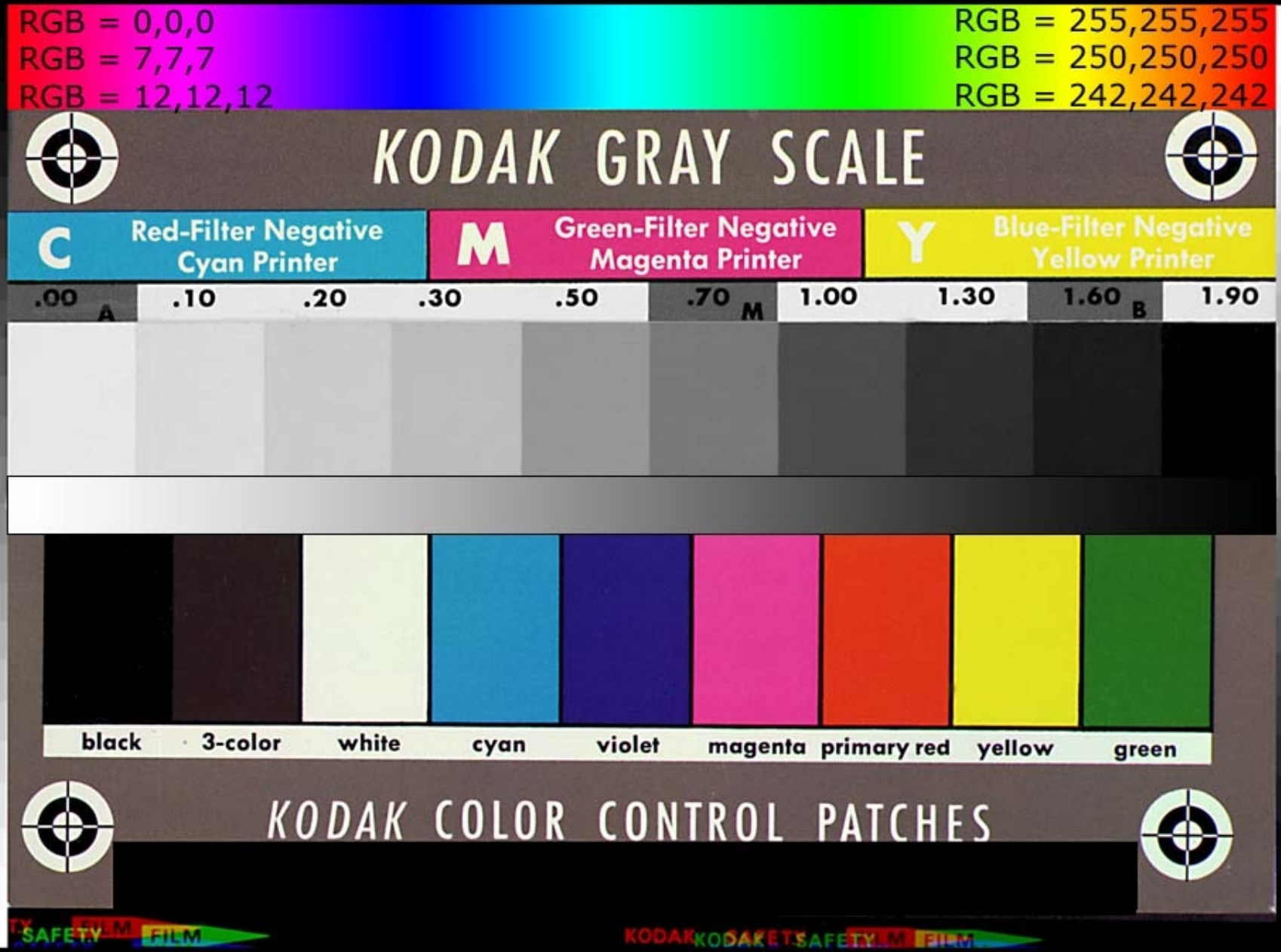
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KODAK GRAY SCALE
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.30
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.70 M
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1.30
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black
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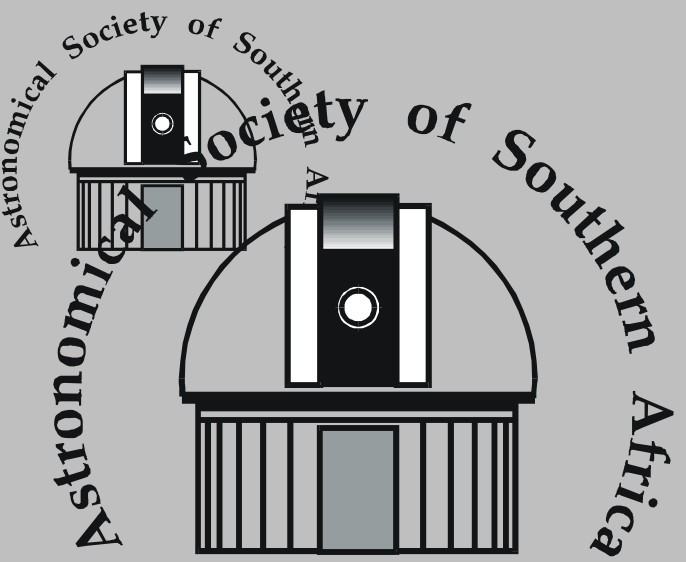
KODAK COLOR CONTROL PATCHES
SAFETY FILM
KODAK SAFETY FILM



History and Current Status of Education, Outreach and Communication

Case Rijsdijk

ASSA/SAIP

particles@mweb.co.za
case@saao.ac.za

Overview

- Background
- Recent History
- Outreach
- Communication
- Education
- Future

Early times

There was very little prior to the last half of the 20th Century

Public interest was fairly low unless there was an eclipse or comet visible

Media would pick this up; interview an astronomer?

Of course events like Halley's Comet would generate a great deal of coverage.

Generally speaking astronomy was a low-key activity for the general public

Einstein's GR "proof" and Hubble's expanding U did make the media, but

Global Beginnings

The “Space Race” formed part of the Cold War of the 1950s

It was the launch of Sputnik in 1957 that generated a huge increase in public awareness

It also led to a huge awakening in the US education system

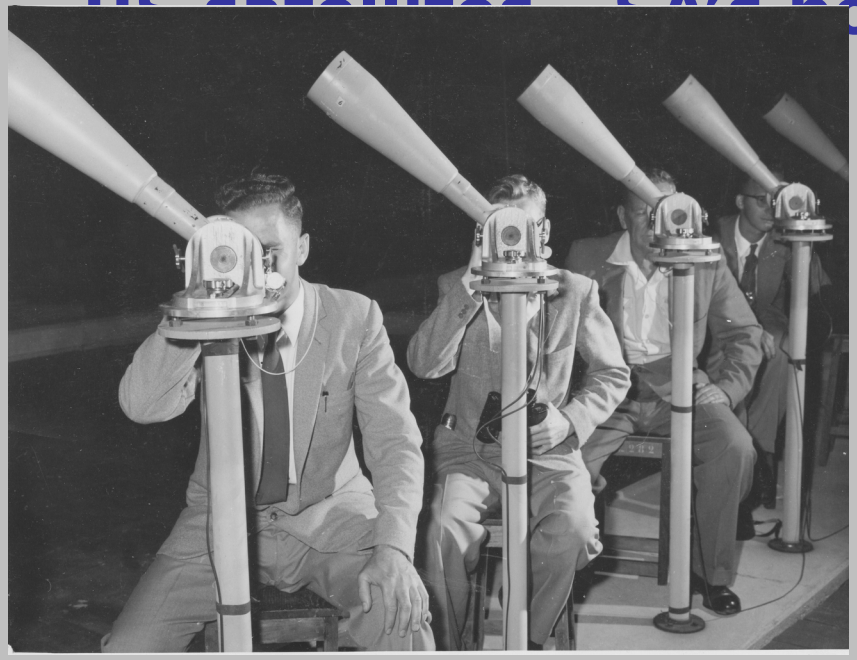
The realization that the US had to play catch-up

The eventual successful launch of Explorer 1 led to the formation of NASA in 1958

SA Spin offs

It started the Moonwatch programme in SA which brought in a substantial public involvement and interest – covered extensively in MNASSA

Many amateurs then got involv



Moon Landings

Following the Moon landings there was an exponential growth of Public interest

The discovery of a bright comet by John Bennett from Pretoria on 28 December, 1969 led to an increase in SA media interest.

Further Moon landings, astronauts living in space – Skylab, David Malin's full colour images and the launch of HST, the ISS and the Mars robots

Did a huge amount to improve the image of science, and that of astronomy in particular

Public Money

But along with all this came the awareness that most of astronomy, and science, was funded by public money

The public, and the media, were beginning to raise questions about this

The science community realized and began to respond pointing out that the serendipitous spin-offs made a substantial contribution to technology

But they also realized the need to

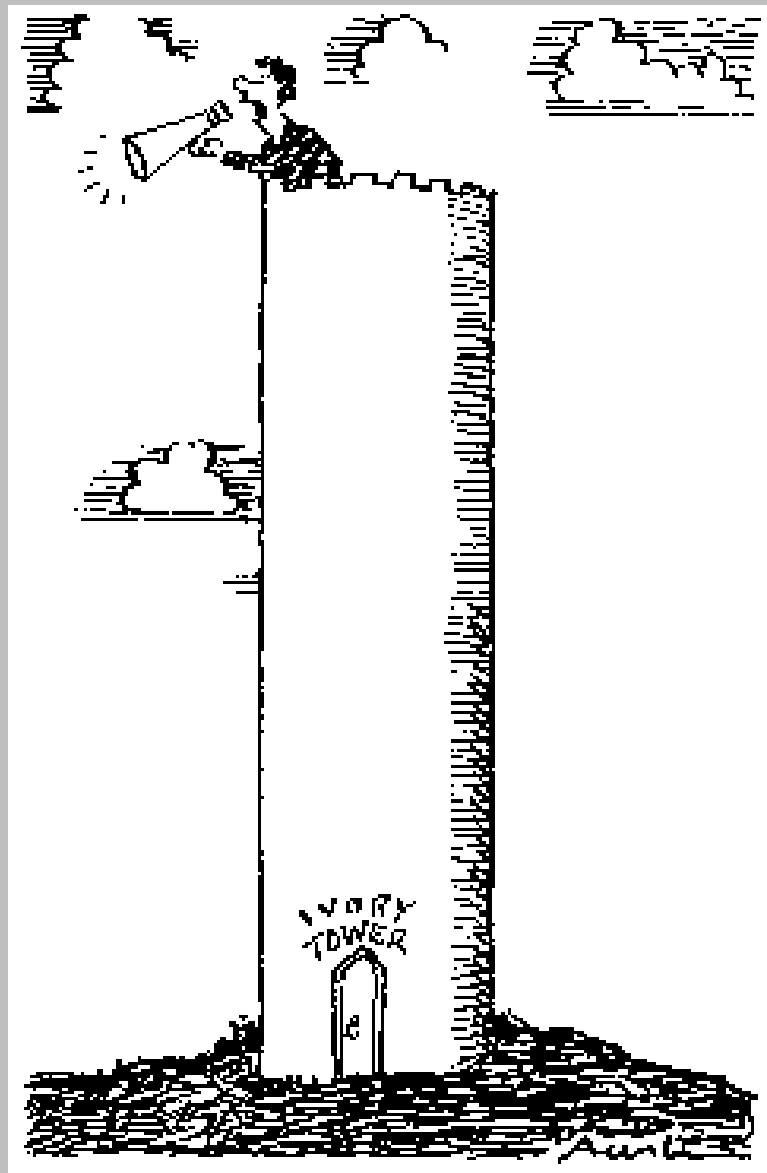
Ivory Towers

. . . the need to move out of their Ivory Towers

Prigorine was one of the early initiators

"One of the problems of our time is to overcome attitudes that tend to justify and reinforce the isolation of the scientific community. We must open new channels of communication between science and society"

Ilya Prigorine
Nobel Laureate 1977



Reaching out

As was Dyson

"If, in fifteen minutes, you can't explain to the man-in-the-street, what it is you are doing, then you yourself don't know!"

Freeman Dyson
Institute of Advanced Studies, Princeton

This raised awareness of the need to reach out to the public – Outreach Projects were one route

1996 White Paper

With the advent of Democracy, SA was aware of the importance science and technology for a young and developing country and economy

Scientific endeavour is not purely utilitarian in its objectives and has important associated cultural and social values. Not to offer 'flagship' sciences (such as physics and astronomy) would be to take a negative view of our future - the view that we are a second class nation, chained forever to the treadmill of feeding and clothing ourselves

The beginning

We weren't the innovators of these issues, we did catch up and in several ways became leaders, as we'll see

Prof. Phillip Tobias delivered a brilliant lecture in the Rhodes University Council Chamber

At end, the then director of DACST, Roger Jardine, said that while SA could not afford to fund all the sciences, but that it could, and would, support those niche areas where SA were already leaders: namely looking up and look down

ie. Astronomy and Palaeontology

YEAST

SA govt. was quick to respond with two major projects, SALT and SA's First Year of Science and Technology, YEAST

A substantial part of YEAST was to promote astronomy in SA; "Friends with the Universe" project

Starbus
Posters
Bringing out prominent speakers
Further development of resources
Distribution of Data Projectors

Starbus Project

The aim here was to take “Astronomy to the People”

Equipped with many of the SEI developed resources, laptop, projector, telescope

Visited mainly the Western, Northern and Eastern Cape

Highly successful and now copied in many parts of the world

Sadly about a year after YEAST the project ended due to a lack of funding, but the Starbus was still used for outreach projects.

Starbus

Taking astronomy to the people

Posters

A series of 10 were produced, of which the, Starlore of Southern Africa, is still being distributed.

23 000 of each were distributed to schools throughout SA

Speakers

These included:

Prof. Roger Penrose
Prof. John Barrow
David Malin

from overseas and several more from around South Africa

David Malin travelled through SA extensively

Resources

These were primarily from HartRAO and the SAAO's SEI project and I will discuss that later under Education

Others that can be used: for example for the 1993 solar eclipse, the SAAO liaised with the Cape Argus to produce an illustrated centrefold – they kindly had an over-print run of about 5 000 which were then distributed to local schools

Data Projectors

At that time these were very expensive, R45 000, but YEAST managed to acquire 6 for distribution to the then National Facilities and two Universities

Here they contributed significantly to the public communication and simple Planetaria programmes that were available for desktop/laptop computers.

