



GNOMON

Newsletter of the Association for Astronomy Education

Vol. 9 No. 2

ISSN 0952-326X

Winter 1989

EDITORIAL COMMENT

This Winter Solstice issue is intended to reach everyone on our list by 21 December, but unfortunately this date is so close to Christmas that there may be some delays owing to the Christmas posting rush. This will almost certainly be true for our overseas readers, and we can only apologize (in advance) for this.

Readers may be interested to know that *Gnomon* is sent to members and exchange bodies in the following overseas countries:

France	Canada	British West Indies
Italy	Eire	Singapore
Finland	Australia	South Africa
USA	Germany (West)	Tanzania

Reading a book on the possibility of *time travel* recently, the thought struck me that virtually every account of this strange experience had one thing in common, namely that on going back to the past (backwards time flow), the traveller then enacted his "adventures" in the forward time flow direction. For example, in works of fiction, one could go back to the Battle of Hastings (1066) and then watch the whole conflict act itself out in the normal direction! Surely this is not "real" time travel - it is rather like using the fast rewind button on a video recorder. I do remember reading one SF short story where there was "real" time travel, and most odd it was. There was even communication with the time traveller and a "stationary" observer. Unfortunately I have forgotten the title of this story - does any reader know of it?

SUBSCRIPTIONS

These were due on 1 September 1989. We know from experience that several members forget to pay theirs - in this complex world of ours, it is so easy for renewal applications to become buried under piles of other correspondence. May we appeal to these members to check whether or not they have paid, and if not, to send their subscriptions directly to the Treasurer. A Council decision that members more than 3 months in arrears should not be sent the Newsletter will be adhered to.

Subscription rates are:

Individual members.....	£6.00
Affiliated member (institution).....	£12.00
Retired member	£4.00

Practising teachers may claim tax relief on their subscriptions.

PUBLICATIONS AVAILABLE FROM THE AAE

Astronomy Video and Film Catalogue	£1.00
Federation of Astronomical Societies 1989 Handbook	£1.00
Nimbus 7. Observing the Atmosphere and Oceans. NASA	£2.00
Space Shuttle 'Challenger' launch poster. 12" x 17"	£0.40
Space Shuttle Project Decal. NASA	£0.50
Hubble Space Telescope Decal. NASA	£0.50

The Earth in Space (AAE Primary workpack) in preparation.
The Earth in Space (AAE Secondary workpack) in preparation.

Gnomon back issues 20p each.
Orders should be sent to the Treasurer.

REMINDER: Members more than 3 months in arrears with their subscriptions will not be sent further copies of GNOMON.

Copyright

The AAE waives its rights to copyright as long as (1) the copies are made for educational purposes, (2) the AAE is quoted as the source, and (3) attention is paid to the copyright being possibly vested in other publications (if there is any doubt on this, contact the Editor).

Advance Notice: AAE Annual Meeting:

Arrangements have been made for the tenth Annual Meeting to be held at Manchester Grammar School on Saturday 19th May, 1990. The key speaker will be Professor Ian Robson of Lancashire Polytechnic. It is hoped to show a display of work from local primary schools related to the 'Earth in Space' themes in the National Curriculum.

INTERNATIONAL ASTRONOMICAL YOUTH CAMP (1990)

ADVANCE NOTICE: 16 July - 6 August, North Yugoslavia. Please apply direct to IWAeV c/o Uwe Reimann, Ferdinand-Beit-Str. 7, D-2000, Hamburg 1 for details (or to the Editor for a photocopy of the same leaflets). Further details in next issue.

PROFESSIONAL-AMATEUR LIAISON

Professional astronomers working on variable stars rely heavily on amateur data, and a group of professionals and amateurs met in London in May 1988 to discuss ways of increasing communication and collaboration between us. The result was the formation of a small committee, the Pro-Am Liaison Committee (PALC-VS), which is part of the BAA Variable Star Section. The PALC is producing a regular Newsletter, giving news, advice and information. Already more than 40 people have responded to a questionnaire asking about support for cooperation.

The first two Newsletters have appeared as inserts in the BAA VSS Circulars (68, January 1989 and 69, July 1989), and we are now trying to reach a wider group of people. If you would like to be involved, but haven't heard anything, perhaps because you are not a member of the BAA, please write to Mr. Roger Pickard, 28 Appletons, Court Lane, Hadlow, Kent TN11 0DT, and ask for a questionnaire.

