

114. TG. Oc.



GNOMON

Newsletter of the Association for Astronomy Education

Vol. 7 No. 3

ISSN 0952-326X

April 1988

ANNUAL MEETING

This will take place on Saturday 21st May 1988 at the Hammersmith and West London College (nearest Underground Stations: West Kensington, Kensington Olympia, Hammersmith).

The annual meeting consists of two parts: a business meeting (the AGM) to elect officers and Council members, etc., and a number of talks and discussions on astronomy education. There will also be a *members' exhibition*: please bring along any interesting exhibits to display at the meeting.

COME ALONG AND MEET YOUR FELLOW ASTRONOMY TEACHERS – JUST COMPLETE THE REPLY SLIP AND SEND IT WITH YOUR REMITTANCE TO BOB KIBBLE, ACTING SECRETARY (address on slip).

CONSTITUTION

You will find enclosed in this issue of the newsletter a copy of the second draft of the proposed amended Constitution. This draft Constitution will be discussed and voted upon at the AGM in accordance with the existing Constitution.

EDITORIAL COMMENT

Constitutions do not generate wild enthusiasm; members are not attracted to societies because of their constitutions and rules. Thus most members of the AAE do not go into raptures over its constitution; as long as the organisation seems to be functioning reasonably well, the constitution rarely enters one's thoughts.

However, the Association has now been operating for seven years under a constitution proposed in its first year, and with hindsight some anomalies have been brought to light. These mostly affect the number of officers of the Association, their titles and duties; the number of Council members and their periods of office; the methods of election of Council members and officers; and some related matters.

All members should have received a draft document, the proposed new constitution (despite the fact that for 'technical reasons' this had to be issued in two parts, for which the Council apologise).

The Council has further considered the draft document, and as a result proposed its own amendments. These are included with this issue of the Newsletter. The Council hope that members will endorse the proposed new constitution, as amended, at the Annual General Meeting on 21 May 1988. All members, of course, have the right to put forward other amendments, and these may be debated at the AGM.

Once the new constitution has been agreed, it is hoped that it will again fall into the background, only to be referred to as and when problems arise.

Articles for GNOMON

Members are encouraged to contribute to the Newsletter. If you have anything of interest relating to astronomy and its teaching *at any level* (from kindergarten to University), we will be pleased to publish it. News from astronomical societies is also welcome. It would be helpful if articles are typewritten. Photographs may also be useful, but some editorial discretion may be used here as they take up valuable space in the Newsletter.

Copyright

Although the Association owns the copyright of material in GNOMON, we

ADDRESSES FOR CORRESPONDENCE

These are the current addresses, but are liable to change after the annual general meeting on 21 May.

Secretary: Bob Kibble, 34 Acland Crescent, Denmark Hill, LONDON SE5 8EQ for all general enquiries (Tel: 01-274-0530).

Treasurer: Laurence Anslow, "Asterion", 18 Wellington Lane, FARNHAM, Surrey. GU9 9BA (Tel: 0252-20588). For all financial and subscription enquiries.

Editor: Eric Zucker, 35 Gundreda Road, LEWES, East Sussex. BN7 1PT (Tel: 0273-474347). For all enquiries concerning the Newsletter.

are pleased to waive this right as long as (1) copies are made only for educational purposes and (2) the AAE is quoted as the source. Sometimes the copyright is vested in other publications; please contact the editor if there is any doubt.

Advertising in GNOMON

Members adverts of reasonable length are *free*. So if you have a telescope for sale, or wish to buy accessories, slides, books and so forth, remember you may advertise them in this Newsletter. A small charge will be made for the same facilities offered to non-members.

Commercial adverts are best made as inserts. The cost will depend on the material supplied, and will take into account any possible increased postal charges. Contact the editor for details.

SHOULD WE ABOLISH NIGHT?