Continued Outreach

Even before YEAST there had already been a significant increase outreach activity by:

HartRAO, Bloemfontein and SAAO as well as the ASSA's activities at its centres around SA

There used to be a major Open Night in Sutherland, often attended by up to 400 visitors

These were eventually ended when the Observatories themselves had more frequent Open Nights, and the Sutherland Visitor centre was opened

Which included a facility for night-time


SAAO
VISITOR CENTRE
AND
RECEPTION
SALT

Current status

The VC needs up-dating and maintenance and a proper narrative needs to be developed but it still serves an essential role for visitors

But up-grades and new developments are being planned

Eclipses

The eclipses of 2000 and 2001 led to a project of making solar viewers using the unemployed and disabled in Sutherland.

Stamped out printed frames were designed, material imported from the UK ands a production line was set-up producing many tens of thousands of viewers

They were the cheapest (and best?) solar viewers and but the project was not sustained after the events were over and sadly died; it should have become a minor industry for Sutherland

Visits to Sutherland

Astroquiz winners visit Sutherland

Visits to MeerKAT

ASSA members visit MeerKAT – future site for SKA

Other Activities

All the astronomical facilities attended the National Science Festival, Scifest, in Grahamstown since its opening in 1997 and made regular contributions

Recently of course SKA's attendance added substantially to these efforts

Several Centres got SAASTA funding to participate in the National Science Week which are spin-offs from YEAST

STARTEC

STate of ARt Telescope Education Collaboration. An international collaboration of the Education and Outreach units of all the major Observatories around the world.

Formed by the SAAO and McDonald Observatory, Texas in February 2001 at the SAAO with:

Gran Telescopio Canarias,VLA, Gemini, VLT, Arecibo, HST, Jodrell Bank, HET and SALT

Second meeting at Arecibo

ScopeX

The JHB centre of the ASSA has an active Amateur Telescope Making, ATM, group, and in 2002 decided to hold an Expo of their efforts

This then grew in popularity and became ScopeX as an annual exposition.

Now funded by SAASTA it attracts several thousand visitors and has gone beyond original ATM activities

Mobile Planetarium

There are several in use around SA

Scifest, ScopeX and SAASTA use them

JHB Observatory

Whilst the main telescope, the 26” refractor is no longer a working instrument, it still plays a significant role during Open Nights

This is now run/managed by SAASTA and is home for the JHB ASSA Centre.

There are frequent Open Nights and other activities.

Special Staff

In line with overseas trends, SA Observatories began to appoint staff to look after the media, education and outreach

All major projects now budget for this

There is a substantial collaboration between the Observatories

There are now educators and communicators at most facilities, who are making a significant contribution to raising awareness of astronomy amongst the public

Communication then ...

Traditionally queries from the media and the public were primarily asked of the Planetaria,

There were initially just 2 – one in WITS and the other in the Iziko Museum in Cape Town, which has recently undergone a major up-grade to become one of the top planetaria/multi-media centre in the world

Recently another has been built in Bloemfontein. It is also fully digital planetarium and Prof Hoffmann will cover these.

Communication now...

But the advent of specialized staff at facilities, there are better links with the media, press releases and interviews are more common now.

Members of the ASSA also handle a number of queries from the public, write regular columns for the print media and also have regular radio slots

The issue of using social media is addressed at the ASSA Symposium – obviously a powerful network for communication.

Science Education Initiative

This was started at the SAAO in 1993, the under pinning philosophy being that astronomy was a “warm fuzzy” science

It countered the negative view of science

So that astronomy could be used as vehicle to get youngsters interested in Science

To this end an old store-room was converted into the Science Education Resources Centre

Small groups of learners workshopped newly developed resources in the Centre to see if they worked!

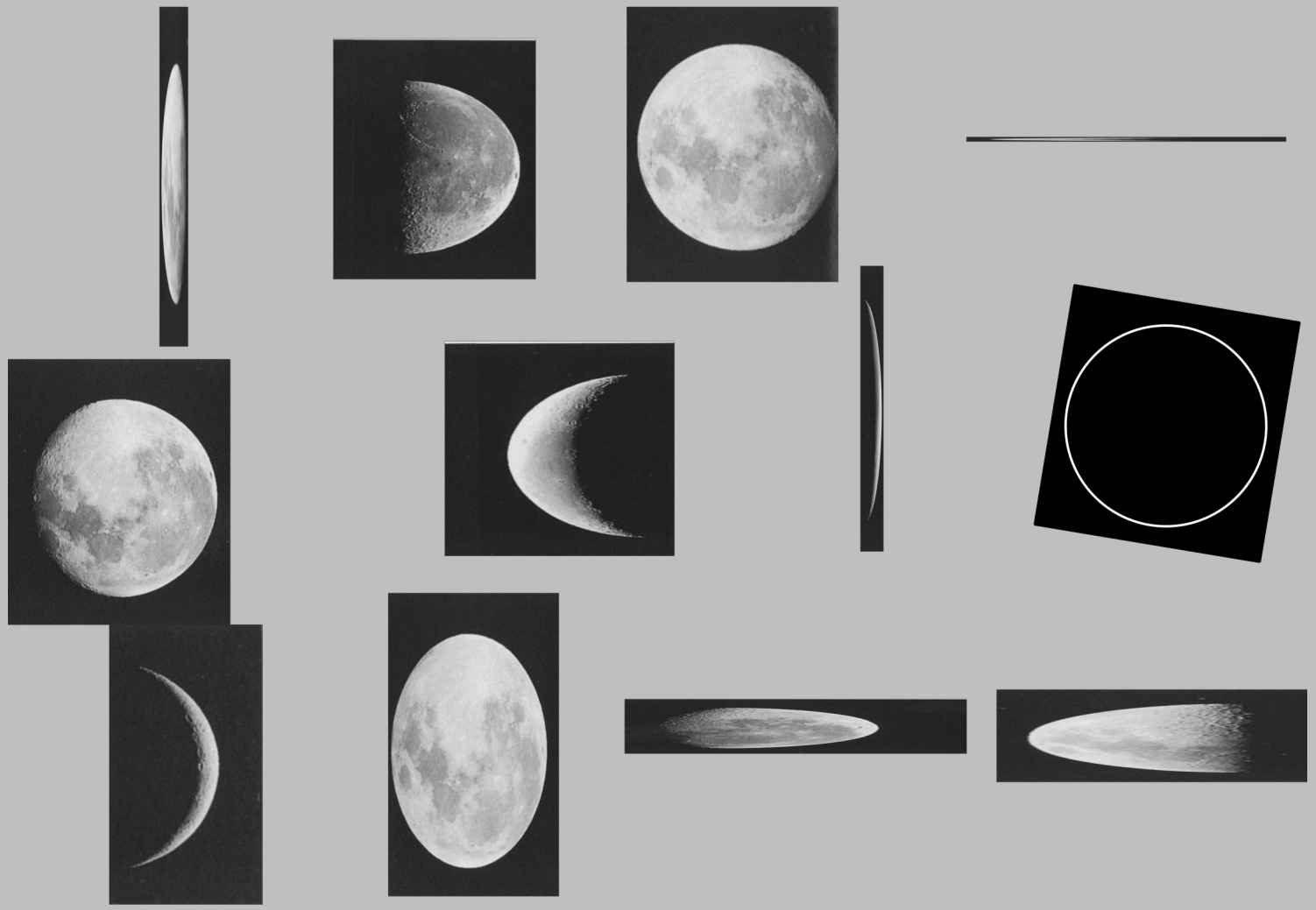
Official Opening

Gravity simulation

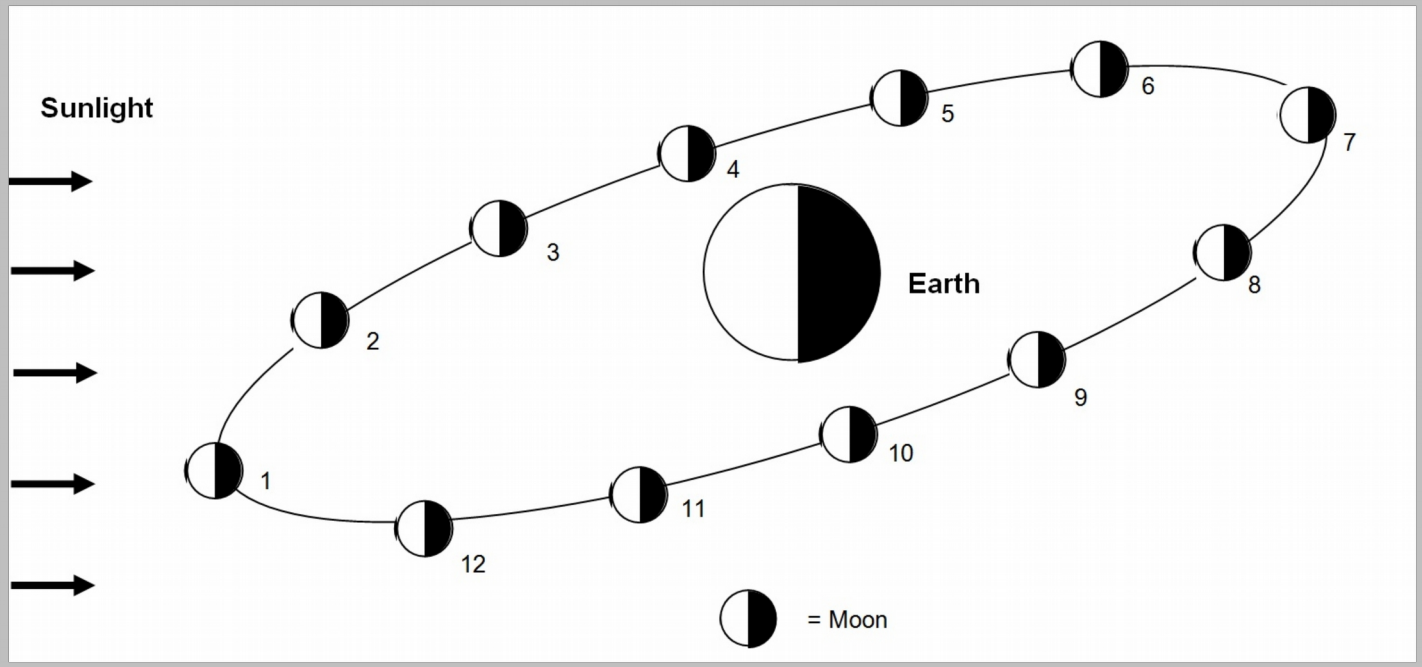
Galileo Telescope?