More information can be found in an article in *Astronomy Now*, July 1988, p.14, which reports the London meeting.

Dr. Robert Smith
Astronomy Centre, University of Sussex

ASE ANNUAL MEETING

The AAE will be present in force at the annual meeting of the Association for Science Education to be held at Lancaster University from Jan 4th to 6th 1990. Our Education group will be running a workshop in support of the National Curriculum Attainment Target 16 'the Earth in Space'. This will be supplemented by two display areas. Weather permitting there will also be an evening sky-watch to entice passers-by. Volunteers to help man the display stands and assist with the sky-watch are required, and their help will be much appreciated. Please contact the Secretary, Bob Kibble so that a rôta may be drawn up.

VIDEOS AND FILMS

Members who have information on new videos and films on astronomy are invited to send details to the Editor, as these may be useful if a second edition of the AAE Video Catalogue is published.

EDINBURGH SCIENCE FESTIVAL

The second festival will be held on 2-16 April, 1990. The first festival was a great success, attracting over 60,000 visitors. There will be an astronomical content, with a talk by Heather Couper and a performance of Nigel Henbest's play "Its All in the Stars". Further information from: Edinburgh Science Festival, 20-22 Torphichen Street, Edinburgh EH3 8JB.

ADVANCE NOTICE FROM URSA ASTRONOMICAL SOCIETY: TOTAL ECLIPSE OF THE SUN (22 JULY 1990) VISIBLE IN FINLAND. DETAILS IN NEXT ISSUE.

VOYAGER AT NEPTUNE

After a 12 year-long odyssey visiting the giant planets of the solar system, Voyager 2 finally encountered Neptune on August 25th. It was the first time a spacecraft had visited Neptune, the fourth largest planet, orbiting the Sun at a distance of 2.793 billion miles.

After sending back extraordinary pictures of storms in Neptune's atmosphere, cloud shadows, six new moons, several new rings and icy Triton, Norman Haynes Voyager Project Manager at JPL, announced that "Everything went exceedingly well and we couldn't be happier".

Voyager's fields and particles instruments discovered that Neptune's magnetic field is highly tilted, much like the case at Uranus, and other investigations pooled their knowledge to determine the composition of the atmospheres of Neptune and Triton and the structure of the rings.

In some regions, Neptune's weather is perhaps as dynamic and variable as that of the Earth. However, the scale is immense by our standards – the Earth and the Great Dark Spot (GDS) are of similar size, and in Neptune's frigid atmosphere where temperatures are as low as 55 degrees Kelvin (-360°F), the cirrus clouds are composed of frozen methane rather than Earth's crystals of water ice.

The GDS, at about 22 degrees south latitude, is probably at a lower altitude than its accompanying bright clouds. Time-lapsed movies constructed from single frames show that the GDS is not totally oval, has spiral arms and appears to have a counterclockwise circulation pattern. The GDS circles Neptune in a little less than 18 hours, implying that it is in an atmospheric zone with westward (retrograde) winds of more than 300 metres per second (700 miles per hour).

Although Neptune receives only 1/900th as much energy from the Sun as the Earth does, it re-emits about three times this amount, an indication that heat is being generated in Neptune's interior and radiated to space. Scientists have long thought that the winds in a planet's cloud tops are driven by the Sun's heat, but now they must consider more strongly the contributions of the planet's own interior heat source.

The results, so far, of the radio science investigation seem consistent with an atmospheric chemical composition of about 85% molecular hydrogen, 13% helium and 2% methane. The infrared investigation's results indicate that some amount of acetylene exists as well.

Neptune is the densest of the four giant planets, about 64% heavier than if it were composed entirely of water.

The Planetary Radio Astronomy Team, led by Dr. Jim Warwick, determined from Neptune's radio signals that a Neptunian day is 16 hours and 3 minutes long.

Voyager also saw cloud shadows in Neptune's south polar region, the first time a Voyager spacecraft has been able to see such features on any planet. The shadows are cast by methane cirrus-like clouds estimated to be 50 to 75 kilometers (30 to 45 miles) above the haze or stratus clouds.

Nick Steggall

NEW VIDEOS FROM GUILD SOUND AND VISION

Members might like to add the following new titles to their "Catalogue of Videos and Films on Astronomy":

A series of 13 x 26 minute videos aimed at children eager to know more about science and technology.