A lady was once overheard to say as she alighted from a train which had just pulled into London Victoria railway station that she always travelled in the front of the train as this was the part which stopped first. In this way she gained on her fellow travellers who presumably carried on moving when she had already left the train!

The same sort of mentality seems to be adopted by the recent spate of letters to the press and to the broadcasting media concerning British Summer Time, for example, that we gain an hour of daylight if we adopt it, or even more so if we went over to Double BST! Some correspondents really believe the length of the day, from sunrise to sunset, could be increased by utilising such dodges.

Should the AAE be carrying out an educational crusade to eradicate such peculiar beliefs?

THERE BE DRAGONS!

A recent survey by an AAE member amongst school children has shown that most of the very young ones (up to 7 years old) really believe that there are bears, lions, dragons, etc. in the sky. To them, the constellations are as real as they were to the ancient Greeks.

Most children seem to discard these views as they grow older (possibly at the same time as they lose faith in Father Christmas), but surprisingly the belief lingers on with some of them even into adulthood.

Should the AAE be concerned about this?



PROJECTS IN SCIENCE WITH ASTRONOMY AT GCSE LEVEL

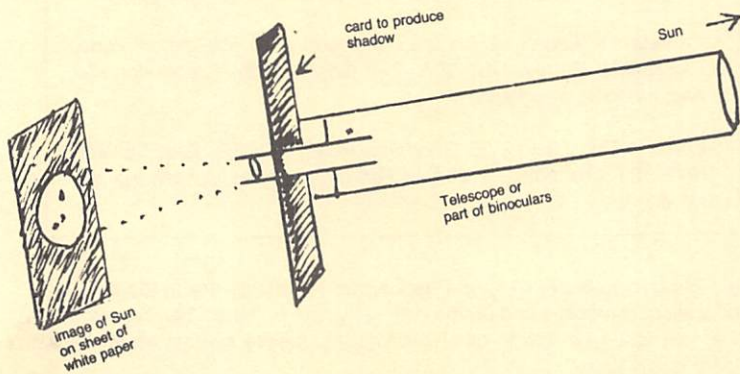
The following projects have been suggested to enquiries which have been sent in to the AAE. They represent typical advice offered by the Association.

1. SUNSPOTS and SUNSPOT CYCLES

- (a) If you have a small telescope or binoculars you can project an image of the sun onto a sheet of paper. Sunspots if they can be found can be counted. You could do this whenever the sun is shining over a period of a few weeks. Count the number of sunspots and note where they are on the surface.

NOTE: NEVER LOOK DIRECTLY AT THE SUN THROUGH ANY OPTICAL AID – NOT EVEN WITH A FILTER!!

The technique is:



(b) Follow-up work:

- From your school or local library:
- find out about *sunspot cycles*. How often do they occur? Why do they occur? What are sunspots?
 - it has been said that the patterns of sunspot maxima and minima might be related to the growth patterns of trees as shown by annual growth rings. Find out more about these patterns.

2. HOW HOT IS THE SUN?

- Try to find out the temperature of the Sun. Look this up in textbooks or an encyclopaedia. Is the Sun at a single temperature or different temperatures?
- How can you tell how hot the sun is? What kind of thermometer can possibly tell the temperature of something so far away?
- Can the Sun's radiations, light, heat, radio and X-rays, tell us anything about its temperature?
- Some stars are red in colour. Some are blue and some are white. The Sun is yellow. Why are stars different colours?

3. ASTRONOMICAL CLOCKS AND TIMEKEEPING

- How do you use the Sun, Moon or Stars to tell the time?
- What problems do you find if you set up a simple 'stick' sundial for accurate timekeeping?

Some possible projects on this theme:

- Make a simple sundial. Check it against your own school clock. What difficulties do you find if you try to tell the time using this sundial? Look up 'sundials' in a reference book. What different styles are there? Why are different sundials required?
- The Sun is a star. Is a Sundial the same as a star-dial? Can you tell the time by looking at the stars at night? If so, will your star-clock be as regular and as reliable as your sundial?
- How was *one second of time* decided upon before we had atomic clocks?