Showing phases at HartRAO

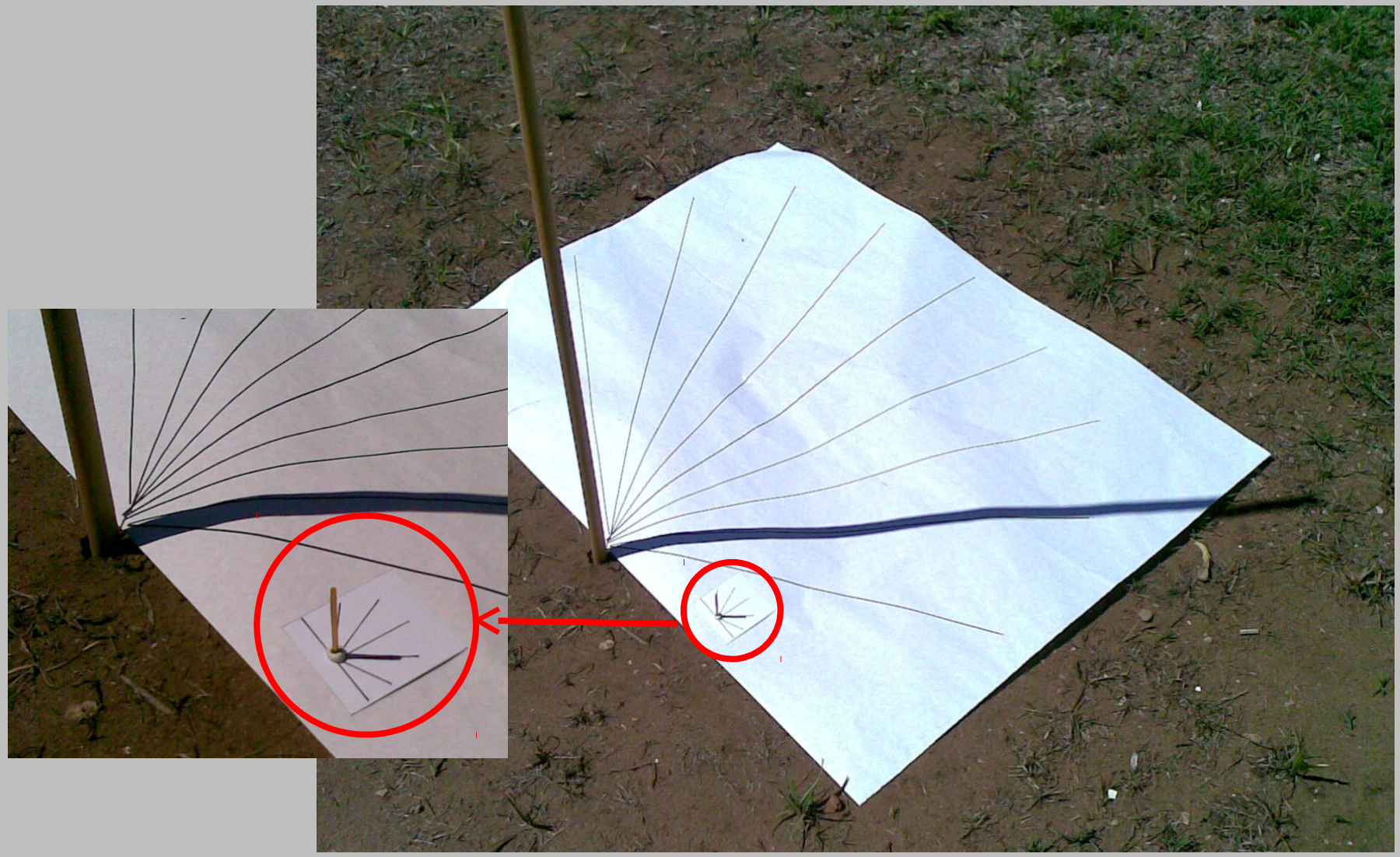
Moon puzzle



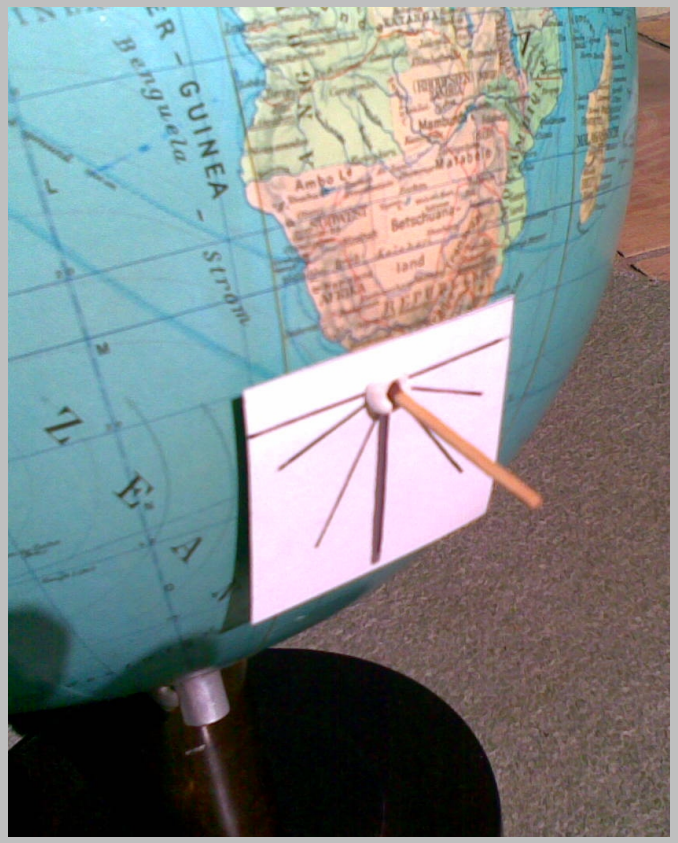
Answers



Shadow sticks



Mini shadow sticks



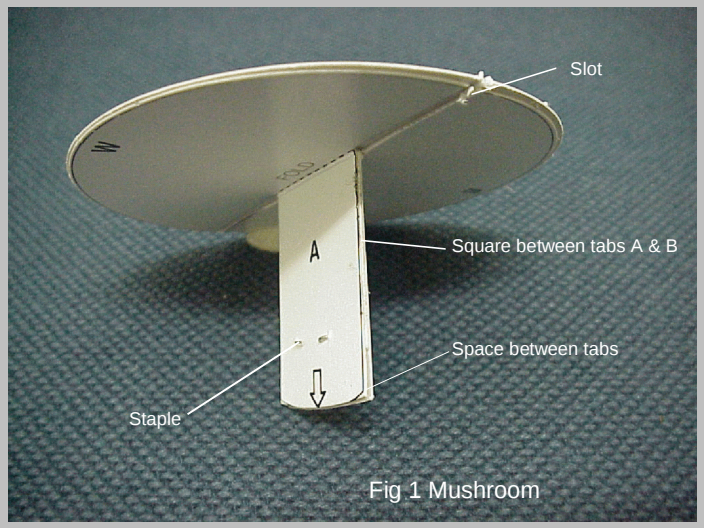
Time zones

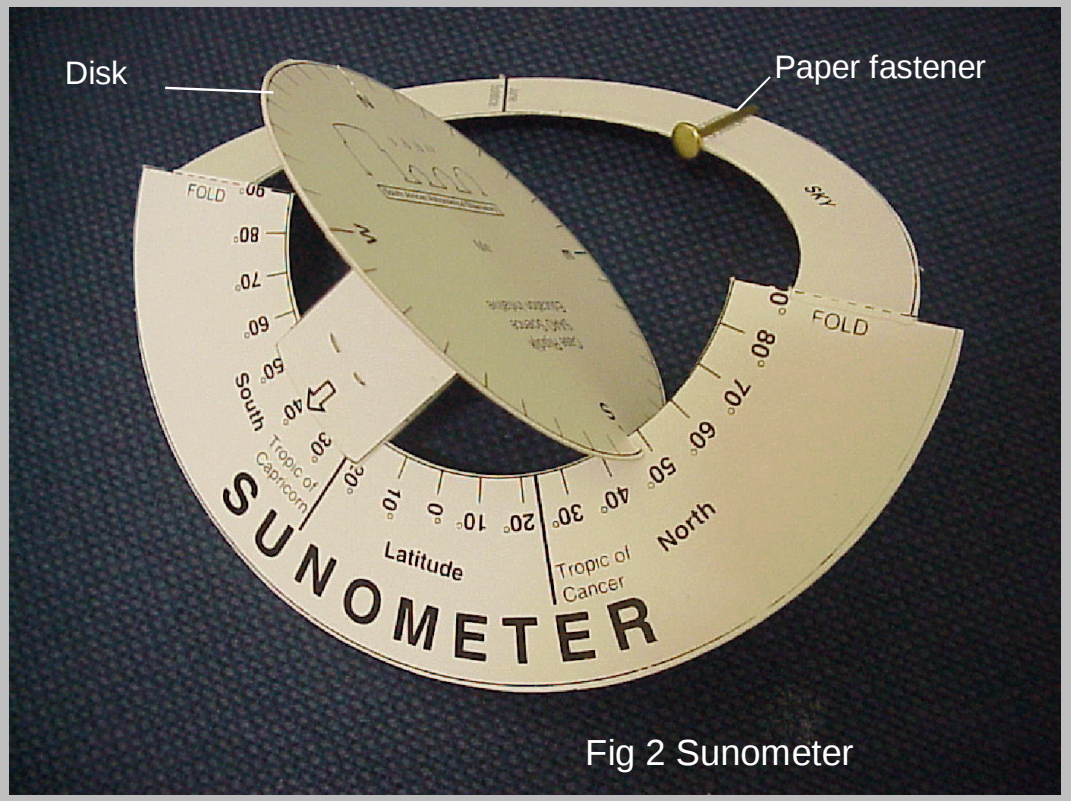
One can see how these time differences can occur

The magic is when the globe is turned round

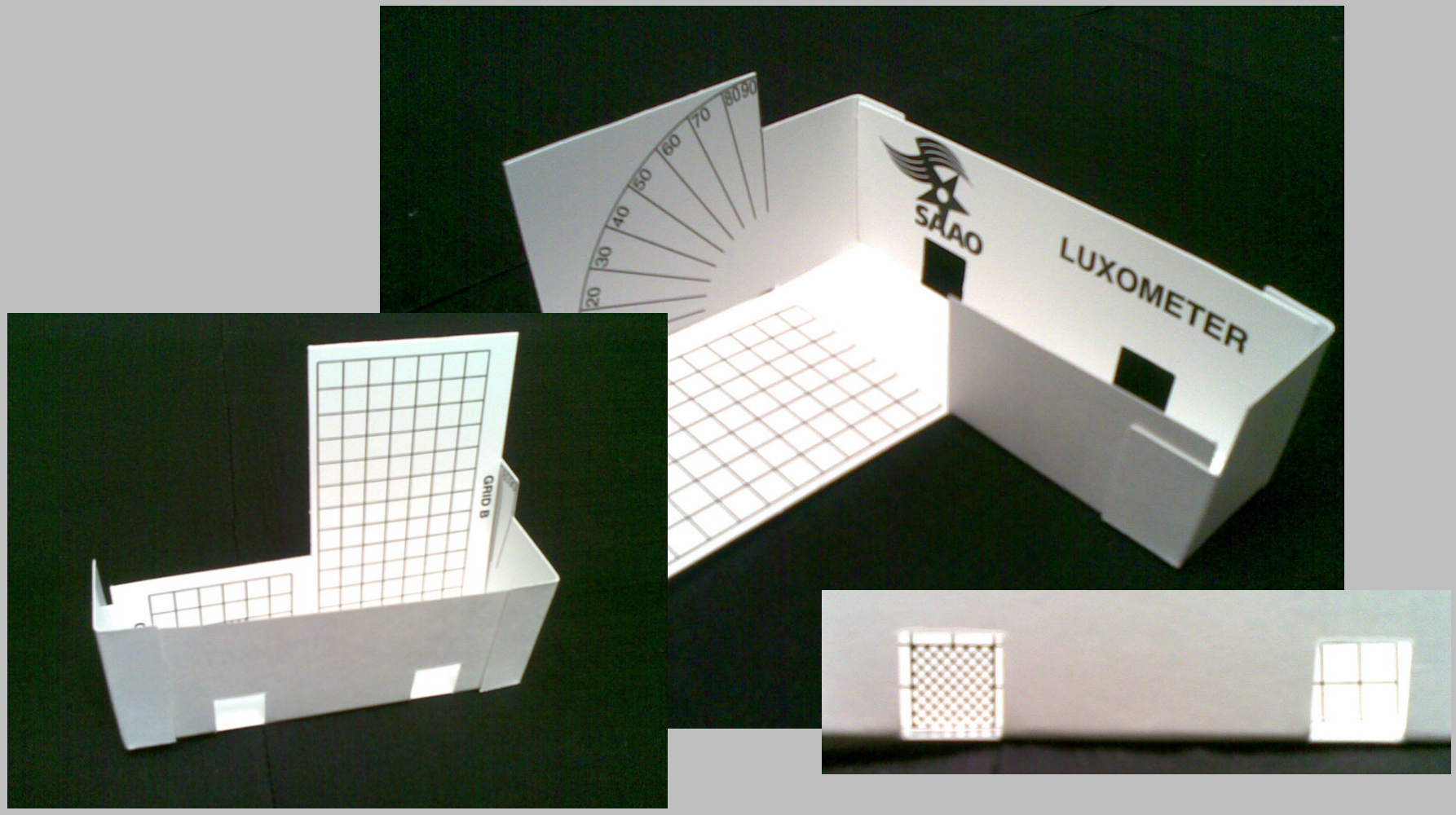
The shadows move, showing that the Sun's apparent movement across the sky is because the Earth is turning

Sunometer


Slot
Square between tabs A & B
Space between tabs
Staple
A
Fig 1 Mushroom


Disk
Paper fastener
FOLD
SKY
South
Tropic of Capricorn
Latitude
Tropic of Cancer
North
SUNOMETER
Fig 2 Sunometer

Luxometer



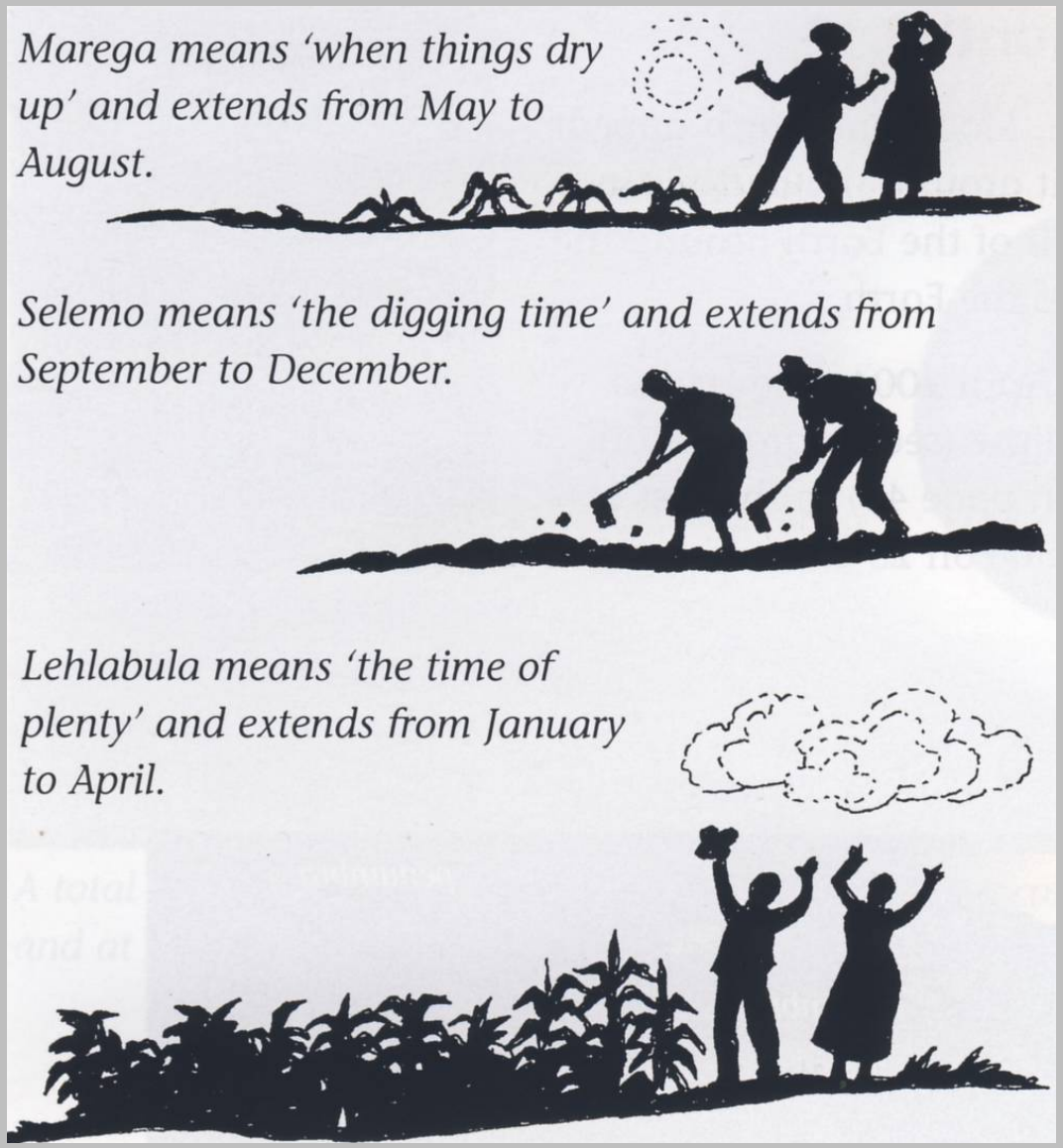
Seasons

Capturing and using our rich oral history

We still teach that there are 4 seasons

In SA we have from 2 – 6 seasons

We must move away from the Eurocentric view and start using



Astronomical Society of Southern Africa

Telescopes

Resources

Many Science Centres are also involved in supporting astronomy, and making their facilities available for w/s

Many of the SEI resources are still in use – arguably in greater use than before, and new ones have been developed.

