

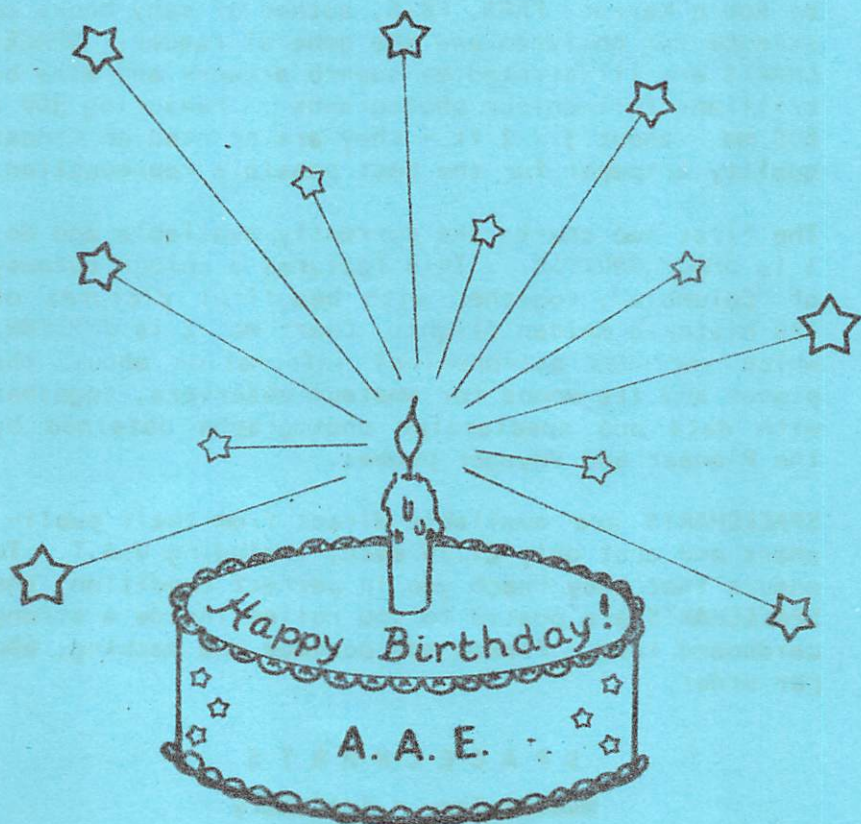


# AAE news

PUBLISHED BY THE ASSOCIATION FOR ASTRONOMY EDUCATION

Vol. 1, No. 3.

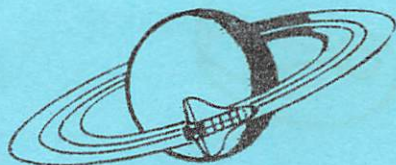
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## EDITORIAL

Our first volume of AAEnews is now complete. The end of one year and the beginning of another is always a pertinent time for reassessment. What are the questions that might be asked?

Firstly, we can consider the Newsletter itself. In its present form, does it serve a useful purpose to our membership and beyond? The question is posed with the hope that the Editor will get some response. So far, the articles published greatly outnumber the letters of support, comment or criticism. Do they serve more as an author's ego-trip rather than being informative and stimulating?

Secondly, we can look at the progress of the AAE. Without wanting to sound too parsonic, I wonder if we have done enough to provide help for educational enterprises allowing projects to be attempted other than by our enthusiastic members. Admittedly, the Newsletter has carried very little on this line - but then, very little has been submitted. Maybe now is the time for the AAE to start assembling a more concrete output.

Opportunity to discuss the future both of the Newsletter and of the AAE as a whole can be had at our Annual Meeting on 15 May. In the meantime, to paraphrase Tom Lehrer, "Your Newsletter is like a sewer; what you get out of it depends on what you put into it." Please keep your contributions rolling in.

David Clarke.

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## THE ASTRONOMICAL OBSERVATORIES OF PRESTON 1881-1981

In October 1981 the Jeremiah Horrocks Observatory of Preston celebrated the centenary of its foundation. In many respects this Observatory has an unique place in astronomy in this country, particularly for its pioneering work in the field of astronomical education.

Towards the end of the last century, in the industrial north of England, there was a great interest in science and in technology. The affluence produced by the industrial revolution gave birth to various technical colleges and to a general desire to increase the education of the people. In many of the cotton towns of Lancashire, astronomical observatories were founded. Unfortunately most of them had a very short life but Preston was an exception.

For most of its hundred years, the Preston Observatory remained unique in the sense that it was the only Municipal Observatory in this country and was not attached to any particular educational institution.

