ Klaas van Berkel proposed a three-day 'Legacy' symposium on Jacobus C. Kapteyn.
- ▶ Historians from my gallery that were speakers: Adriaan Blaauw, David DeVorkin, Robert Smith, Owen Gingerich and Woody Sullivan.
- ▶ Adriaan Blaauw en David DeVorkin had suggested I write a biography of Kapteyn after retirement.

2010–2020 Biographies (books).



- ▶ First **Kapteyn** in (expensive) **academic** and 'general audience' version in Dutch.
- ▶ Then **Oort** followed in the same two versions.
- ▶ 'General audience' versions translated into **English**.

2021–2024 Biographies (articles) and other papers.

Journal of Astronomical History and Heritage, 24(2), 521–543 (2021).

**KARL SCHWARZSCHILD, ANNIE J. CANNON AND
CORNELIS EASTON: THE HONORARY PhDs OF
JACOBUS C. KAPTEYN**

Journal of Astronomical History and Heritage, 25(3), 341–438 (2022).

**PIETER JOHANNES VAN RHIJN, KAPTEYN'S ASTRONOMICAL
LABORATORY AND THE PLAN OF SELECTED AREAS**

Journal of Astronomical History and Heritage, 26(1), 203–251 (2023).

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Journal of Astronomical History and Heritage, 27(1), 135–199 (2024).

PANNEKOEK'S GALAXY

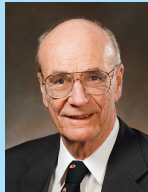
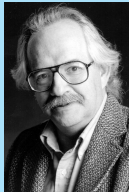
Journal of Astronomical History and Heritage, 27(3), 559–578 (2024).

JAN VETH'S PAINTINGS OF JACOBUS KAPTEYN

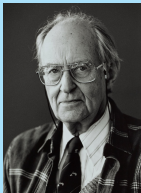
- ▶ Kapteyn's doctores **honoris causa**.
- ▶ Biographical **van Rhijn**.
- ▶ Autobiographical.
- ▶ Biographical **Pannekoek** (Galactic).
- ▶ Kapteyn paintings by **Jan Veth**.

- An excellent alternative to a biography is a longer journal article (van Rhijn 98p., Pannekoek 65p.)

Back to the prominent historians of astronomy



Michael Hoskin, Owen Gingerich, David DeVorkin, Don Osterbrock, Virginia Trimble



Robert Smith, Adriaan Blaauw, Woody Sullivan, Wayne Orchiston, Ken Kellermann

- ▶ Most contributed to my symposia.
- ▶ I have known **Virginia Trimble** since **1980** or thereabouts.
- ▶ **Virginia** one of the speakers at the KNG-200 symposium in **2001**.
- ▶ **Woody Sullivan** had been postdoc in Groningen **early 1970s**; **Ken Kellermann** visited Leiden **late 1960s**.
- ▶ **Michael Hoskin** (long ago) and **Wayne Orchiston** gave colloquia in Groningen.



Most started working on history of astronomy with at least a Bachelor or equivalent academic degree in astronomy.

- ▶ Owen Gingerich, Don Osterbrock, Adriaan Blaauw and Ken Kellermann had successful careers in astronomical research before entering history.
- ▶ Virginia Trimble, Woody Sullivan combined important historical contributions with a successful career in astronomical research.
- ▶ David DeVorkin and Wayne Orchiston studied astronomy and decided not to pursue a research career in astronomy and turned to history.
- ▶ Michael Hoskin and Robert Smith did not study astronomy, but had a Bachelor or comparable degree in mathematics!
- ▶ Among this set of ten historians of astronomy there is no 'real' historian.

Two international bodies.

- ▶ **2018–2024** I have been a member of the **Organizing Committee of IAU Commission C3** (History of Astronomy).
- ▶ **Since 2022** I have been a member of the **Editorial Board** for the **Journal for Astronomical History and Heritage**.

Distribution among the ‘Western’ members over these categories.

	IAU-C3	EB-JAHH
No academic degree in astronomy	6	4
Astronomy degree, then career as historian	3	8
Astronomy and history research throughout	3	5
Astronomy research, history towards retirement	2	6
	14/18	23/38

What do historians think of astronomers turned historians?

studium ■ Tijdschrift voor Wetenschaps- en Universiteitsgeschiedenis
Revue d'Histoire des Sciences et des Universités

Vol. 12, no. 1–3 (2019) 134–138 | ISSN: 1876-9055 | e-ISSN: 2212-7283

Essay Review: Astronomische biografieën

DAVID BANEKE*

- **David Baneke** reviews of **four biografies**, incl. those I wrote on Kapteyn and Oort.