Another successful spin-off from this is Astroquiz, s

Astroquiz™

The AstroQuiz™ Competition is a live, interactive Astronomy-focused Q & A competition for teams of Gr 7 learners.

Initially founded in 2005 at Sci-Bono Discovery Centre by means of an NRF|SAASTA grant for the National Astronomy Platform month, the competition enjoyed almost instant success was subsequently established as a fixed annual competition that gained a national footprint.

Bafedile Kgwadi

ASSA

All ASSA Centres today produce Newsletters

Most are also involved in Outreach activities

The ASSA also has three major publications:

1 MNASSA once every two months,
2 SGAS annually, and
3 Nightfall – occasional

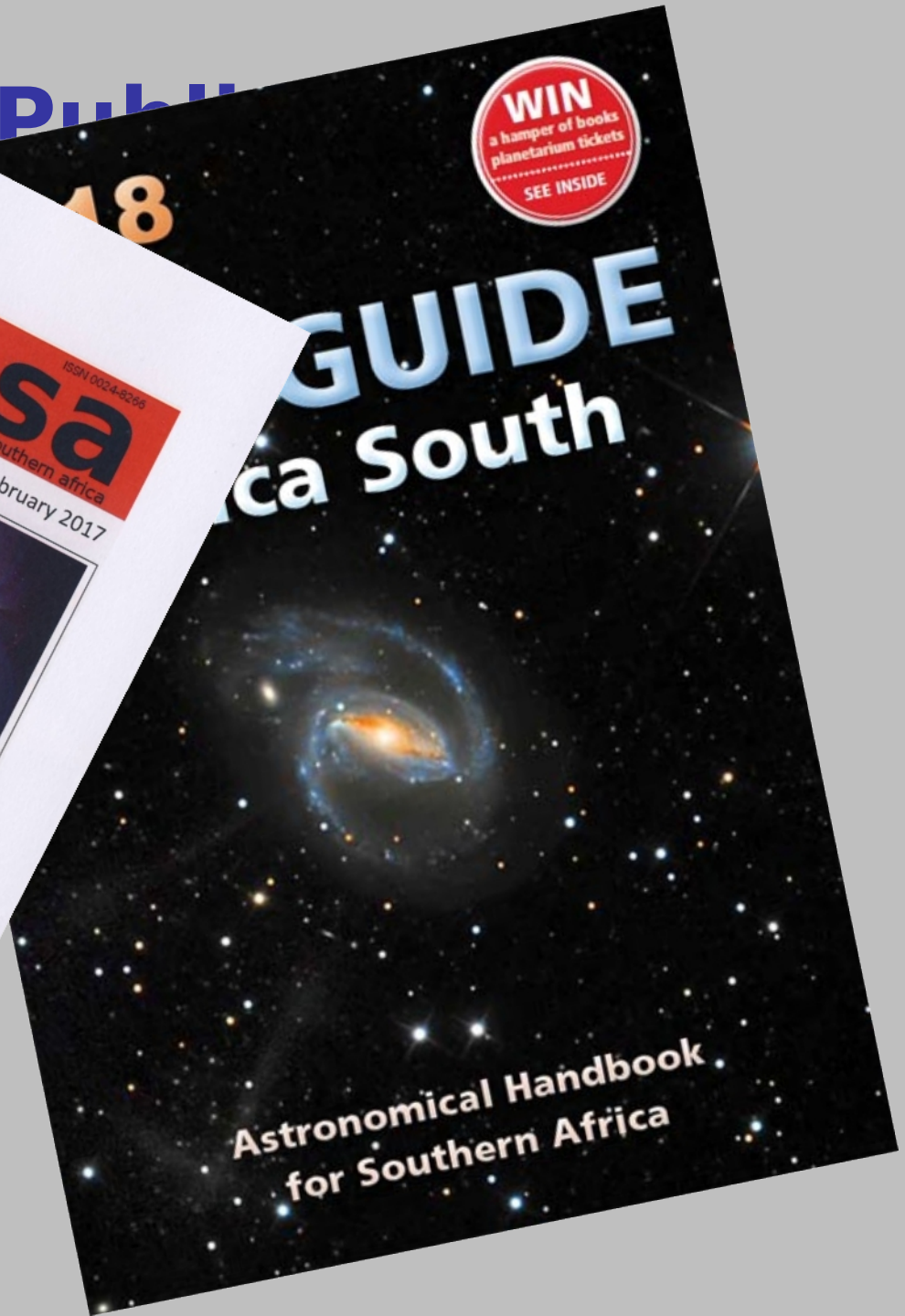
Astronomical Society of Southern Africa

mnassa

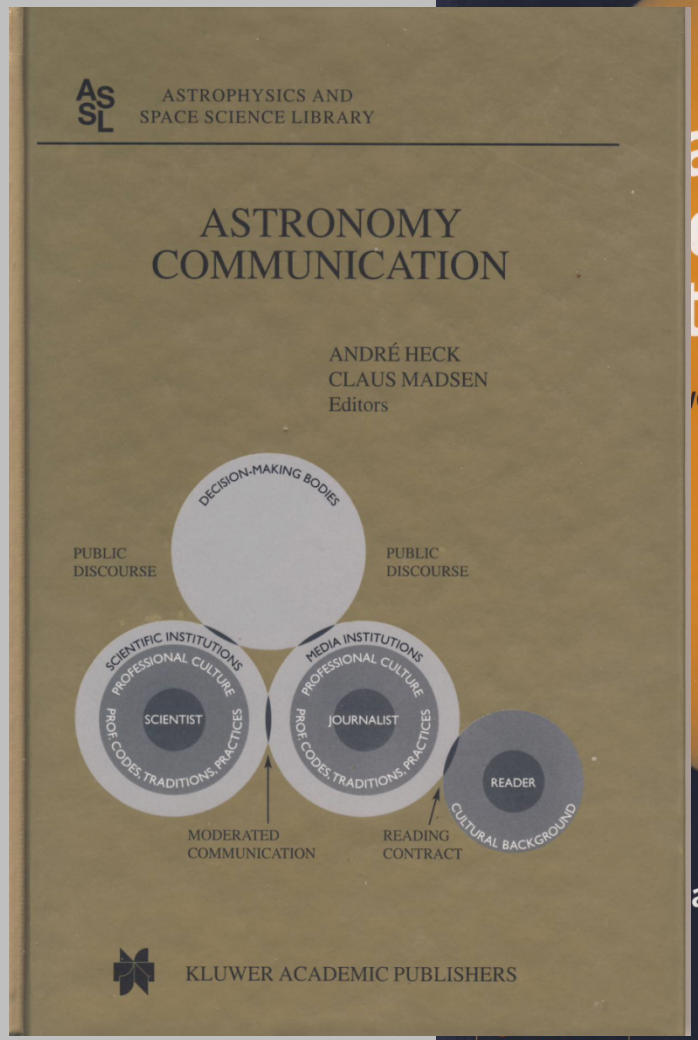
monthly notes of the astronomical society of southern africa

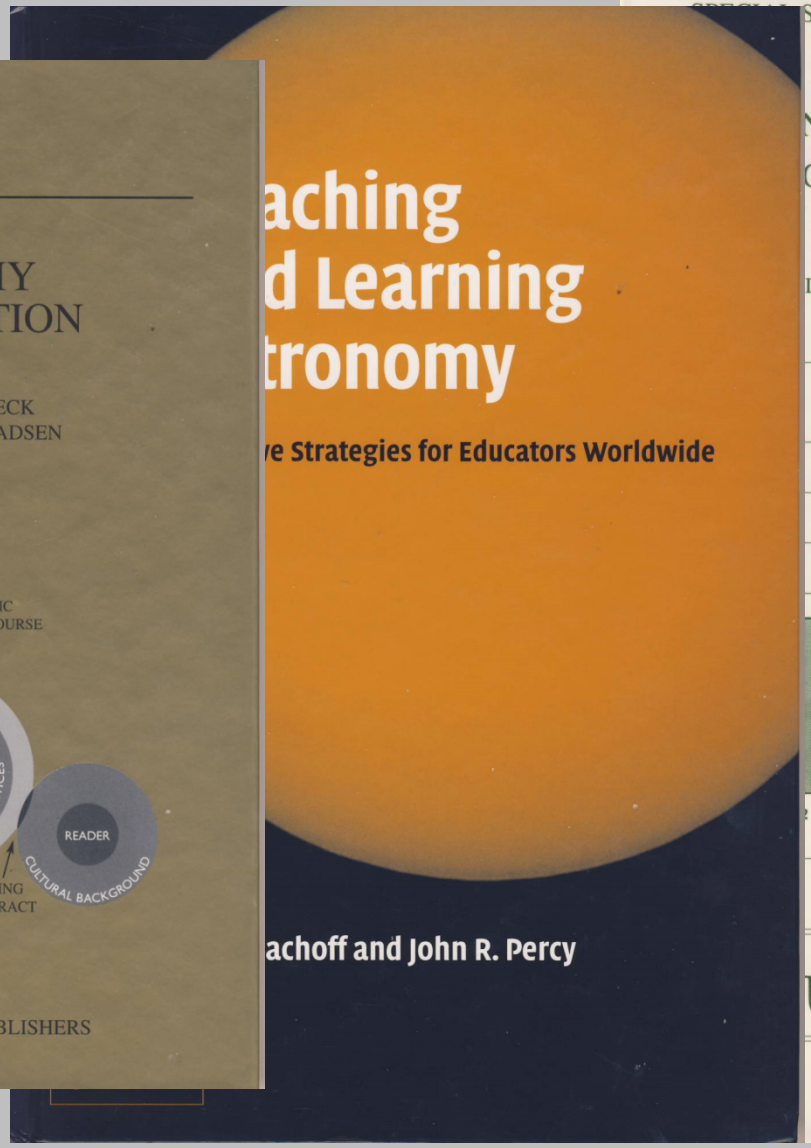
Volume 76 Nos 1 & 2
ISSN 0024-8266
February 2017

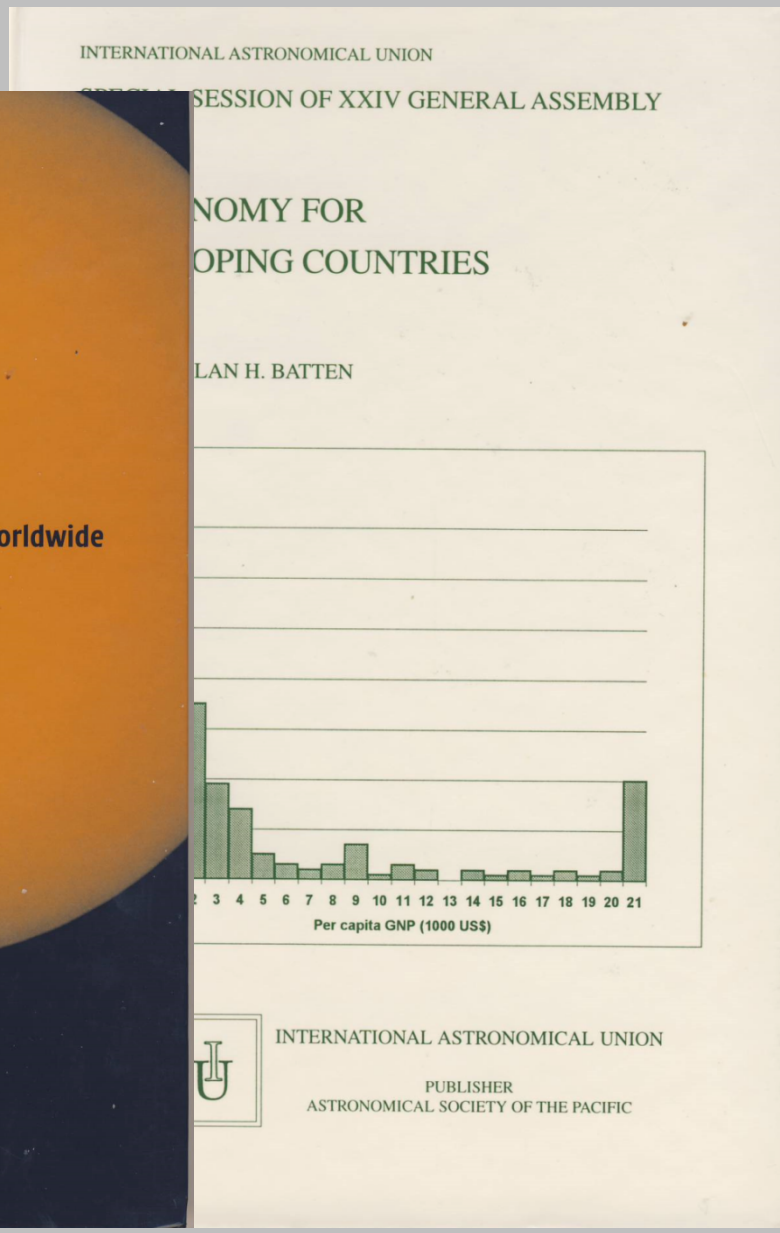
In this issue:



Publications







MONET

MOnitoring NEtwork of Telescopes

Collaboration between SAAO and McDonald Obs

Robotic

on

Hermanus

Workshop Modules

Almost 60 modules were written up and still available

Highlights – but there are many more:

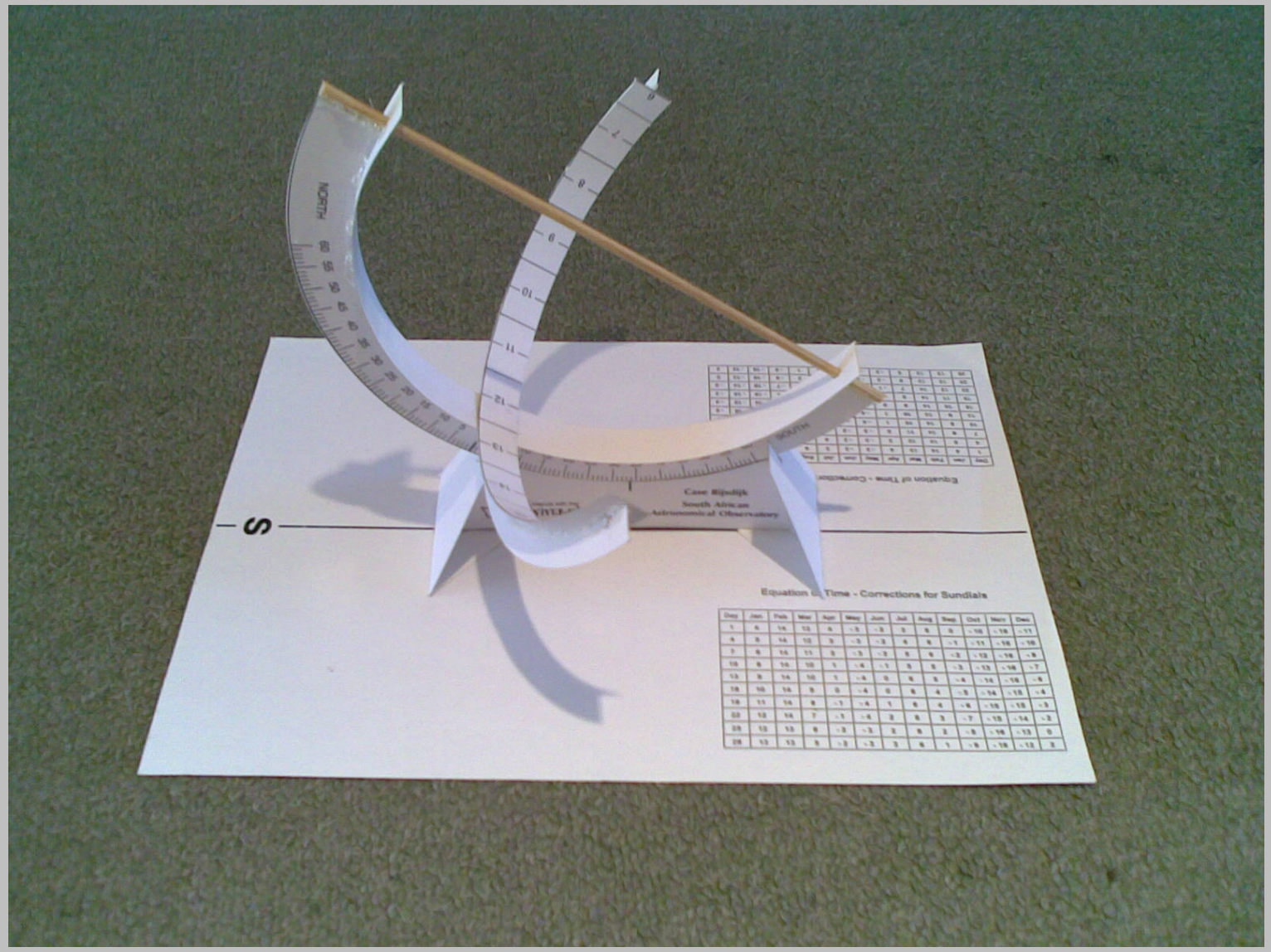
1 Using shadow sticks at schools 500+ km apart it is possible to measure the size of the Earth using the same method that Eratosthenes used

2 Measuring the distance to the nearest using simple photometry

3 Making Sundials – this cardboard model was also turned into three 1-m bowstring sundials Brass and SS

Some of these modules have been adapted and used

Proper sundials



International Collaboration

An international parallax campaign to measure the Moon's and Mars' distances

D Cenadelli[1], M Zeni[2], A Bernagozzi[3], P Calcidese[3], L Ferreira[4], C Hoang[1], C Rijsdijk[4]

1 Istituto di Fisica Generale Applicata – Universita degli Studi di Milano

2 Liceo Ginnasio "G. Parini"

3 Osservatorio Astronomico della Regione Autonoma Valle d'Aosta

4 Astronomical Society of Southern Africa – Garden Route Branch

***Eur. J. Phys.* 30 No 1 (January 2009) 35-46**

Astronomy in the curriculum

In 1996 the curriculum underwent major changes to an OBE type curriculum and astronomy was introduced

Had a short a short life as being unimplementable but many features were retained in the new C2005

This eventually evolved into the Curriculum Assessment Policy Statements (CAPS) which is currently in use and retains the astronomy component

But whatever curriculum was/is in use

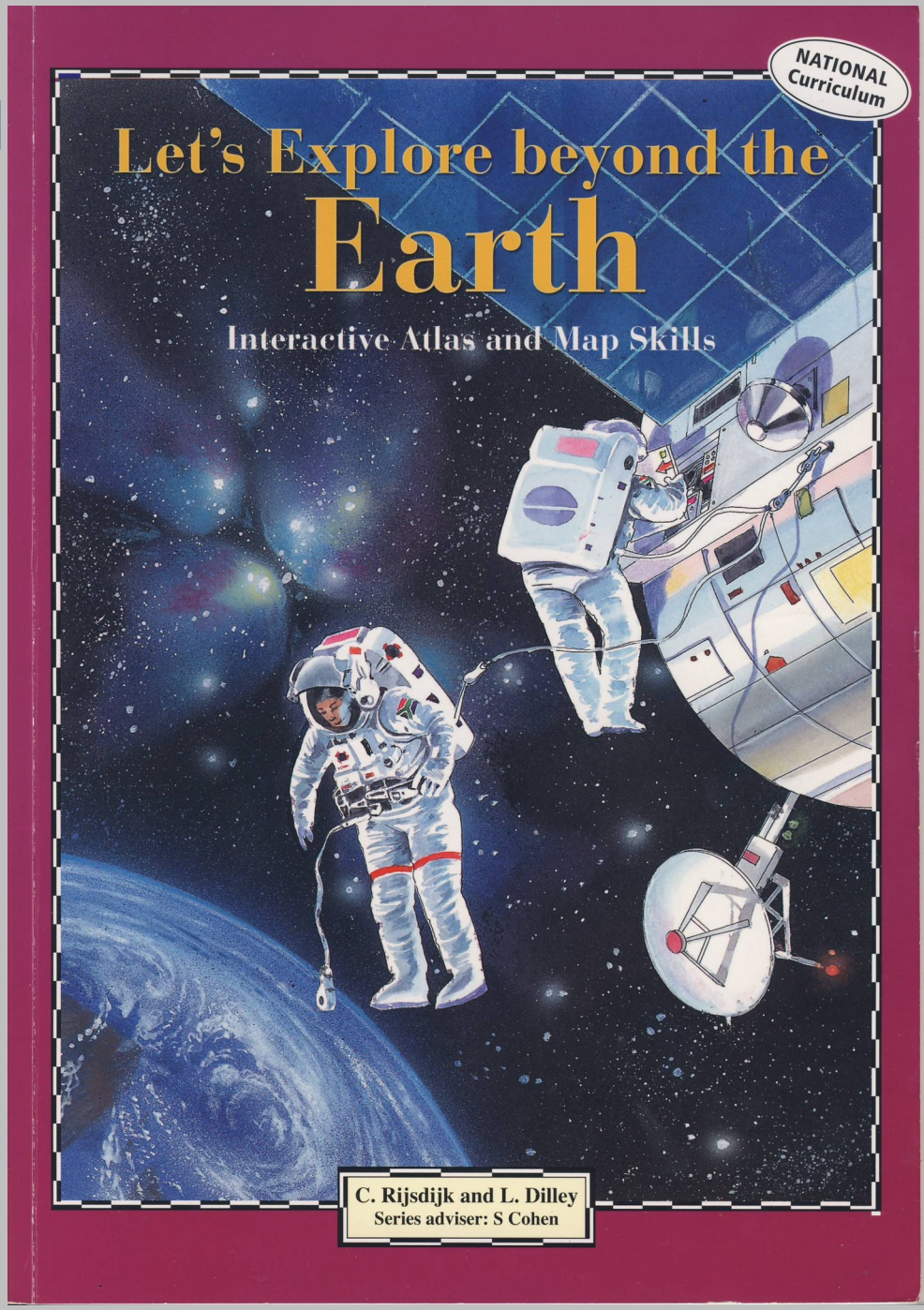
Astronomical Society of Southern Africa

Edu

Having succeeded in including astronomy inn the curriculum did mean that new material had to be introduced

Teachers of course then needed resources and training

Many of the SEI materials were workshopped and new resources developed



North/South problem

Is one that we in the southern hemisphere are very aware of

Most astronomical material is produced in the northern hemisphere

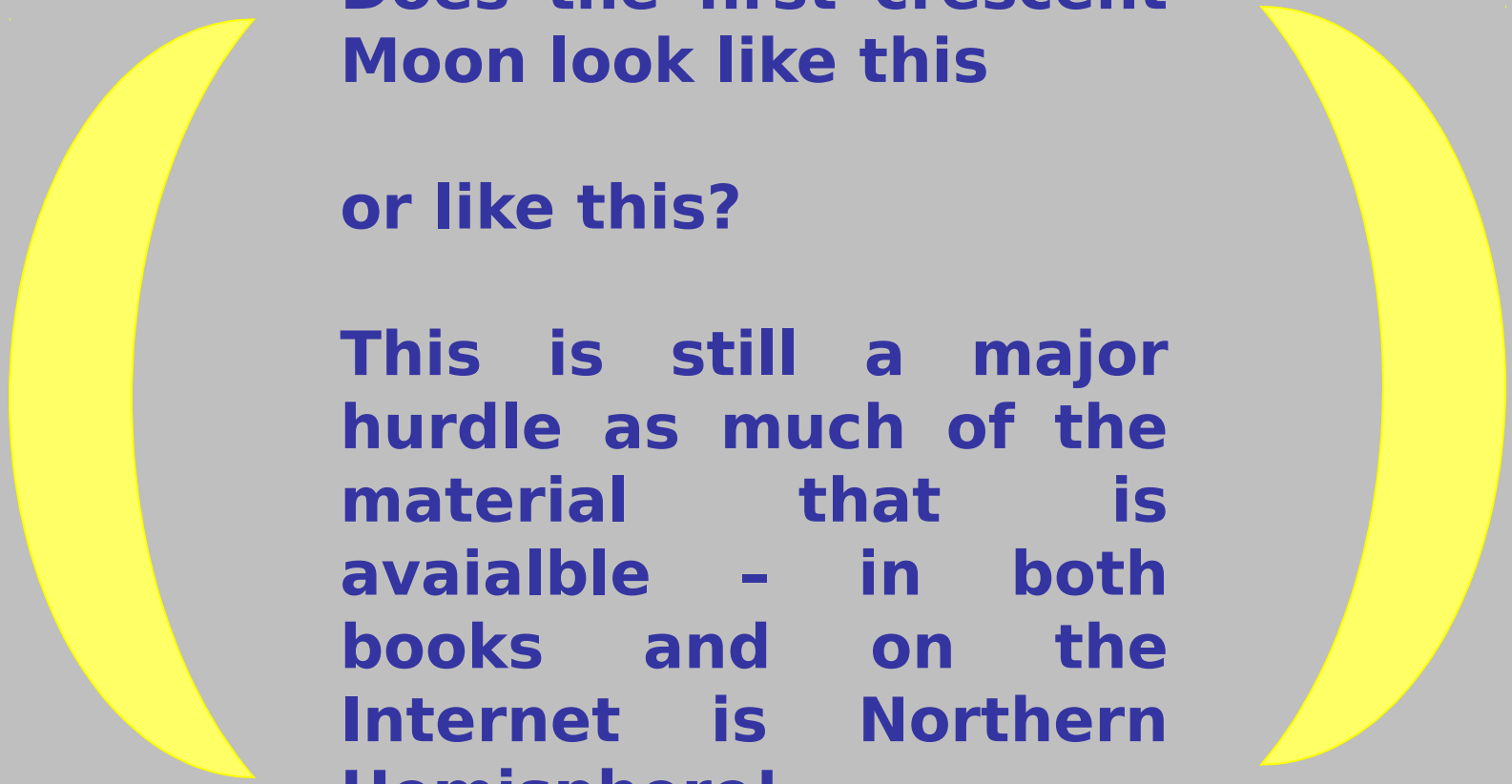
This affects Moon phases, sunrise/set, and constellations

We see, but we don't observe

Again simple models and demonstrations explain this

Whilst digital technology is great, simple tactile 3-D self-made models take a lot of

The crescent Moon

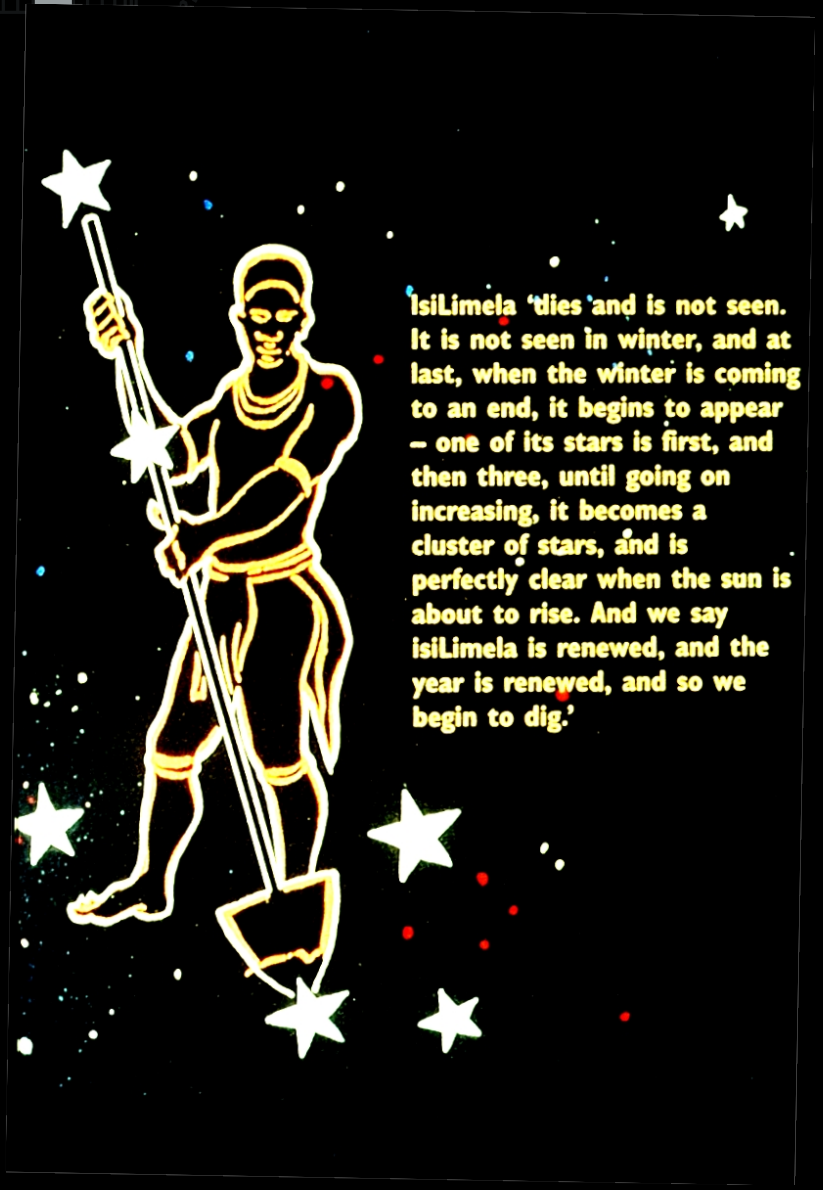


Does the first crescent Moon look like this

or like this?