Cassette 1 (1-4) Lasers, Space, the Brain, Earthquakes and Volcanoes.

Cassette 2 (5-8) Satellites, Ocean, Surgery, Food.

Cassette 3 (9-13) Genetics, Automation, Solar Energy, Tunnels, Biological Communication.

Running time 338 minutes total; price £35 each cassette or £100 for a complete set on 3 cassettes.

This is a Channel 4 production.

★★★★★

Equinox: Chaos. Another Channel 4 product on video. Running time 52 minutes, price £35.

★★★★★

Space Studies: the Planets. 7 programmes on 1 cassette. Presented by Heather Couper (Children of the Sun, Venus and Mercury, the Blue Planet, the Angry Red Planet, Planets of Gas, the Search for Planet X, are we alone?). A Channel 4 video, running time 7 x 26 minutes, price £75.

Space Studies: the Stars. 6 programmes on 1 cassette. Presented by Heather Couper (Reach for the Stars, Messages from the Stars, Secrets of the Sun, a Star is Born, Stardoom, Beyond the Big Bang). Another Channel 4 production, running time 6 x 26 minutes, £75.

★★★★★

Further details from Guild Sound and Vision Ltd., 6 Royce Road, Peterborough, PE1 5YB (Tel: 0733-315315). Please mention the AAE.

Guild Sound and Vision also have a special sale of Physics 16mm films, surplus to requirements, at £50 each. This is a fraction of their original price. Full details from GS and V.

ASTRONOMY FOR THE PUBLIC IN AUSTRALIA

We have received, via the RAS, a communication from Douglas Sprigg of Ridgetops Arkaroola, South Australia. Arkaroola is a tourist resort and wildlife sanctuary, and Mr. Sprigg explains how the centre is promoting the study by members of the public of such topics as geology, ecology, wildlife conservation and other scientific topics. Tourism at the centre is growing, and this includes many international visitors. The centre has established an accommodation base for universities and this is used primarily by earth science students on field excursions.

Arkaroola operates a small observatory for visitors in the Northern Flinders Ranges of South Australia. The main telescope is a Celestron C14 (362mm Schmidt Cassegrain), coupled with a Mead CAT computer. Seeing conditions are normally excellent. A major objective is to increase public interest and awareness in the sciences, and this obviously includes astronomy. Anyone wishing to communicate with the Arkaroola Centre should write to: Mr. Douglas P. Sprigg, Managing Director, Arkaroola Pty. Ltd., Ridgetops Arkaroola, South Australia 5700.

GNOBLEM 7

The correct solutions are given by readers in the "Letters" column.

GNOBLEM 8

Some readers may recall a book by Edgar Rice Burroughs called "The Moon Maiden". He describes how a race of Moon people inhabit the Moon which is hollow, and these people live on the *inside* of the spherical shell. They walk and go about their daily business with their feet planted firmly on the shell and their heads pointing towards the centre! Readers comments on the plausibility of such an existence are welcome.

THEATRE

It's All In The Stars

"A Meteoric Play for 7-11's written by Nigel Henbest and Michael Bennett, performed by Molecule Theatre.

This play is described as 'Science Theatre for the 1990s based on the National Curriculum'. I went to see it at the Bloomsbury Theatre, London, during the initial week of a round Britain tour lasting until April 1990.

"It's All In The Stars" is a pantomime with traditional characters intact. There is Doug Thuggery, an almost lovable, loutish villain with his loyal 'Mumsie' in tow. They set off for John O'Groats in search of a meteorite recently fallen to Earth in the hope that finding this will make Doug a Star fit to appear on 'Wogan'. However, they find themselves in competition with clever, decent young astronomer, Stella and her 'Buttons', a Scottish lad named Jimmy, who want to place the meteorite in a museum for everyone to see.

After many adventures, everything ends happily and good triumphs over bad though Doug is not forced to grovel unduly and even has a comet named after him. Topics featured in the show include time (sundials and shadow sticks); mirrors and lenses; tides; the phases of the Moon; seasonal changes and the Solar System. These are woven into the play's action and put over with the help of some lively song and dance routines. There is a degree of audience interaction and the standard of presentation is high. The dialogue is funny and fast-moving and the children in the audience at the time I saw the play obviously enjoyed it very much.