4. THE TELESCOPE

- Construct a simple astronomical telescope out of two lenses (they could be fitted into cardboard tubes), focal lengths (for example) 50cm and 5cm. The smallest is the eyepiece, and you should be able to slide it to and fro in the tube.
- Notice the distortion (spherical aberration) and how it could be reduced by stopping down the lenses.
- Measure the magnifying power by looking at a distant object through the telescope with one eye and directly with the other eye. Show that this magnifying power is the ratio of the focal lengths ($50 \div 5$ in this example).
- Comment on any chromatic aberration (colours you might see).
- Repeat all this using a *concave* lens as eyepiece (e.g. 5cm virtual focal length) – this is a Galilean telescope.
- Use your telescope – or a proper one if there is too much aberration – to observe a few interesting astronomical objects, eg Alcor and Mizar in the Plough (estimate their angular separation), the Great Nebula in Orion, any planets that might be visible (Jupiter and Venus are observable now). Look for Jupiter's moons – make drawings of their positions on different nights (you will need a large aperture objective, but a small aperture (say, 5mm) eyepiece).
- A separate but related experiment if you have a camera – try taking some astrophotographs (using a stationary camera alone) – exposures of about 15 minutes or so would give you star trails. You will have to do this well away from street lights.

WEATHER FORECAST

Today's weather will be cloudy (as it has been for as long as anyone can remember). Temperatures will range from the low to high 900s Fahrenheit. Atmospheric pressure will continue to be high – about 90 times as high as it ever gets on our neighbour planet, Earth. Winds will average about four miles per hour (but they still may be able to knock you over because of the extremely high pressure), and there is the usual chance of misty precipitation of sulphuric acid. The Sun will set in the East about two months after sunrise.

The above weather forecast for Venus is reprinted from *The Universe in the Classroom*, a newsletter on teaching astronomy published and © copyright Spring 1985 by the Astronomical Society of the Pacific, 1290 24th Avenue, San Francisco, CA 94122, USA. Subscriptions are free to astronomy teachers who write for it on school stationery.

Readers might like to send in similar weather forecasts for other planets or satellites. Would someone like to start the ball rolling with Pluto?



STARBURST!

**The London Planetarium's
NEW STAR SHOW**
featuring the secret lives of the stars!
Written & narrated by
Heather Couper

OPEN EVERY DAY
Shows every 40 minutes
from 12.20pm Mon-Fri; 11am Sat-Sun
Admission: £2.50 Adult £1.60 Child £1.90 OAP

**The London Planetarium, Marylebone Road,
London NW1 5LR**
Telephone: 01-486 1121



GNOBLEM 3

A national newspaper gives the following information for 22 March 1988:

Sunrise 5.59 am

Sunset 6.17pm

From this we see that the length of the morning (sunrise to noon, or midday) is 6 hours and 1 minute, whereas the length of the afternoon (noon to sunset) is 6 hours and 17 minutes. If noon is the instant when the Sun reaches its highest point in the sky, why is it that the durations of the morning and afternoon are not the same, or, in other words why is noon not exactly midway between sunrise and sunset.

The same newspaper gives similar information for 31 March 1988:

Sunrise 6.38am

Sunset 7.33pm

Even taking into account British Summer Time, which was operative on 31 March, there is still a discrepancy between the lengths of morning and afternoon. Readers' views are welcomed. (Also, please send in further gnoblems).

SOLUTION TO GNOBLEM 1

Voluminous correspondence has been received relating to this problem (the "asteroid problem"), with both Robert Mills and Keith Atkin maintaining their respective positions. The editor also thanks the many other readers who have expressed their opinions, supporting either one school of thought or the other.