This is still a major hurdle as much of the material that is avaialble – in both books and on the Internet is Northern Hemisphere!

isiLimela or Pleiades?



Starlore

This was an early example, but much more work has been done

Venus Rising was a massive research project by the late Peter Alcock and now available on the ASSA website as a PDF book

The SGAS uses parts of this rich tradition, but it needs to be used more, especially in the print media and the new planetaria

Keith Snedegar is another

Future

The South African Radio Astronomy Observatory (SARAO) has collaborated with the National Radio Astronomy Observatory (NRAO), USA to establish a pilot Multi-wavelength Public Engagement Programme (MAPPP) to be implemented in South Africa in 2018.

The programme has been co-designed by the SARAO Communications and Stakeholder Relations Unit and the NRAO National and International Non-Traditional Exchange (NINE) Programme.

M9

The overall objective of MAPPP NINE (M9) is to contribute to the advancement of the public engagement with astronomy, as well as the science engagement sector in South Africa, by training high-potential individuals in the sector.

The ASSA, SAAO, SA Science Centres and other STEM organizations are also involved

This is but one of several other collaborations

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5 *Astronomy for Developing Countries*. Ed. A H Batten. IAU publication. Astronomical Society of the Pacific, 2001

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8 *Explore Beyond the Earth*. C Rijsdijk and L Dilley. Maskew-Miller Longman, Cape Town.


Astronomical Society of Southern Africa

WITS Planetarium

(formally Johannesburg) at the University of the Witwatersrand has been open to the public since 12 October 1960

It was the first full-sized planetarium in Africa, and the second in the S. Hemisphere,

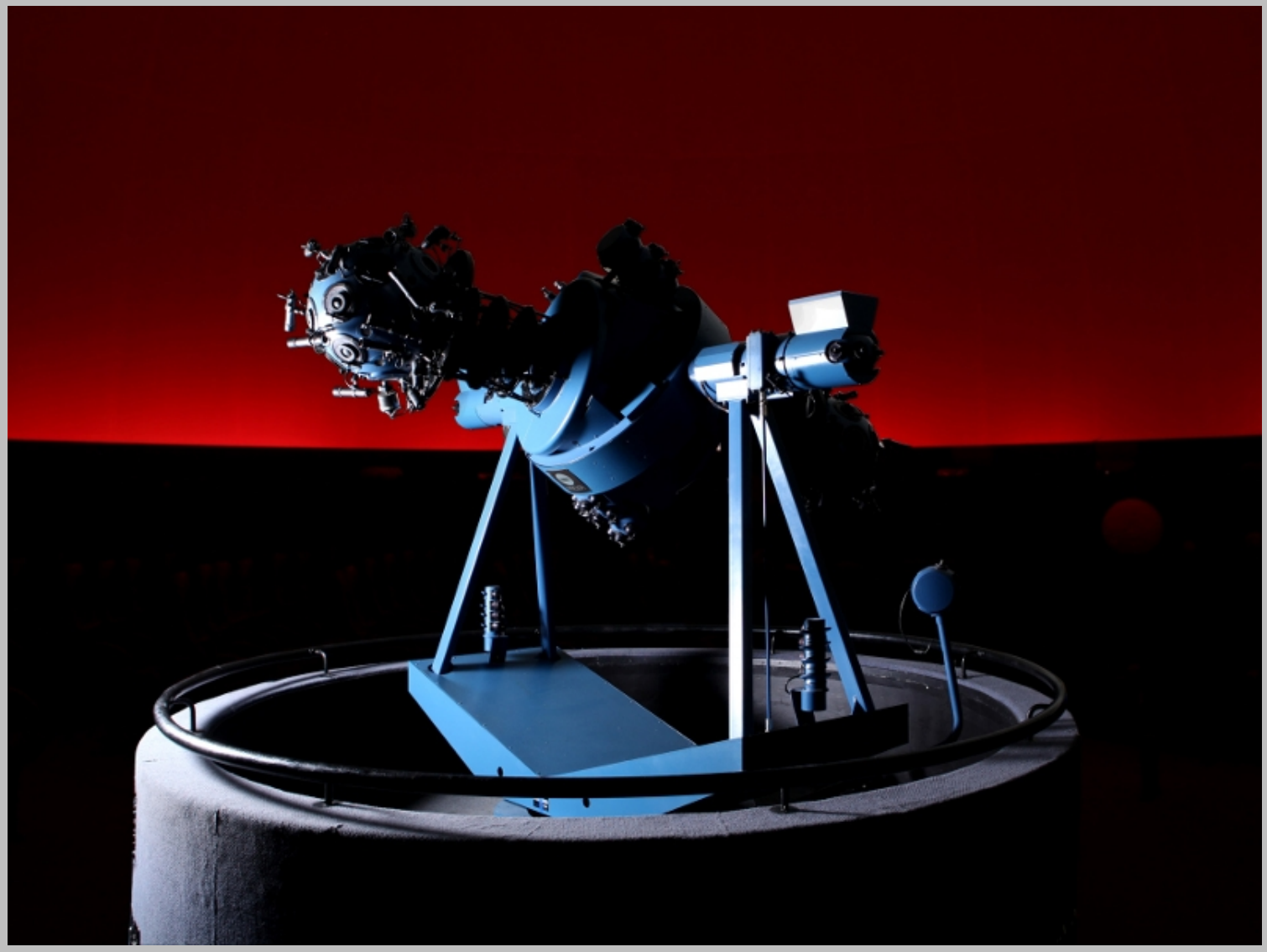
Bloemfontein

This was added to SA's planetaria much more recently

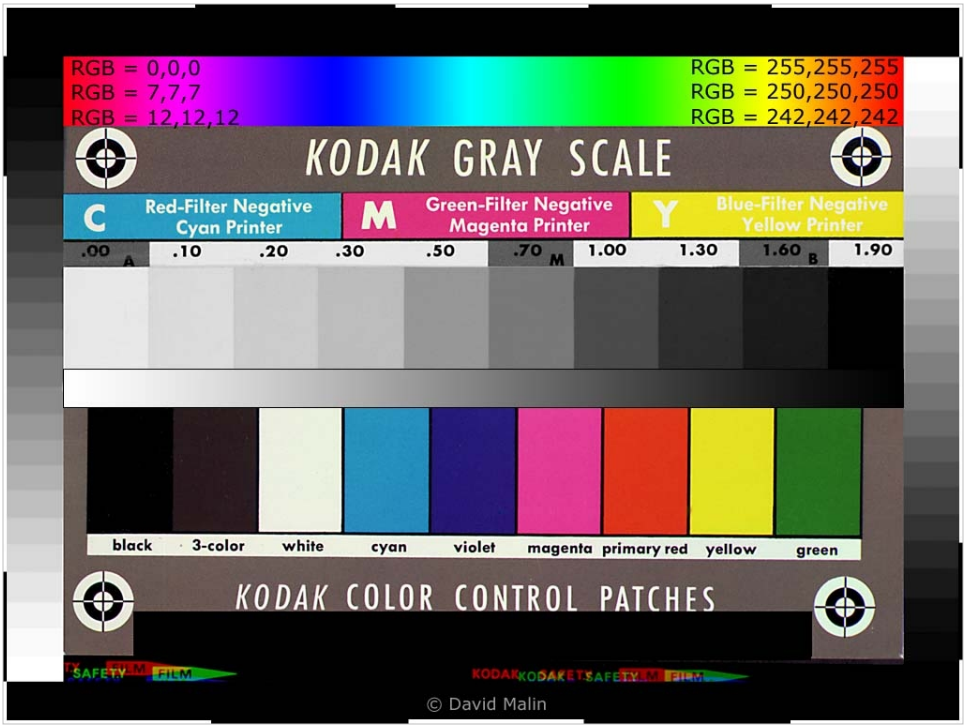

VAL HILL
LANETARIUM

Astronomical Society of Southern Afr

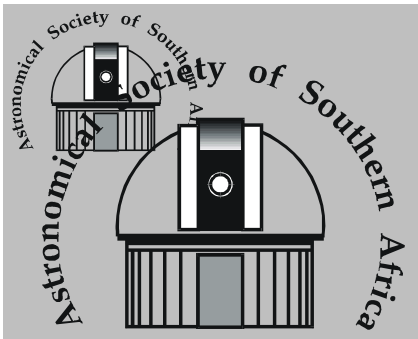
Astronomical Society of Southern Africa



Astronomical Society of Southern Africa



To set up the data projector, ensure that the steps at the extreme (shadow and highlight) ends of the vertical greyscales are visible. This is usually done by adjusting the projector's contrast and brightness. The greyscales should also be neutral grey. If they are not, adjust colour balance. The white edge of the slide allows for adjustment of keystone distortion.



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- Background
- Recent History
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- Education
- Future

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There was very little prior to the last half of the 20th Century

Public interest was fairly low unless there was an eclipse or comet visible

Media would pick this up; interview an astronomer?

Of course events like Halley's Comet would generate a great deal of coverage.

Generally speaking astronomy was a low-key activity for the general public

Einstein's GR "proof" and Hubble's expanding U did make the media, but

Global Beginnings

The “Space Race” formed part of the Cold War of the 1950s

It was the launch of Sputnik in 1957 that generated a huge increase in public awareness

It also led to a huge awakening in the US education system

The realization that the US had to play catch-up

The eventual successful launch of Explorer 1 led to the formation of NASA in 1958

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It started the Moonwatch programme in SA which brought in a substantial public involvement and interest – covered extensively in MNASSA

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position was

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Further Moon landings, astronauts living in space – Skylab, David Malin's full colour images and the launch of HST, the ISS and the Mars robots

Did a huge amount to improve the image of science, and that of astronomy in particular

Public Money

But along with all this came the awareness that most of astronomy, and science, was funded by public money

The public, and the media, were beginning to raise questions about this

The science community realized and began to respond pointing out that the serendipitous spin-offs made a substantial contribution to technology

But they also realized the need to communicate

Ivory Towers

. . . the need to move out of their Ivory Towers

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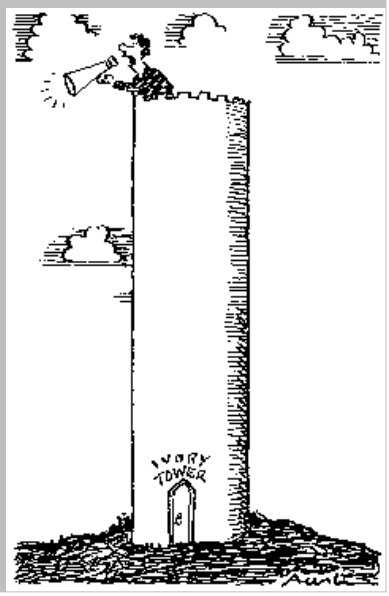
Ilya Prigorine
Nobel Laureate 1977



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As was Dyson

"If, in fifteen minutes, you can't explain to the man-in-the-street, what it is you are doing, then you yourself don't know!"

Freeman Dyson
Institute of Advanced Studies,
Princeton

This raised awareness of the need to reach out to the public – Outreach Projects were one route

1996 White Paper

With the advent of Democracy, SA was aware of the importance science and technology for a young and developing country and economy

Scientific endeavour is not purely utilitarian in its objectives and has important associated cultural and social values. Not to offer 'flagship' sciences (such as physics and astronomy) would be to take a negative view of our future - the view that we are a second class nation, chained forever to the treadmill of feeding and clothing ourselves

The beginning

We weren't the innovators of these issues, we did catch up and in several ways became leaders, as we'll see

Prof. Phillip Tobias delivered a brilliant lecture in the Rhodes University Council Chamber

At end, the then director of DACST, Roger Jardine, said that while SA could not afford to fund all the sciences, but that it could, and would, support those niche areas where SA were already leaders: namely looking up and look down

ie. Astronomy and Palaeontology

YEAST

SA govt. was quick to respond with two major projects, SALT and SA's First Year of Science and Technology, YEAST

A substantial part of YEAST was to promote astronomy in SA; "Friends with the Universe" project

Starbus
Posters
Bringing out prominent speakers
Further development of resources
Distribution of Data Projectors

Starbus Project

The aim here was to take “Astronomy to the People”

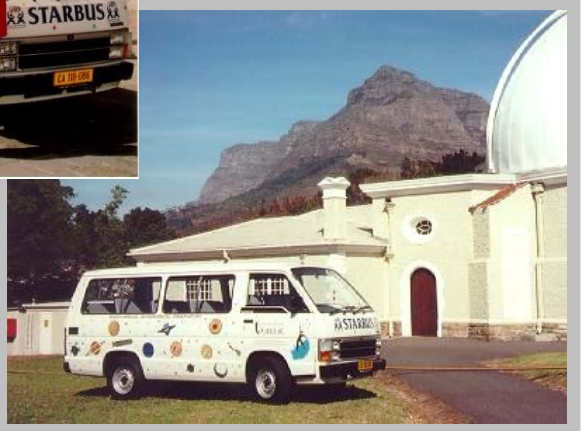
Equipped with many of the SEI developed resources, laptop, projector, telescope

Visited mainly the Western, Northern and Eastern Cape

Highly successful and now copied in many parts of the world

Sadly about a year after YEAST the project ended due to a lack of funding, but the Starbus was still used for outreach projects.