Some of the effects, for example, views of the Planets as seen through a simple telescope, are crude and the comet doesn't appear at all. But what this show may lack in magic it makes up for in fun and highly professional enthusiasm. As a final tribute I should say that I left my seat at the end of the performance to a chorus of adult male voices in the next row chanting "Mercury, Venus, Mars and Jupiter etc. . ." The visit underlined for me the importance of extending the classroom wherever possible to include observatory, planetarium or theatre and the value this has in actively helping students of all ages to get involved with and really understand the concepts being presented within AT16.

If you want to take school parties to this show you need to book well ahead as it is proving very popular. For more information about this and other Molecule Projects contact:

*Molecule Theatre, Bloomsbury Theatre,
15 Gordon Street, LONDON, WC1H 0AH
Tel: 01-388 5739*

Teresa Grafton, Schools Lecturer, The London Planetarium

Note: Performances are as follows:

16 Jan	Gulbenkian, Canterbury
23 Jan	Merlin, Frome
29 Jan	CTC, Solihull
5 Feb	The Elgiva, Chesham
12 Feb	The Elgiva, Chesham
26 Feb	Festival, Malvern
5 Mar	Stag, Sevenoaks
12 Mar	Rosehill, Whitehaven
19 Mar	Grange Arts, Oldham
26 Mar	Playhouse, Derby
9 Apr	Royal Lyceum, Edinburgh

BOOK REVIEWS

PHYSICS AND ASTRONOMY: VIDEO AND FILM RESOURCES

Compiled by BUFVC/IOP/RAS, published June 1989 by BUFVC. Price £12 (£7 to BUFVC members) ISBN 0-901299-59-6.

The 77 pages of this A4 booklet bring together details of over 600 videos and films currently for hire or sale in the UK and which a team of reviewers have deemed suitable for use with students at sixth form level and above. Appropriate Open University, university, polytechnic and college resources are included. Each entry is accompanied by information on availability, format, duration, publisher and a concise outline of content to enable the reader to decide on its suitability for his/her needs.

The topics included range from the philosophy of science to geophysics. Astronomical titles are in the minority but in this category range from 'computer simulations of galactic clusters' to 'what is an eclipse?' The separate subject index and title index make it easy to locate areas of interest.

At £12 the 77 page catalogue appears rather expensive. The information, however, will be invaluable to schools and colleges with commitments to physics or astronomy courses. A single copy will enhance your departmental library. For those developing resource-based learning, a copy for your resources officer should be considered.

Readers should also consider the film and video catalogue compiled by Eric Zucker for the AAE which is good value at only £1 to members. (From the Treasurer).

The BUFVC catalogue is available from: BUFVC, 55 Greek Street, London W1V 5LR.

Bob Kibble

MAKING USE OF PHYSICS – for GCSE by R. Kibble, published 1989 by Macmillan Education Ltd., price in the region of £3, paperback, pp238. ISBN 0-333-46926-7.

This article might appropriately be called "the reviewer reviewed" as it deals with a book by AAE Secretary Bob Kibble, who, from time to time, has reviewed books by other authors in this Newsletter, including this issue. Furthermore, Bob Kibble's book is on Physics, not Astronomy, and this underlines the link which exists between the two subjects. Although "Making Use of Physics" has expressly been written for students taking Physics for GCSE, it may be profitably read by teachers of Astronomy at that level.

Typical chapters are entitled: Speed, Force, Acceleration; Gravity; Atoms; Molecules and Models; Pressure; Mathematical Skills; Vibrations and Waves; the Electromagnetic Spectrum; Radioactivity; Electrons and Electricity; Electromagnetism; Introducing Electronics.

The book easily passes my "flip test", i.e. a rapid flip through the pages giving an immediate first impression, which, although not infallible, usually correlates very well with a more detailed scrutiny. Thus the flip test shows a visually attractive format with "Scientific American Standard" coloured diagrams.

In his preface the author refers to the "science for all" principle, with more students studying science but fewer studying physics, and the trend towards school-based methods of assessment. The book takes both of these into account.

Mr. Kibble points out that his book is not intended to be read from cover to cover, nor is it a course in its own right. Nevertheless, it *may* be read in that manner, as the chapters follow on sequentially.

"Making Use of Physics" is an excellent publication and a bargain at its proposed price. I thoroughly commend it to AAE members – and to many others.