Basically, the nub of the problem is the point about which the object turns when the tangential force is applied. There is a small majority in favour of the centre of mass being that point (Mr. Atkins' view); but Robert Mills has carried out an experiment in which a metre rule is floated in a bath of water, a force applied at one end (perpendicular to the length of the rule) and the subsequent motion observed. He notices that the centre of rotation is *not* the centre of mass but a point 66.7cm away from the end at which the force is applied.

In the interest of harmonious relations with our readers, the editor is, of course, impartial in this dispute.

SOLUTION TO GNOBLEM 2

Various ideas have been submitted by readers concerning the problem (GNOMON 2, Vol. 7, No. 2).

Some say that there is indeed a potential difference (voltage) between Earth and Moon, and that astronauts (lunarnauts?) landing on the Moon will experience an electric shock. If this is the case, however, there seems to be very little information published on this effect. One reader has suggested that the electric discharge from the astronaut takes place over the person's surface, not throughout his body, and the resulting "skin-effect" would cause no inconvenience.

Other readers take a contrary view. They say that the plasma produced by the solar wind is, in fact, a large-scale region of conducting material in which both Earth and Moon are embedded. Everything within this region will therefore be at the same potential, and thus there is no discharge or electric shock, on landing.

Any further views on this problem are welcome – GNOBLEMS are not necessarily problems with clear-cut solutions.

GEMINI

Gemini is the name of the newsletter of the Royal Greenwich Observatory at Herstmonceux and La Palma. For some time now, the RGO and AAE have been exchanging newsletters. Until very recently the editor was Dr. Margaret Penston – the present editors are Chas Parker and Keith Tritton.

Copies of *Gemini* will be available for inspection at the annual meeting of the AAE on 21 May.

VENUS OBSERVED: a naked eye observation



I recently observed Venus "set" behind a roof-top low down in the western sky during conditions of great clarity. The diagram shows, in an exaggerated way, the path taken by the planet; position (1) corresponds to Venus just beginning to set, and position (2) when it has just completely set. I wondered whether I would be able to estimate the time which had elapsed between these two positions, and if so, whether I would be able to make a rough estimate of the angular size of Venus (I had no instruments and had not prepared in any way for this casual observation). I realised, of course, that I would have to keep my head perfectly still during the observation.

In fact, what I observed is shown by the graph; the time between the two positions was about three seconds, but more interestingly were the brightness fluctuations between them. When the Moon occults a star, there are similar fluctuations due to diffraction. Was the "Venus effect" with a finite size disc of similar origin? I would be interested to hear from any reader who has witnessed the same phenomenon.

POOR MAN'S PLANETARIUM

Are you, like many others, too impoverished to buy a planetarium? If so, here is a way in which you may achieve a useful result similar to a planetarium if you are able to beg, borrow or steal (preferably legally) two overhead projectors. All that is necessary is to place the two projectors side by side, slightly inclined to each other, in such a way that they project overlapping pictures on to the same screen.

OHP 1 projects star images; these are circular sheets of cardboard in which pinholes are made, representing the stars.

Make large holes for bright stars, smaller ones for faint stars. The north celestial pole should be at the centre of the disc, so that Polaris is slightly off-centre. Surrounding the disc fix another sheet of cardboard (with a large hole cut out to accommodate the disc; so as to remove unnecessary background light).

OHP 2 projects a grid (co-ordinate) system. This is another cardboard disc with slots cut out radiating from the centre. Each slot corresponds to an hour circle – they could be a series of dotted lines if preferred. With practice the hours of Right Ascension can also be cut out of the disc. A light removing guard around the disc completes the set-up.

The star disc should be capable of rotation (diurnal rotation), so a little cardboard hand stuck on the disc is useful. The grid system must remain fixed, of course.

In a completely darkened room, the effect is passable. One limitation is that only the stars in the polar region (or regions) can be shown, but a continuous loop of an acetate roll might be possible for the stars in the equatorial zone.