In 1881 its first instrument was an 18-inch reflector, considered to be a large instrument in those days, with a mirror made of speculum which had been made in the town. The body responsible for the running of the Observatory was the Library Committee which was also responsible for the Museum in Preston. An Honorary Curator for the Observatory was appointed who gave freely of his spare time. The intention was that the Observatory should be open to the public on given evenings so that anyone interested could actually use the telescope.

In the first 18 months of its life the Observatory was visited by 1066 people not only from Preston but also from neighbouring towns. Throughout 100 years the number of visitors varied, but on average 600 people a year visited the Observatory. Observations were also carried out by amateur astronomers

together with early experiments of photography of celestial objects. In the days when Time Signals were not available and the time for the town was that given by the Town Clock, the Transit Instrument at the Observatory was widely used for the accurate determination of time.

The Observatory survived the difficult years of the two wars and under the leadership of a gifted amateur (Mr Gibbs who was Curator for 37 years) continued to be a centre regularly used by amateurs and visited by schools of the town and of its neighbourhood.

In 1947, after the death of Mr Gibbs, the Preston Corporation decided that the time had come to review the situation concerning the Observatory. The Education Committee took over the responsibility for the running of the Observatory and, following the 1944 Education Act, the Preston Observatory, with the approval of the Ministry of Education, became an Institute for Further Education - the only astronomical observatory in the country which had this status.

The next step was taken in 1949 by appointing a professional astronomer, Dr V Barocas, as a full time Director of the Observatory. The terms of reference of the appointment were very general because in reality the Education Committee was embarking on a new venture in a new field. So the Director was given the task in general terms of developing interest in astronomy among adults in the town and of introducing astronomy in schools.

During the 1950's there was a growing interest in astronomy among the general public. The reasons are varied but could be attributed to the black-out years of the war when people in towns, many for the first time, were able to see the night sky, and the fact that specific war duties required many people to scan the night sky. After the end of the war, interest in astronomy among the general public was

also increased by the regular radio programmes of Dr Porter and the lectures of Professor Hoyle on the Steady State Theory. In addition, the existence of war surplus equipment enabled many people to purchase cheaply small telescopes, lenses, prisms and mirrors so that many telescopes began to be used and new astronomical societies were formed.

The Preston Observatory witnessed a surge in the number of visitors who came from other towns as well, because they knew that they could use the telescope there. We must remember that in those days professional observatories did not encourage visits from the general public, astronomical societies or even schools.

It soon became obvious that there was a general demand for a greater knowledge of astronomy, so that evening courses for the general public were established at the Preston Observatory. To the weekly evening, when the public was allowed to visit the Observatory, were added other evenings reserved for societies and organised groups. These consisted not only of astronomical societies but also of church groups, women's organisations, working men's clubs and professional groups.

The question of introducing astronomy in schools was a different problem. It soon became clear that the greatest difficulty was due to the lack of teachers who had any astronomical knowledge.

While boys and girls were anxious to learn more about the subject their enthusiasm was not always matched by that of their teachers. Astronomical societies in schools were often organised by teachers who had no scientific background, such as teachers of music and of classics, but who were very enthusiastic. It became obvious that if astronomy had to find its place in schools, then teachers were needed who had at least some elementary knowledge of the subject.

The Director of the Observatory was fortunate to have the support of some Divisional HMI's so that,

with the backing of the Ministry of Education, a first residential course "Astronomy for Teachers" was organised in 1958, followed by another one in 1960. Teachers came from all types of schools, public, technical, grammar, modern and nautical schools. It became clear, however, that the education of teachers should start much earlier in their career and so, with the co-operation of many of the Teacher Training Colleges in Lancashire, optional courses in astronomy were introduced.

With the rapid developments taking place in astronomy and in space science, it soon became clear that special residential weekend courses covering individual, interesting, astronomical topics had to be introduced in the work of the Observatory.

Schools had also to be considered and here the problem was how to motivate young people and how to help with the schools' astronomical societies. Courses of lectures, dealing with new discoveries in astronomy, were organised each year for 6th form students of the local grammar schools and took place towards the end of the academic year. Throughout the year, visits were also made to schools of all grades to talk about astronomy. These individual lectures were followed by visits to the Observatory.

Schools' Astronomical Societies presented different problems. With day schools and with the uncertainty of the weather, it was extremely difficult to organise regular observational programmes but one other difficulty encountered was that these astronomical societies lacked guidance. In many cases great enthusiasm was shown in the construction of telescopes and even of an observatory but once the project was completed, the following generation of members of the society appeared to be at a loss about what to do with the equipment available.