Eric Zucker

ADDRESSES FOR CORRESPONDENCE

- Secretary:** Bob Kibble, 34 Acland Crescent, Denmark Hill, London SE5 8EQ. For all general enquiries (Tel: 01-274 0530).
- Treasurer:** Nick Steggall, 38 Victoria Crescent, Birkdale Road, Dewsbury WF13 4HJ for all financial and subscription enquiries (Tel: 0924 454718).
- Editor:** Eric Zucker, 35 Gundreda Road, Lewes, East Sussex BN7 1PT for all enquiries concerning the Newsletter (Tel: 0273 474347).

THE PLANETARY SOCIETY

The Planetary Society is an independent non-profit organization with the goal of exploring our Solar System and continuing the search for extra-terrestrial life. It supports critical research projects and has doubled the discovery rate of near-Earth asteroids, as well as making possible the most advanced radio search for extra-terrestrial civilizations. The Planetary Society has been in the forefront of promoting a return to Mars as a cooperative venture by many nations.

Membership costs \$35 a year. Further details from: The Planetary Society, Membership Department, 65 North Catalina Avenue, Pasadena, CA91106, USA.

BINOCULARS FROM ZEISS

Members who received the leaflet on the Zeiss Telementor telescope in the last issue of *Gnomon* may be interested in the new Carl Zeiss Binoculars brochure, which has just been received by the AAE. This is a lavishly produced booklet with details of many different types. (The rôle of the binoculars in astronomical observation is often ignored – in many instances, binoculars are better than a telescope). For a copy of the brochure, write to: Steve Lealand, Carl Zeiss Jena Ltd., P.O. Box 71, Ripon Way, Borehamwood, Herts. WD6 2AR, mentioning the AAE Newsletter, *Gnomon*.

ADULT EDUCATION AT KENT

We received (unfortunately too late for publication in the previous issue) details of courses open to the general public at the University of Kent. Although the courses for autumn and winter 1989/90 are well under way, members may still be interested in the astronomical content with a view to earlier notification next year!

The course, entitled "Frontiers of Space: introduction to Space Science", convened by Dr. John Zamecki, Lecturer in Physics at the University commenced on 10 October, 1989, and runs on Tuesday evenings (fee £11, but reduced rates for certain pensioners and unemployed). The course is sponsored by the Institute of Physics, ICI and the Royal Aeronautical Society. Among the topics dealt with are: the nature of the Universe and Solar System, black holes, optical and radio telescopes, satellites, extra-terrestrial intelligence, materials in micro-gravity and experiments actually carried out in space by scientists from the University of Kent.

It is hoped that the above will whet the appetite of readers interested in attending next year's sessions.

No previous scientific knowledge is required. For details of future courses contact: The General Adult Education Programme Office, School of Continuing Education, Rutherford College, The University, Canterbury, Kent CT2 7NX (telephone 0227-764000; ask for Jean Field on ext. 7647 or Vicki Inge on ext. 3662).

BOOKS FROM ADAM HILGER

We have received a leaflet from the Institute of Physics (IOP) Publishing Ltd, a list of books on Astronomy published by Adam Hilger. Several are re-issues of earlier publications.

To obtain a copy of the list, write to: Adam Hilger, IOP Publishing Ltd., Techno House, Redcliffe Way, Bristol, BS1 6NX (telephone 0272-297481).

JAS PLANETARIUM LECTURES

AAE members are reminded that they are entitled to attend meetings of the Junior Astronomical Society held at the London Planetarium *free of charge*. The lectures are accompanied by planetarium shows. Evidence of paid-up membership of the AAE is required (e.g. a membership subscription receipt).

The next JAS meeting will take place at the London Planetarium at 10.30 am on Saturday 10 March, 1990.

IN THE NEXT ISSUE: Review of the Irish Astronomical Journal, in particular an article entitled "the Universe as a Teaching Aid". Also more on astrology, and an account of an instrument called a stellotoposcope described in the French journal "les cahiers clairaut". News of a Finnish Amateur Astronomy Organization (Ursa Astronomical Association).

SPRINGER-VERLAG ASTRO-CATALOGUE

The current catalogue of books on Astronomy and Astrophysics has been received which runs to 12 pages. Members can obtain copies of the catalogue on application to: Springer for Science, POB 503, 1970 AM IJMUJIDEN, The Netherlands. (State that the application is for books on Astronomy and Astrophysics. It would be helpful if members also stated that they saw this notice in the AAE's Newsletter, *Gnomon*).