To obtain the realistic crick in the neck peculiar to real planetaria and the true heavens, the projectors may be directed slightly upwards on to a raised screen.

Eric Zucker

THE ASTRONOMICAL SOCIETY OF THE PACIFIC

The Astronomical Society of the Pacific (ASP) and the Association for Astronomy Education (AAE) have agreed to exchange publications. The ASP, based in San Francisco, is one of the main sources for the dissemination of non-technical information on astronomy. It was founded in 1889 and no doubt is looking forward to its centenary next year.

The ASP publishes a newsletter on teaching astronomy three times a year, edited by Andrew Fraknoi. To give an idea of the range of topics covered in the newsletter, we may list articles on Voyager 2 and Miranda, on the constellations (including one in which students are asked to invent their own, having been provided with a star chart), on Venus (including information about the Soviet Vega spacecraft), on Halley's comet (1986 issue), on planets around other stars, and many others.

Some ASP literature will be available for inspection at the annual meeting of the AAE on 21 May.

"STARBURSTS!" AT THE LONDON PLANETARIUM

"Starburst!" is 1988's new star show at the London Planetarium and has been specially devised by popular astronomer, broadcaster and writer Heather Couper to celebrate the 30th anniversary of the Planetarium.

"Starburst!" is Heather Couper's first show for the London Planetarium and reveals some of the fascinating secrets of the lives of the stars.

A star is born from a glowing cloud of gas – and it may die in a spectacular explosion. The death of our own star, the Sun, in around 5 billion years' time, will mean the end of planet Earth as we know it, but in the vast expanse of the Universe, it will be no more important than the snuffing out of a candle.

When some of the giant stars die they may leave bizarre corpses behind them like pulsars, and black holes, and these and many other mysteries are probed in "Starburst!" which Heather Couper has both written and narrates. Her new show, set against the night skies, with special effects, and music by Bruckner, is thrilling, awe-inspiring and enlightening.

Heather Couper, 38, is a trained professional astronomer. She is now a full-time broadcaster and writer on astronomy and space subjects. She is author and co-author of 19 books and has presented three networked television series. Her latest series of programmes will be broadcast by Channel 4 this year.

For more information, please contact Juliet Simpkins or Undine Concannon, the London Planetarium, 01-486 1121.

(Watch out for two dramatic events in the performance – one, the explosion of a neighbouring supernova when the whole dome is lit up a brilliant white, and two, the rotating beam of a pulsar, which projected on to the dome as a series of elongating and contracting beams gives rise to the illusion of rotation. Members of the audience are advised to become disembodied before the show begins. Editor.)



PHOTOGRAPHS OF SUPERNOVA 1987 A

We have received from Nicholas Steggall of Space Associations some magnificent photographs taken from the European Southern Observatory, of the large magellanic cloud supernova. These photographs, and others, will be displayed at the AAE's annual meeting on 21 May.

1987A
progenitor

1 arcmin

This photograph is reproduced by permission of the ESO.

BOOK REVIEWS

How far away are the stars?: discovering astronomy, by Peppo Gavazi (Cambridge University Press, 1987, ISBN 0521355167, 41pp, £5.95)

This is a beautiful book with which to introduce young people to astronomy. Translated by Jacqueline Mitton the simple text, in large print, takes the reader by the hand to unfold a story of the heavens through the eyes of an astronomer. The delightful watercolour illustrations, photographs and line drawings complement the text well. This hardback book represents value for money and would be an ideal reader for 8 to 10 year olds or, with help from an adult, for even younger children. I warmly recommend *How far away are the stars?* to teachers, junior school librarians, parents and anyone interested in astronomy education.

Bob Kibble, Secretary, Association for Astronomy Education.

Universe (second edition by William J. Kaufmann III, W. H. Freeman and Co., New York, USA, January 1988, ISBN 0-7167-1927-4, pp.634, hardback £24.95)

This second edition incorporates nearly all the advances in astronomy which have been made in the 20 years since the first edition was published.