- ▶ *‘De biografieën [...] komen voort uit bewondering. Ze zijn geschreven door gepensioneerde natuurwetenschappers met een passie voor de geschiedenis van een vak. Dat is een groep waar door professionele wetenschapshistorici nog wel eens op wordt neergekeken. Ten onrechte.’*
- ▶ *‘Natuurlijk leggen ze meer nadruk op het wetenschappelijke werk van hun hoofdpersonen dan op de historische context of historiografische inbedding. Maar wat er wél staat, kan bijzonder nuttig zijn, al was het maar vanwege het zorgvuldige archiefonderzoek. Ik ben er zelf in elk geval altijd blij mee.’*

Don Osterbrock when receiving the LeRoy Doggett Prize¹

THE VIEW FROM THE OBSERVATORY:
HISTORY IS TOO IMPORTANT TO BE LEFT
TO THE HISTORIANS

DONALD E. OSTERBROCK

- ▶ Don Osterbrock received this prize from History of Astronomy Division of the American Astronomical Society in 2002.
- ▶ For individuals who have significantly influenced the field of the history of astronomy by a career-long effort.

¹In: Organizations and strategies in astronomy III. André Heck (ed.), 201-215, 2002.

- ▶ Don said: *'I believe it helps anyone who wants to understand the history of astronomy to know and understand astronomy.'*
- ▶ And: *'My advantage in writing history of astronomy: I know the territory'.*
- ▶ *'I can sympathize with their desire that a person should not have to understand science to write about its history, but I am afraid that in my opinion you do. I have seen some bad errors in published history of science books which resulted from their authors' misunderstanding science.'*

HISTORY IS TOO IMPORTANT TO BE LEFT TO THE HISTORIANS

DAVID H. DEVORKIN

- ▶ DeVorkin's essay² from 2013 is also a plea to astronomers to protect their archives, etc.
- ▶ David: 'Historians, including historians of science, generally craft contextual arguments, [...] a point of view, a perspective, or a historiographical argument. [...] An excellent example is what historians call the center-periphery view.' (e.g. Russell, Saha).

²In: Organizations, people and strategies Vol.2, André Heck (ed.), 417-440 (2013).

Donald Osterbrock: *The present trend in academic history of science is toward "deconstruction" (briefly, how wrong everyone was and is but us), sociology, and concentration on the collective of all*



workers in the field, rather than on 'great' men and women. None of these trends seem very interesting to readers who are scientists and know the field themselves.

David DeVorkin: *Certainly it helps to have a certain familiarity with astronomy in order to intelligently frame*

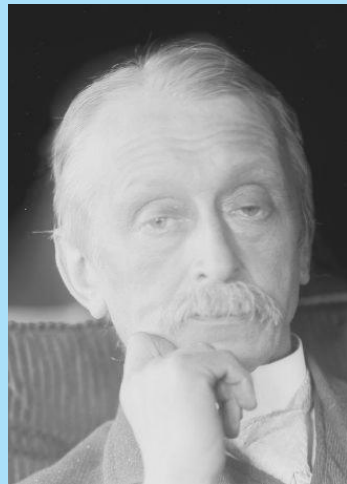
questions that can be answered by studying its history. But it also requires a sensitivity to, and facility with, the broader history that encompasses astronomy, social and cultural.

So how would biographies fit in?

- ▶ The 'Great Men Theory' in history states that the developments and evolution of science can be understood by examining the accomplishments of key-figures and leaders.
- ▶ This involved pretty much the area of **biographies** and maybe this would be the part ideally suited to scientists with an interest in history.
- ▶ So this would be **nice niche** for astronomers that want to contribute to history after a career in research.
- ▶ It is also a way of telling the general public (and not limited to the Netherlands) about our **great examples in Dutch astronomy**.