CIRCULATION OF GNOMON IS NOW 800,
AND THERE ARE 4 ISSUES PER YEAR.

Deadline for copy:
5 weeks before each equinox and solstice

Dear Editor,

"Earlier Gnoblems" – Gnomon 9(1), p.6. There is a misprint: the first sentence should read "... unequal at the equinoxes?"

Also there is an error. The definition and calculation of sunrise and sunset, as used for the "Astronomical Ephemeris", includes an allowance for the solar diameter and refraction. No inequality arises from this as the same zenith distance, 90° 50', is used for both phenomena.

The AE definitions reflect the history of its predecessor, "The Nautical Almanac". Seamen can only observe stars and the sea horizon for astro-navigation between the AE sunrise/sunset and the beginning/end of nautical twilight. Observations of five stars for a 'fix' and two more in reserve, to allow for mistakes and anomalous refraction are desirable. This requires careful preplanning and timing, particularly in low latitudes where twilight is of short duration.

The AE definition is not the only one although the alternatives are now obsolescent for practical purposes.

Yours sincerely,

Cmdr. L. M. Dougherty, Barkisland, W. Yorks.

Dear Editor,

I have just spent some time with "Gnomon" on my knee, rotated through 90°, and with my eyes crossed, attempting to solve Gnoblem 7. I think the "planet" can be found 25mm right and 22mm up from the bottom left-hand corner of the first picture; I can't find it at all on the second. The "stars" look suspiciously like dabs of "Liquid Paper" or similar, but I suppose if they were perfectly round, and the same on both pictures, it would hardly be realistic...

I like your term "canuters" for the people who wish to impose bureaucratic tidiness in defiance of the laws of nature. (I suppose the mythical American legislator who defined "pi" to be exactly 3 come under the same heading.) I thoroughly agree with your views about the proposed mucking-about with the time system; I enclose a copy of the notes I sent to the Home Office on the topic. I got the usual polite acknowledgement; whether they take any notice is, of course, quite another matter. None of what I have written will be news to you, but it makes me feel better to air it whenever possible!

Dr. Fiona Vincent,

Mills Observatory, Dundee.

Note: A copy of Dr. Vincents notes on the time system is available on application. please send 50p in stamps to cover photo-copying and postage. Ed.

Dear Editor,

Telescopes at our observatory are known as 'the 5-inch' or the 26-inch', whilst the eyepieces are 'the 25' or 'the 12.5' (millimetres). Telescopes are sold commercially in metric sizes but many people refer to their own, especially if making one, as their '4½-inch' or '8-inch'. (I'm not speaking for the very large, more professional societies). We recently had an advertisement, including photos, from someone who is building and selling 'home-made' telescopes. He refers to them as '16-inch' and '20-inch'.

Talking about 'a certain poetry', what about that lovely old song, 'Inchworm'? Want to metricate that?

Most alarming about GMT! Like astronomers everywhere, the Australians use UT all the time. The uniform time system for Europe seems ludicrous. Is the EEC isolated from the rest of the world? No, of course not! Does everyone get to work and go home at the same, uniform time, whatever the biological time of day?

If there's a petition against all this, put my name on it! It's just another attempt to reduce the significance and effectiveness of England.

Interesting information, especially for children, about ellipses and things. May I suggest that, if hand-written or drawn inserts are added to articles, that these be very neat and clear? [Point taken! Ed.]

I presume that you've already noticed the error in the table of planet sizes (page 5). [Yes, many readers have pointed this out. Ed.]

Very interested in National Astronomy Week. A lot of good suggestions. May use some of them.

Now – Gnoblem 7. Apart from the funny-shaped stars, which are more suggestive of a journey through the asteroid belt than anything, there must be a catch! All I did was to trace both diagrams with a felt pen on small sheets of clear plastic and then put them over the ones in Gnomon. I then 'shivered' them from side to side. There are planets at – diagram A: 25X, 23Y. Diagram B: 35X, 36Y and also at 4X, 72Y (or was this last one just a slip of the pen?). [No catch. Yes, a slip of the pen! Ed.]