The title, lacking the definite article, is a little strange, but presumably it distinguishes the book from other similarly named publications. The book contains a wealth of information; every square inch of it is used, even the front and back covers (inside and outside). It may be used as an encyclopaedia of astronomy covering every aspect of the subject. There are 29 chapters, each listed as a "contents overview", followed by nine pages of a breakdown of the individual chapters, so that it is easy to locate a particular topic by consulting this list. There is also an impressive nine page index covering about 1600 items; some idea of the detail in the index may be illustrated by taking *gravity* as an example. Separately listed are: *gravitation, gravitational deflection of light, gravitational lens, gravitational radiation, gravitational slowing of time, gravitational wave, gravitino, graviton, and gravity (see gravitation)*. There are eight different subject entries under *Pluto*, to give another example.

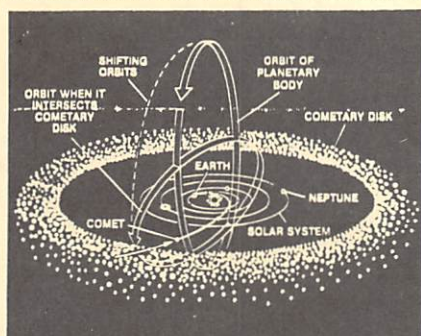
There are seven appendices on planets, satellites, stars, etc. and a glossary of some 500 astronomical terms.

The book is well written and easy to understand; the photographs and diagrams are of *Scientific American* standard. Very little maths is used, which may annoy some readers, but this does mean that the book will appeal to the general reader and intelligent layman. Amongst the "fringe" topics included are *meteorology, geology and life in the Universe*. Essays by specialists are presented throughout the book, and include one entitled *Supercomputers in Astronomy* and another on *The Hubble Space Telescope*. Problems are set at the ends of the chapters, some involving some simple maths, and the answers to selected problems are given at the end of the book.

This is an excellent publication and I wholeheartedly recommend it to all members of the AAE. If I have any criticisms at all, they relate to the awkward size of the book (10" x 8" x 1 1/4") and its weight (over 3lb). A paperback edition, while perhaps not so durable, would be easier to handle; nevertheless £24.95 spent on this book is money well spent.

Eric Zucker

Some basic details of *Observational Astronomy* by S. J. Lubbock, reviewed in GNOMON Vol. 7, No. 2, were omitted. We apologise for this slip; the details which were missing are: published by the Federation of Astronomical Societies and available from Ken Marcus, 5 Cedar Gardens, Brighton BN1 6YD, 75p inc. p&p.



NASA SCIENTIST BELIEVES A TENTH PLANET MAY EXIST

Information supplied by Nicholas E. Steggall (Space Associations, 38 Victoria Crescent, Birkdale Road, Dewsbury, W. Yorkshire WF13 4HJ).

A tenth planet may exist beyond the known solar system. If it does, it must travel in an orbit at nearly right angles to the orbits of the known planets – an orbit so elongated that it only nears the sun and known planets every 700 to 1000 years, according to NASA scientist Dr. John Anderson.

His conclusion was first put forward in a book, "The Galaxy and the Solar System," published by the University of Arizona Press. It follows examination of long term astronomical measurements, together with the absence of gravitational effects of a tenth planet on the Pioneer 10 and 11 spacecraft. Both the Pioneers spacecraft are currently in the far solar system so they represent a uniquely sensitive measuring system for gravity effects.

Astronomers have long sought a large planet or other object beyond the orbits of Neptune and Pluto. Data which exists on the orbits of the planets indicates that some kind of celestial object has affected the orbits of the outer planets. Until 1978, this object was thought to have been Pluto and it was believed that neither the planet *nor* its moon were massive enough to cause the long-observed waverings in the orbits of the outer planets. Anderson believes that some other object must be responsible for this effect.