Kapteyn preprint series

- ▶ Sometime around 1990 we started at the Kapteyn Astronomical Laboratory a preprint series.
- ▶ For the cover we chose (I think) this picture of Kapteyn.
- ▶ Some us were discretely told by a few (American) colleagues that this was inappropriate.
- ▶ After all, Kapteyn had been wrong in all or almost all respects.
- ▶ We gave in and I now regret that.



Owen Gingerich 1999 Kapteyn Symposium.

KAPTEYN, SHAPLEY, AND THEIR UNIVERSES

Owen Gingerich
*Harvard-Smithsonian Center for Astrophysics,
60 Garden Street, Cambridge, Mass. 02138, U.S.A.*
ginger@cfa.harvard.edu

- ▶ 'For American college students studying introductory astronomy, the chances are about even that they will encounter the name of Kapteyn. The distinguished astronomer of Groningen is mentioned in seven of ten recent textbooks that I examined, always associated with the Kapteyn Universe, and invariably as a foil for Shapley's larger and more modern conception of the Milky Way Galaxy. While the presentation in American textbooks places Kapteyn and Shapley as intellectual rivals and their systems as totally antithetical, the historical reality is much different.'
- ▶ A good English-language biography of Kapteyn would not have mended this, but it might have helped.

Senior astronomers in the Netherlands born 1921 or before.

Galactic astronomy (incl. astrometry)

Name	Years	Proms	Gold RAS	Bruce ASP	BEA cols	Biography NL	Eng
Frederik Kaiser	1808–1872				4.5	book	
Hendrik vdS Bakhuyzen	1838–1923	1			2		
Ernst vdS Bakhuyzen	1848–1918	1					
Jacobus Kapteyn	1851–1922	8+5	X	X	5.5		
Cornelis Easton	1864–1929					auto	
Willem de Sitter	1872–1934	6	X	X	3.5	book	book
Anton Pannekoek	1873–1960		X		4.5	auto	conf.
Pieter van Rhijn	1886–1960	8			2.5		
Coert Hins	1890–1951						
Jan Oort	1900–1992	14	X	X	4		
Gijs van Herk	1907–1999						
Lucas Plaut	1910–1984	1					chapt.
Adriaan Blaauw	1914–2010	3		X	2		
Henk van de Hulst	1918–2000	25		X		book	

Without my contributions.

Senior astronomers in the Netherlands born 1921 or before.

Stellar astronomy

Name	Years	Proms	Gold RAS	Bruce ASP	BEA cols	Biography NL	Eng
Jean Oudemans	1827–1906						
Ejnar Hertzsprung	1873–1967	8	X	X	2		German
Albert Nijland	1868–1936	5					
Anton Pannekoek	1873–1960	4		X	4.5	auto	conf.
Leonard Ornstein	1880–1941	3					
Jan Woltjer	1892–1946						
Marcel Minnaert	1893–1970	12	X	X	2.5	book	
Herman Zanstra	1894–1972	2	X				
Pieter Oosterhoff	1904–1978	4					
Jaap Houtgast	1909–1982						
Kees de Jager	1921–2021	15	X			auto	

Senior astronomers in the Netherlands born 1921 or before.

Galactic astronomy

Name	Years	Proms	Gold RAS	Bruce ASP	BEA cols	Biography NL	Eng
Frederik Kaiser	1808–1872				4.5	book	
Hendrik vdS Bakhuyzen	1838–1923	1			2		
Ernst vdS Bakhuyzen	1848–1918	1					
Jacobus Kapteyn	1851–1922	8+5	X	X	5.5	book	book
Cornelis Easton	1864–1929					auto	(article)
Willem de Sitter	1872–1934	6	X	X	3.5	book	book
Anton Pannekoek	1873–1960		X		4.5	auto	article
Pieter van Rhijn	1886–1960	8			2.5		article
Coert Hins	1890–1951						
Jan Oort	1900–1992	14	X	X	4	book	book
Gijs van Herk	1907–1999						
Lucas Plaut	1910–1984	1					chapt.
Adriaan Blaauw	1914–2010	3		X	2		
Henk van de Hulst	1918–2000	25		X		book	

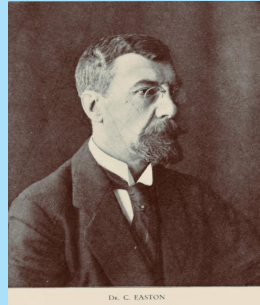
This book fills a much needed gap.
Thank you for sending me a copy of your book. I'll waste no time reading it.
Moses Hadas, (1900–1966), American classical scholar.