FINALLY – the telescope brochure. I am worried to see, in the list of Supplementary Equipment, 'set of 5 neutral Sun filters'. Can you please reassure me that these are not the extremely dangerous eyepiece filters which either don't eliminate harmful rays or which may shatter when in use? Either way, eyes are likely to be severely damaged by unsuspecting users, often children.

Yours sincerely

Karenza Burk,

RMB 210.

Creswick, Victoria, 3363, Australia.

Editor's note: We will raise the point about the Sun Filters with the manufacturers, Carl Zeiss of Jena, German Democratic Republic. In the meantime, please observe the utmost caution.

Dear Editor,

Mr. George Y. Haig in his letter in Gnomon of January 1988 points out that there is a simple alternative to my Nomogramic method for converting coordinate systems and deriving altitudes and azimuths from hour angles and declinations, by using a graticule as an overlay on a planisphere such as a Philips Planisphere. I am only too well aware of this, because I first published an altitude-azimuth graticule for use on a planisphere in the Journal of the BAA of December 1975. Details of its construction, together with a computer printout of all the relevant coordinates were given in my book on "Positional Astronomy and Astro Navigation" published in 1978. Since then I have produced Polar graticules for the Daily Telegraph Star map, and four other commercial star maps. Rather sadly the graticules are not made part of the planisphere, but are available separately from the London Planetarium or the BAA, or by post from me. I notice however that a precision planisphere with a graticule suited for a range of latitudes is on sale in the USA and advertized in Popular Astronomy (October 1989 back page) for \$17.

The nomograms I produced for Gnomon (Sept. 1987) were intended as a means of finding just where to look for stars using cartesian coordinates on three sheets of A4 paper which serve a number of useful purposes, and in effect renders an expensive planisphere unnecessary! The A4 sheets of nomograms are obtainable from the BAA as mentioned in my original note.

I have been at a loss over the past ten or so years to understand why no British firm has taken the important step of bringing out a planisphere which in effect is a versatile astrolabe, telling stargazers exactly where to look for stars or planets in terms of altitudes and azimuths, our natural earthly coordinates.

Yours sincerely,

H. Robert Mills

83 Firs Road,

Firsdown, Salisbury SP5 1SW.

GRESHAM LECTURES AND ASTRONOMY

by RAYMOND HIDE, Sc.D., F.R.S.
Gresham Professor of Astronomy

Gresham College was founded in 1597 with the appointment of seven professors, one in each of the traditional areas of knowledge, namely contemporary astronomy, geometry, physic, divinity, law, music and rhetoric. Modern physical and biological sciences, mathematics, technology and medicine developed from what constituted "astronomy", "geometry" and "physic" of the sixteenth century, so it is appropriate now to interpret the first of these titles as covering the whole of modern physical sciences.

The promotion of public understanding of knowledge in all these areas has been a constant theme of Gresham College throughout its existence. Professional science is a comparatively recent development which is characterized by continual fragmentation into numerous "specializations". A challenge to every professional scientist is presented by the need to promote better understanding and appreciation of his or her activities amongst two groups of people, namely fellow scientists working in other areas, and members of the general public with little or no scientific background. It is the latter group which, through taxation, provide most of the funding needed for the pursuit of scientific research!

So it is appropriate for Gresham professors not only to deliver lectures to general audiences but also to conduct seminars attended by budding professional scientists. This dual approach to the public understanding of the physical sciences is reflected in the current programme of the astronomy professor, details of which can be found in the 1989-90 programme of Gresham College.

26 October 1989

Note: It was too late to advertize this year's lectures as information was only recently received. Professor Hide was due to give a lecture on "the Earth's rotation and Magnetic Fields" on 1 December, 1989.

COMMERCIAL ADVERTISING IN GNOMON

Circulation now 800.

The prices quoted below are based on a circulation of 600. The rise in membership has necessitated the number of copies of GNOMON to be increased, but we are maintaining existing charges for the time being.

COMMERCIAL RATES:

Full Page	£100 for 1 insertion
	£200 for 2 insertions
	£250 for 3 insertions

Half Page	£ 50 for 1 insertion
	£100 for 2 insertions
	£125 for 3 insertions

Quarter Page	£ 25 for 1 insertion
	£ 50 for 2 insertions
	£ 66 for 3 insertions

Loose inserts	£ 50 per issue (300 copies)
	PLUS extra postage charges if necessary.