Between 1810 and 1910, during which time measurements were reasonably comparable to modern astronomical standards, evidence for an additional solar system body was strong. Yet the Pioneer findings have shown none of these effects. This has caused experts in the field of planet-orbit measurement (celestial mechanics) to re-examine Anderson's interpretation of the long record of orbit data.

Anderson has reviewed many types of orbit measurements taken over a period of almost two centuries. His re-interpretations of these data now appears to show that, from the present back as far as 1910, all types of measurement techniques have failed to show any unexplained outer planet variations, this despite the fact that most orbit experts had long assumed that these well-known effects were continuing into the present century.

Long time periods are required to reach final conclusions about the very small effects on planetary orbits because the outer planets take a very long time to orbit the sun. Therefore measurements of small position drifts in orbital arcs take decades. Uranus circles the sun once every 84 years and Neptune once every 165 years.

Anderson therefore maintains that the best explanation for an object very likely to have been there for at least 100 years and then disappearing is a "planet" on a greatly elongated orbit. His data also tend to strengthen the idea that some kind of tenth planetary body may have caused the cataclysmic comet impacts some scientists believe are responsible for periodic mass extinctions, including that of the dinosaurs.

Anderson's surveys of theories for additional solar system bodies to explain first the apparent presence and then the absence of such a body have covered both "planets and stars", including mini-sized brown dwarfs. One of the current theories is that of a planet whose orbit is tilted at almost right angles to the orbits of the other planets. In one dimension, this orbit might be from 10 to 20 billion miles across.

The Pioneer spacecraft are good indicators of the gravitational pull of celestial objects because the spacecraft generate almost no forces of their own which affect their trajectories. They are stabilized by their own spin, rather than the thrusts of control jets and like tiny planets, float freely in the gravity fields of the solar system planets. Any unexpected changes in their velocities would show the presence of an uncharted star or planetary object.

In three years of precise measuring, Anderson has found no gravitational effect on Pioneers 10 and 11 which cannot be explained by the known nine planets. His review of planetary orbit data appears to show that this has been the case for the past 75 years. But Anderson believes that the data gathered between the 17th and early 20th centuries, showing orbit irregularities, is valid. He suggests that his own negative data mean that whatever perturbed the orbits of outer planets is now either a huge distance from the Sun or is orbiting on the side of the Sun opposite Uranus and Neptune.

GRATICULE FOR GREENWICH STAR DISC

The Greenwich Star Disc was reviewed in the last issue of GNOMON. Robert Mills has produced a graticule attachment which in fact is a refinement giving the attitudes and azimuths of all the stars on the disc, when properly attached. It can also be used as a star compass. Those who already have the disc may care to add the graticule; if so, please write to Robert Mills, 83 Firs Road, Firsdown, Salisbury, Wilts. SP5 1SW enclosing 60p and a stamped self-addressed envelope large enough to take the disc, which is 25cm in diameter.

COUNCIL MEETING, 20 FEBRUARY 1988

This was the first meeting at which representatives of other astronomical organisations attended.

The Publicity Officer, Geraint Day, was no longer able to continue in his post owing to other commitments; the post would be up for election at the next AGM. The Council thanked Geraint for his helpful contributions to the Association. A publicity sub-committee was set up to co-ordinate AAE publicity, consisting of Julian Ravert, Terrence Murtagh, Eric Zucker and Undine Concannon. (Note: The first meeting of the publicity sub-committee took place on 9 March).

The Treasurer reported a healthy financial position for the Association.

It was agreed to exchange newsletters with the Astronomical Society of the Pacific.

The Council agreed to an AAE display stand at the FAS convention to be held at Jodrell Bank on 5 March. (Note: There were many enquiries about the AAE at this convention).

Eric Zucker reported on the current position on the proposed AAE catalogue of video-tapes and films on astronomy (see separate report in this issue).