Conclusion:

Professional astronomers can contribute significantly and often essentially to documenting the history and development of our understanding of the Universe .

In my case, biographical studies, in the form of books or (long) papers, of influential galactic astronomers, particularly in English, filled an important gap in the available literature.

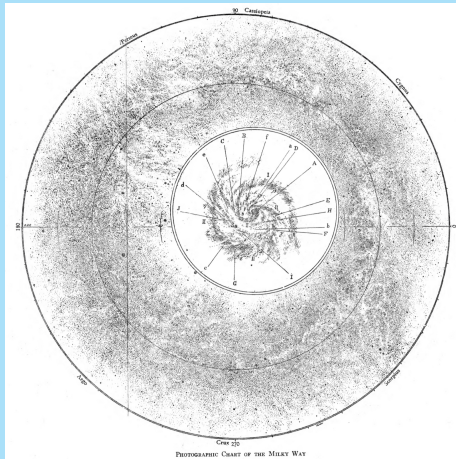
Cornelis Easton



- ▶ Cornelis Easton (1864–1929).
- ▶ Studied for teacher of French, but became a newspaper editor.
- ▶ Already as a teenager Easton was an amateur astronomer.
- ▶ Easton was a keen observer of the Milky Way, drawing isophotes maps from naked-eye observations.

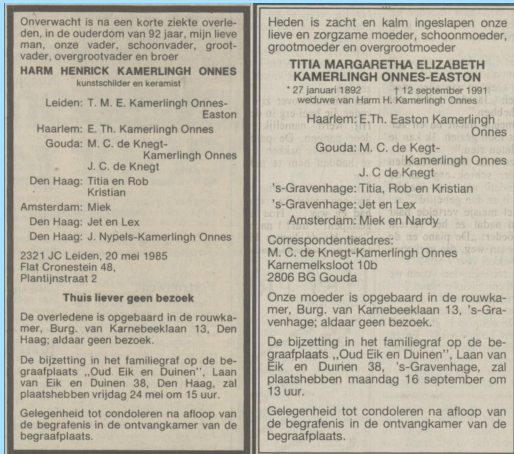


- ▶ He became convinced the Sidereal System had **spiral structure**, like M51.
- ▶ Published this in the **Astrophysical Journal** in **1900** based on visual data and in **1913** using photographic data.
- ▶ Easton was promoted to **Doctor honoris causa** with Kapteyn in **1903**.

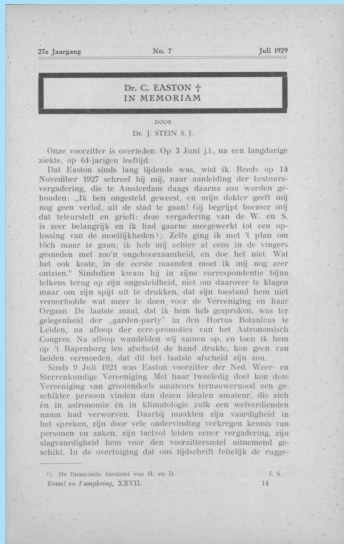




- ▶ I had downloaded scans of an **autobiographical notebook**.
- ▶ I had forgotten this. It had been in **2012**, but that site had gone.
- ▶ Remark in an 'astro-blog' from **2014** of one **Rob Vlaardingbroek**.
- ▶ His wife was a **great-granddaughter** of Easton and had it in her possession.
- ▶ I set out to **contact this person** to obtain permission to publish it in English translation.



- ▶ Genealogy sites:
Easton's daughter **Titia** married **Harm Kamerlingh Onnes**.
- ▶ Using **delpher.com** I found **obituaries** of Titia and Harm.
- ▶ There is a great-granddaughter **Titia** married to a **Rob**.
- ▶ There is a great-great-grandson **Kristian** (**Vlaardingerbroek**).
- ▶ I located him through **LinkedIn**.



- ▶ The notebook contained almost 200 pages.
- ▶ But has it ever been used before?
- ▶ By Johan Stein, S.J. in an *Hemel & Dampkring in memoriam* article.
- ▶ I am transcribing it and will translate it into English.
- ▶ This will hopefully be another biographical article in JAHH.



THANK YOU
for your
ATTENTION!