Starbus



Taking astronomy to the people

Posters

A series of 10 were produced, of which the, Starlore of Southern Africa, is still being distributed.

23 000 of each were distributed to schools throughout SA

Speakers

These included:

Prof. Roger Penrose
Prof. John Barrow
David Malin

from overseas and several more from around South Africa

David Malin travelled through SA extensively

Resources

These were primarily from HartRAO and the SAAO's SEI project and I will discuss that later under Education

Others that can be used: for example for the 1993 solar eclipse, the SAAO liaised with the Cape Argus to produce an illustrated centrefold – they kindly had an over-print run of about 5 000 which were then distributed to local schools

Data Projectors

At that time these were very expensive, R45 000, but YEAST managed to acquire 6 for distribution to the then National Facilities and two Universities

Here they contributed significantly to the public communication and simple Planetaria programmes that were available for desktop/laptop computers.

Continued Outreach

Even before YEAST there had already been a significant increase outreach activity by:

HartRAO, Bloemfontein and SAAO as well as the ASSA's activities at its centres around SA

There used to be a major Open Night in Sutherland, often attended by up to 400 visitors

These were eventually ended when the Observatories themselves had more frequent Open Nights, and the Sutherland Visitor centre was opened

Which included a facility for night-time


SAAO
VISITOR CENTRE
AND
RECEPTION
SALT

Current status

The VC needs up-dating and maintenance and a proper narrative needs to be developed but it still serves an essential role for visitors

But up-grades and new developments are being planned

Eclipses

The eclipses of 2000 and 2001 led to a project of making solar viewers using the unemployed and disabled in Sutherland.

Stamped out printed frames were designed, material imported from the UK ands a production line was set-up producing many tens of thousands of viewers

They were the cheapest (and best?) solar viewers and but the project was not sustained after the events were over and sadly died; it should have become a minor industry for Sutherland

Visits to Sutherland

Astroquiz winners visit Sutherland

Visits to MeerKAT

ASSA members visit MeerKAT – future site for SKA

Other Activities

All the astronomical facilities attended the National Science Festival, Scifest, in Grahamstown since its opening in 1997 and made regular contributions

Recently of course SKA's attendance added substantially to these efforts

Several Centres got SAASTA funding to participate in the National Science Week which are spin-offs from YEAST

STARTEC

STate of ARt Telescope Education Collaboration. An international collaboration of the Education and Outreach units of all the major Observatories around the world.

Formed by the SAAO and McDonald Observatory, Texas in February 2001 at the SAAO with:

Gran Telescopio Canarias,VLA, Gemini, VLT, Arecibo, HST, Jodrell Bank, HET and SALT

Second meeting at Arecibo

ScopeX

The JHB centre of the ASSA has an active Amateur Telescope Making, ATM, group, and in 2002 decided to hold an Expo of their efforts

This then grew in popularity and became ScopeX as an annual exposition.

Now funded by SAASTA it attracts several thousand visitors and has gone beyond original ATM activities

Mobile Planetarium

There are several in use around SA

Scifest, ScopeX and SAASTA use them

JHB Observatory

Whilst the main telescope, the 26” refractor is no longer a working instrument, it still plays a significant role during Open Nights

This is now run/managed by SAASTA and is home for the JHB ASSA Centre.

There are frequent Open Nights and other activities.

Special Staff

In line with overseas trends, SA Observatories began to appoint staff to look after the media, education and outreach

All major projects now budget for this

There is a substantial collaboration between the Observatories

There are now educators and communicators at most facilities, who are making a significant contribution to raising awareness of astronomy amongst the public

Communication then ...

Traditionally queries from the media and the public were primarily asked of the Planetaria,

There were initially just 2 – one in WITS and the other in the Iziko Museum in Cape Town, which has recently undergone a major up-grade to become one of the top planetaria/multi-media centre in the world

Recently another has been built in Bloemfontein. It is also fully digital planetarium and Prof Hoffmann will cover these.

Communication now...

But the advent of specialized staff at facilities, there are better links with the media, press releases and interviews are more common now.

Members of the ASSA also handle a number of queries from the public, write regular columns for the print media and also have regular radio slots

The issue of using social media is addressed at the ASSA Symposium – obviously a powerful network for communication.

Science Education Initiative

This was started at the SAAO in 1993, the under pinning philosophy being that astronomy was a “warm fuzzy” science

It countered the negative view of science

So that astronomy could be used as vehicle to get youngsters interested in Science

To this end an old store-room was converted into the Science Education Resources Centre

Small groups of learners workshopped newly developed resources in the Centre to see if they worked!

Official Opening

Gravity simulation

Galileo Telescope?

Showing phases at HartRAO

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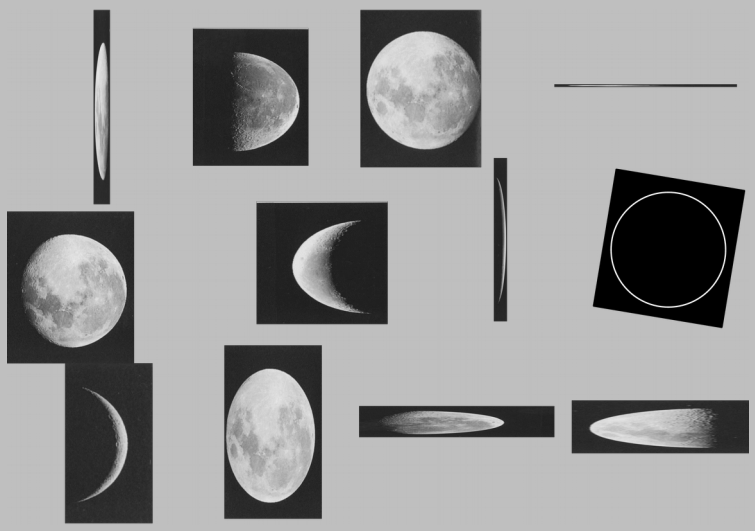
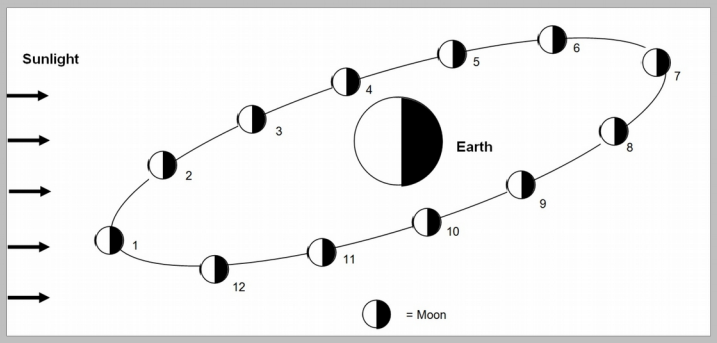
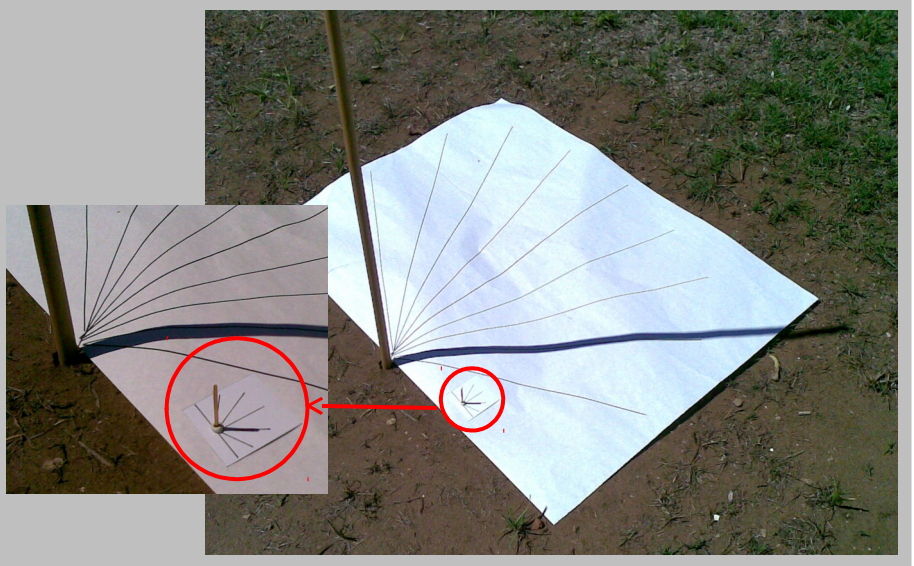
Moon puzzle



Answers



Shadow sticks



Mini shadow sticks

Time zones

One can see how these time differences can occur

The magic is when the globe is turned round

The shadows move, showing that the Sun's apparent movement across the sky is because the Earth is turning

Sunometer

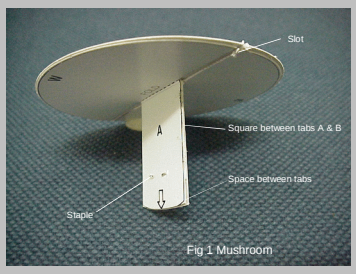


Fig 1 Mushroom

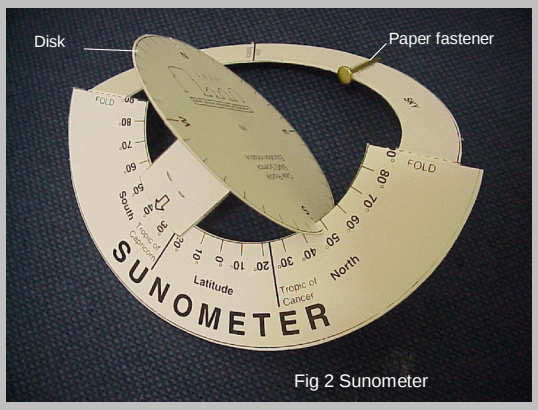
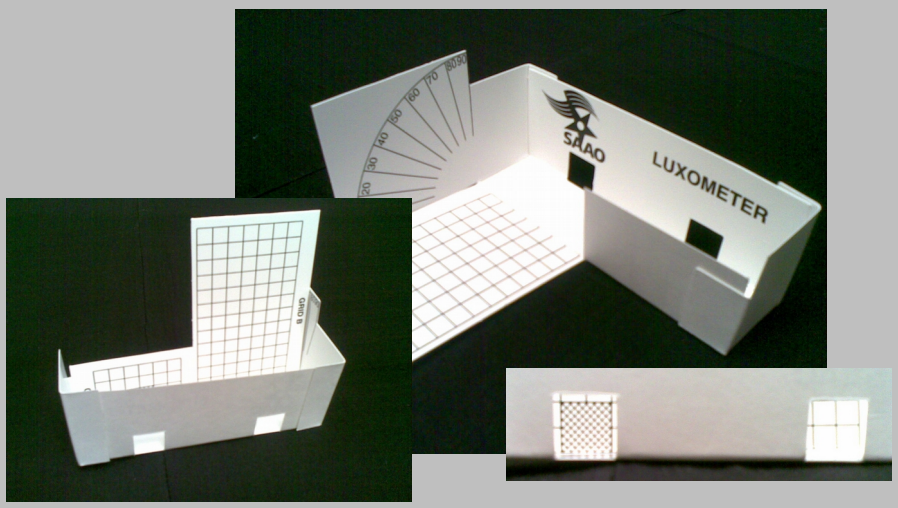


Fig 2 Sunometer

Luxometer



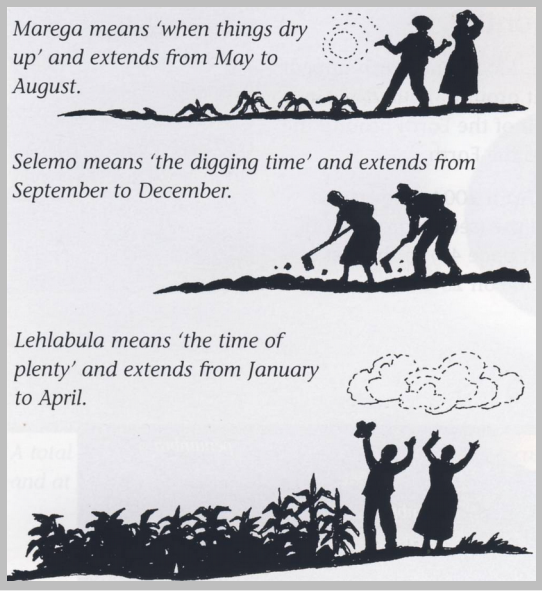
Seasons

Capturing and using our rich oral history

We still teach that there are 4 seasons

In SA we have from 2 – 6 seasons

We must move away from the Eurocentric view and start using



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Telescopes

Resources

Many Science Centres are also involved in supporting astronomy, and making their facilities available for w/s

Many of the SEI resources are still in use – arguably in greater use than before, and new ones have been developed.

Another successful spin-off from this is Astroquiz, s

Astroquiz™

The AstroQuiz™ Competition is a live, interactive Astronomy-focused Q & A competition for teams of Gr 7 learners.

Initially founded in 2005 at Sci-Bono Discovery Centre by means of an NRF|SAASTA grant for the National Astronomy Platform month, the competition enjoyed almost instant success was subsequently established as a fixed annual competition that g national footprint.