The secretary outlined the plans for the annual meeting on 21 May at the Polytechnic of Central London. The possibility of a meeting outside London, maybe involving an overnight stay, for the 1989 annual meeting, was discussed.

It was agreed to form a Learning Resources working group, chaired by Bob Kibble and including Peter Richards-Jones and Laurence Anslow.

Ken Creamer raised the possibility of the AAE becoming a registered charity, and it was agreed to consider a Trust document which he circulated.

An interim report from the Association on Astronomy in the national curriculum was discussed. (See separate report in this issue).

The next Council meeting, no doubt involving new members elected at the AGM, would be held on Saturday 25th June 1988.

AAE CATALOGUE OF VIDEOS ON ASTRONOMY

The compilation of this catalogue is proving to be a mammoth task. Several hundred titles have been received from various distributors. It remains to classify them and to present them in a format acceptable to members. This task is not being tackled as a profit-making venture, but a charge will be made to cover production costs, postage, etc.

It appears that there is still much material in the form of film, and these titles are being incorporated into the catalogue as to omit them would constitute a considerable gap in the material.

It is now hoped that the catalogue will be available by the beginning of the next session (September), but *in the meantime*, I am prepared to search through the (as yet, unclassified) material in answer to requests from members. For example, a member wishing to have information on a film or video on the planet Mars should write to me with this request, and I will do my best to supply details of available material.

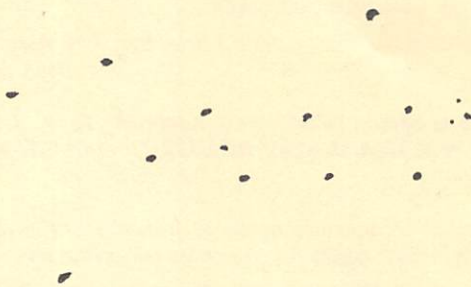
The AAE can only supply information – it is up to the member to contact the distributor directly concerning the conditions of hire or purchase. The Association can take no responsibility for the content of the material.

The Institute of Physics is interested in the proposed catalogue and may participate in its compilation. It is regretted that this service cannot be extended to non-members.

Eric Zucker (Editor)

SCRAMBLED CONSTELLATIONS

The diagram above shows two well-known constellations. However, it differs from the usual star charts in that the two constellations are superimposed! Can you identify them? (Solution below).



SOLUTION: Cassiopeia and Orion.

INFORMATION WANTED

The AAE is interested in the type of audio-visual equipment used by teachers for teaching astronomy. (Slides, films, videos, computers, etc.) Please send any information to the Secretary.

MEMBERS' ADVERTISEMENTS

WANTED: Copies of *Through my Telescope* by Will Hay and *Good Morning Boys* (Will Hay's biography – author not known). Must be in good condition, although I will consider anything if there is little response! Also require biographies of past astronomers. Write with offers to: Brian Jones, 17 Havelock Street, Thornton, Bradford, W. Yorkshire, BD13 3HA. Or telephone (0274); 833651 (24 hours).

WANTED: Holiday accommodation in the UK with astronomical interest. Are you willing to put up a French student with a passion for astronomy and improving his English? Contact M. Vincent Manly, 13 Rue du Maréchal Gallieni, 78400 Chatoir, France.

DETAILS REQUIRED of a book which explains relativity to the layman by developing tensor calculus from scratch (not the traditional method)! The authors are a husband and wife team with a surname rather like Leibnitz. Publication date, probably just pre-war. If you are aware of this book, please contact the editor.

ASTRONOMY IN THE NATIONAL CURRICULUM

The Interim report of the National Curriculum Science Working Group was published early in the new year. An important feature of the report was the inclusion of Astronomy and the Earth Sciences as a possible core theme for all children from 5 to 16. The AAE has responded positively to this initiative. The AAE Council sent its response to the DES on 24th February this year. The response gave ideas for suitable sub-themes, differentiated levels of attainment and learning experiences for the primary and secondary age ranges.