Bafedile Kgwadi

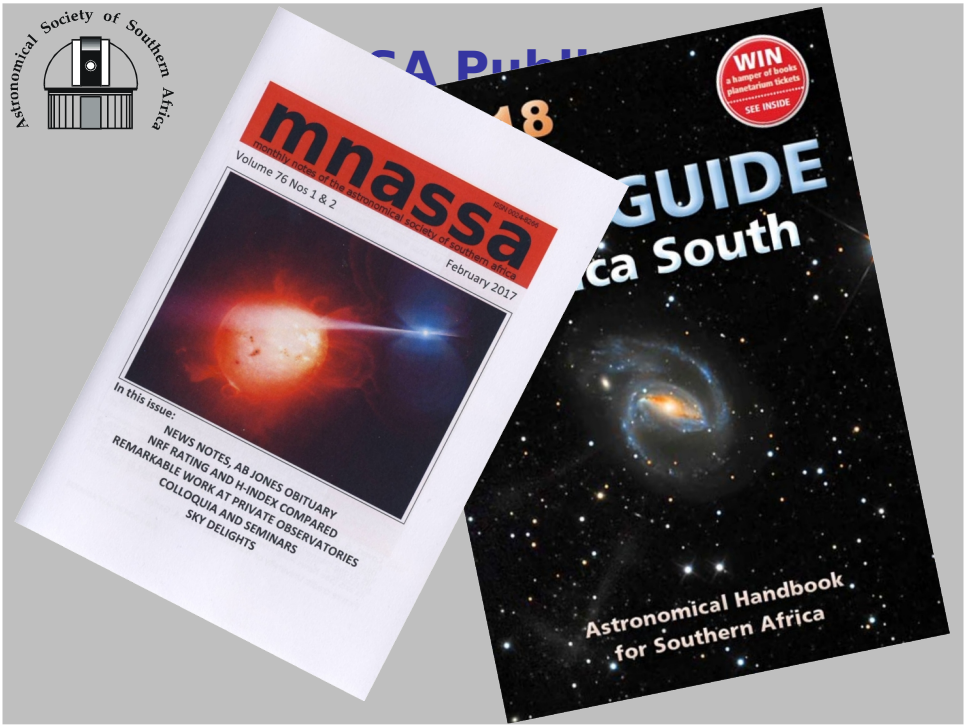
ASSA

All ASSA Centres today produce Newsletters

Most are also involved in Outreach activities

The ASSA also has three major publications:

1. **MNASSA once every two months,**
2. **SGAS annually, and**
3. **Nightfall – occasional**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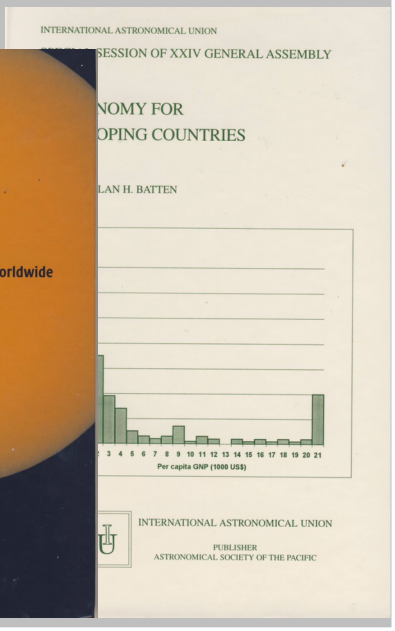
mnassa
monthly notes of the astronomical society of southern africa
Volume 76 Nos 1 & 2
February 2017
In this issue:
NEWS NOTES, AB JONES OBITUARY
NRF RATING AND H-INDEX COMPARED
REMARKABLE WORK AT PRIVATE OBSERVATORIES
COLLOQUIA AND SEMINARS
SKY DELIGHTS
WIN
a hamper of books
planetarium tickets
SEE INSIDE
GUIDE
ca South
Astronomical Handbook
for Southern Africa

Publications



MONET

MOnitoring NEtwork of Telescopes

Collaboration between SAAO and McDonald Obs

Robotic

on

Hermanus

Workshop Modules

Almost 60 modules were written up and still available

Highlights – but there are many more:

1 Using shadow sticks at schools 500+ km apart it is possible to measure the size of the Earth using the same method that Eratosthenes used

2 Measuring the distance to the nearest using simple photometry

3 Making Sundials – this cardboard model was also turned into three 1-m bowstring sundials Brass and SS

Some of these modules have been adapted and used

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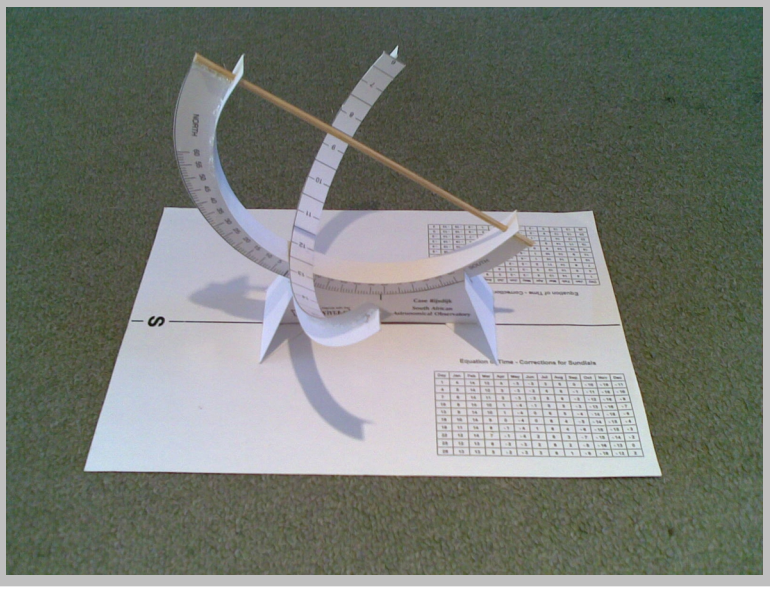
Proper sundials



International Collaboration

An international parallax campaign to measure the Moon's and Mars' distances

D Cenadelli[1], M Zeni[2], A Bernagozzi[3], P Calcidese[3], L Ferreira[4], C Hoang[1], C Rijsdijk[4]

1 Istituto di Fisica Generale Applicata – Universita degli Studi di Milano

2 Liceo Ginnasio "G. Parini"

3 Osservatorio Astronomico della Regione Autonoma Valle d'Aosta

4 Astronomical Society of Southern Africa – Garden Route Branch

Eur. J. Phys. **30 No 1 (January 2009) 35-46**

Astronomy in the curriculum

In 1996 the curriculum underwent major changes to an OBE type curriculum and astronomy was introduced

Had a short a short life as being unimplementable but many features were retained in the new C2005

This eventually evolved into the Curriculum Assessment Policy Statements (CAPS) which is currently in use and retains the astronomy component

But whatever curriculum was/is in use

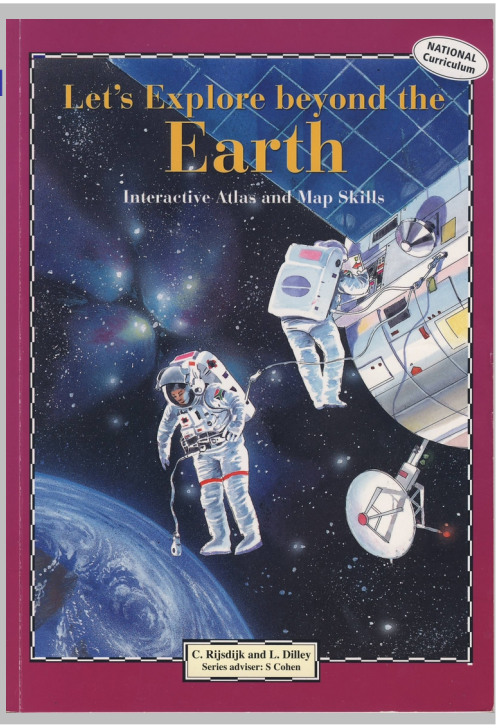
Astronomical Society of Southern Africa

Edu

Having succeeded in including astronomy inn the curriculum did mean that new material had to be introduced

Teachers of course then needed resources and training

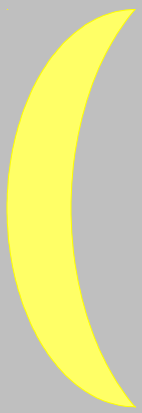
Many of the SEI materials were workshopped and new resources developed



North/South problem

- Is one that we in the southern hemisphere are very aware of
- Most astronomical material is produced in the northern hemisphere
- This affects Moon phases, sunrise/set, and constellations
- We see, but we don't observe
- Again simple models and demonstrations explain this
- Whilst digital technology is great, simple tactile 3-D self-made models take a lot of

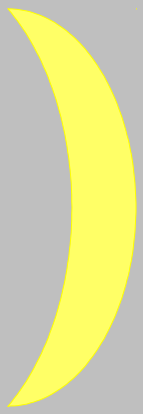
The crescent Moon



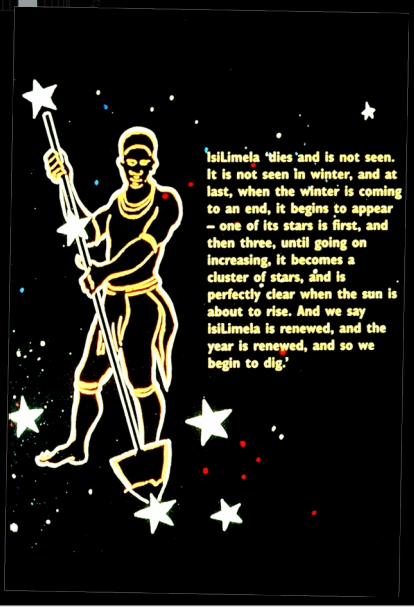
Does the first crescent Moon look like this

or like this?

This is still a major hurdle as much of the material that is avaialble – in both books and on the Internet is Northern Hemisphere!



isiLimela or Pleiades?



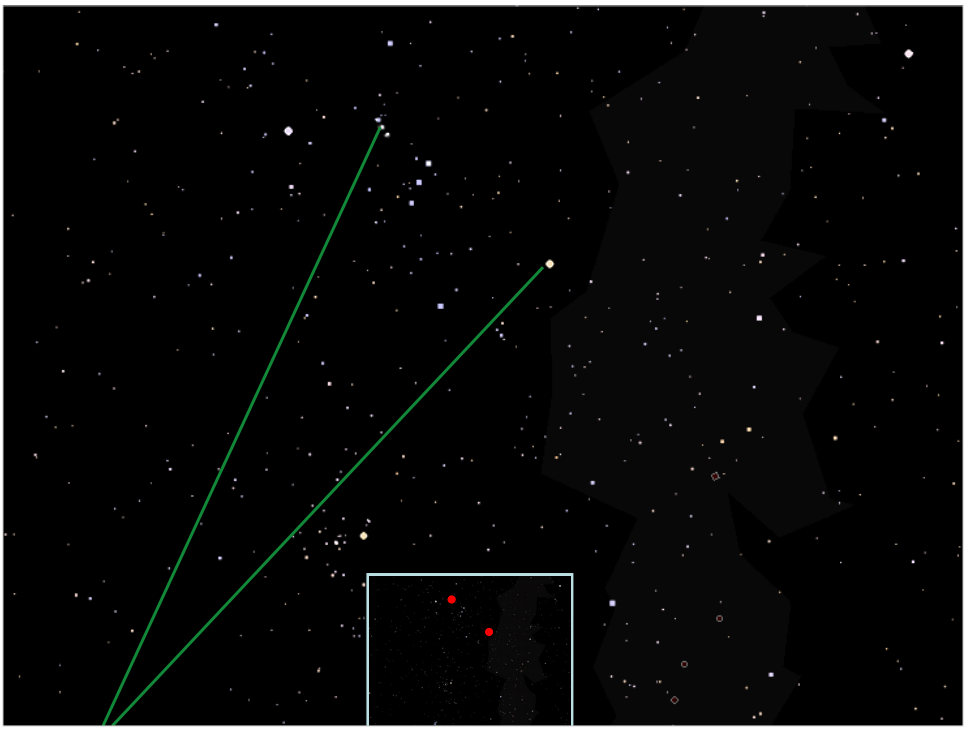
Starlore

This was an early example, but much more work has been done

Venus Rising **was a massive research project by the late Peter Alcock and now available on the ASSA website as a PDF book**

The SGAS uses parts of this rich tradition, but it needs to be used more, especially in the print media and the new planetaria

Keith Snedegar is another



Future

The South African Radio Astronomy Observatory (SARAO) has collaborated with the National Radio Astronomy Observatory (NRAO), USA to establish a pilot Multi-wavelength Public Engagement Programme (MAPPP) to be implemented in South Africa in 2018.

The programme has been co-designed by the SARAO Communications and Stakeholder Relations Unit and the NRAO National and International Non-Traditional Exchange (NINE) Programme.

M9

The overall objective of MAPPP NINE (M9) is to contribute to the advancement of the public engagement with astronomy, as well as the science engagement sector in South Africa, by training high-potential individuals in the sector.

The ASSA, SAAO, SA Science Centres and other STEM organizations are also involved

This is but one of several other collaborations

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WITS Planetarium

(formally Johannesburg) at the University of the Witwatersrand has been open to the public since 12 October 1960

It was the first full-sized planetarium in Africa, and the second in the S. Hemisphere,

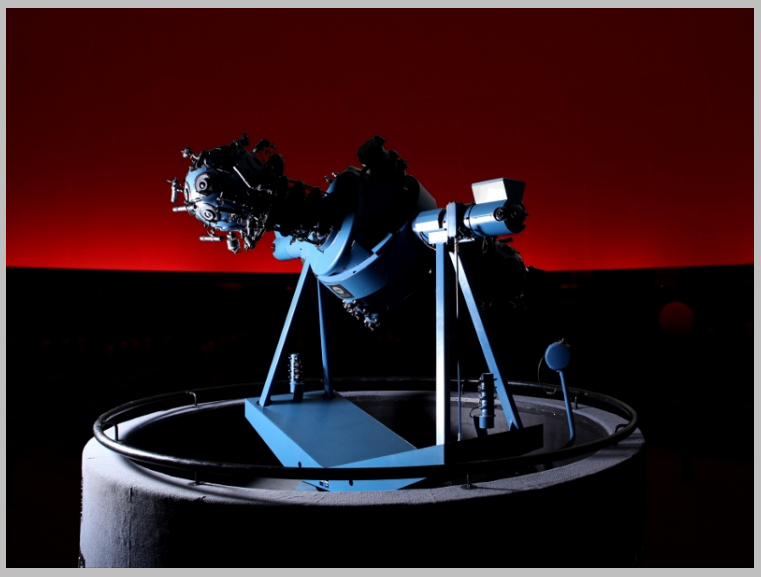
Bloemfontein

This was added to SA's planetaria much more recently


VAL HILL
LANETARIUM


iziko
sa museum
planetarium

Astronomical Society of Southern Africa



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