In 1963 it was decided therefore to form an Association of School Astronomical Societies in the North West. Once a year the members of these

societies met for a one-day meeting. Secretaries of the various school societies gave a report of their activities which were then discussed. A professional astronomer was invited to give a lecture on his work but the most important part of the meeting was that devoted to the preparation of a collective programme for the following year. By choosing particular astronomical phenomena such as eclipses, special occultations, reappearance of a comet or the configuration of Saturn's rings, work was given to the various societies according to the equipment they had available. For example, if there were a partial eclipse of the sun, one school, with no telescope, would work out the time and the conditions of the eclipse for all the others; another school, having a telescope, would be given a programme of observations by projection of the image of the sun, while another school would attempt a series of photographs of the eclipse; schools with radio telescopes would carry out a given set of observations. At the meeting of the following year, representatives of each society would present a report on their observations. In this way the students learnt the meaning of co-operation between groups of observers.

The Association flourished for some years. Unfortunately changes in the educational system produced problems and finally the collapse of the Association. The formation of 6th Form Colleges and the disappearance of grammar schools meant that the astronomical societies in the schools lost their senior members on whose interest and experience the whole of the society depended. The 6th Form Colleges with their wider catchment areas did not necessarily bring together enough students with an interest in astronomy. In any case, the very fact that the students would attend the particular institute for a short time and the lack of the younger elements who were trained in due course to take over the various offices in the society, made the formation



of astronomical societies in 6th Form Colleges difficult. On the other hand the disappearance from the astronomical societies of their senior members brought, with few exceptions, the collapse of the societies and hence of the Association.

The closing down of several Colleges of Education in Lancashire meant that the optional courses which had been introduced and even the courses for postgraduates attending courses for the Teacher Certificate had also to be abolished. In order to remedy this, in 1976 the Preston Observatory, by then part of the Preston Polytechnic, introduced a one full term course leading to a Diploma in Astronomy for teachers.

Applications for this course were received from many parts of the country but unfortunately, due to many factors, several Local Authorities were not able to give leave of absence to their teachers to allow them to attend the course, which had therefore to be abandoned.

In 1977, in order to encourage the interest of teachers in the subject of astronomy, two teachers' astronomical centres were developed, one for primary and one for secondary school teachers. These groups meet several times throughout the year to exchange views, to make models and to discuss teaching and equipment. The group of secondary school teachers undertook recently a project of grinding a small mirror for themselves which could then be used in a telescope at their schools.

The Observatory in Preston did not neglect mature students who wished to obtain some qualification in Astronomy and in 1952 it introduced courses for external students of London University. The difficulty for this degree was that candidates had to carry out practical work and that many of those wishing to do it found this an insurmountable difficulty. However, the Preston Observatory was able to help these students and London University accepted the practical work carried out here.

Naturally, apart from the educational work, the Observatory did carry out regular observations. It developed regular programmes of observations and in 1957 was one of the four British observatories contributing solar observations for the I.G.Y.

The interest shown by schools and the general public encouraged the expansion of the astronomical work in Preston and in 1957 another observatory was built to receive a 15-inch astrograph. This enabled the expansion of the educational work and it also became possible to allow postgraduate students to make use of the new equipment.

In 1974 the reorganisation of Local Authorities and the formation of the new Preston Polytechnic brought changes to the Preston Observatories which became part of the Preston Polytechnic. After 93 years the Observatory ceased to be an independent Municipal Observatory and became attached to a larger educational institution. The pioneering work in education has certainly been the most important part of the life of the Preston Observatories. The work in education is not now limited to schools and the general public, and a new contribution was the introduction of a CMAA course for a B.Sc. in Combined Sciences in which Astronomy is one of the major subjects in combination with either Physics or Mathematics.

The experience gained with various schools and with pilot courses in co-operation with interested teachers made it possible for the Director to prepare the syllabus for the astronomy option in the new "A" level Physics for the J.M.B. It can be claimed that the Preston Observatories have succeeded in furthering the interest in astronomy in schools in the North West.

It was always the belief of the Director that the Observatory should have its own programme of regular observations and research as well as being an educational institution. In 1973 the Observatory joined UMIST in a project to build the first optical

Multi-Aperture Telescope (MAT) in the country. This project is well advanced, both the building and the mounting of this new telescope have been erected. With it the Observatory will continue its pioneering work in introducing something new in the astronomical field both in education and in research.

The Preston Observatory started in 1881 in a small wooden hut. Today it occupies two sites, one in Preston itself and the other at Alston, 7 miles north east of the town where the conditions are more suitable for astronomical work.

As an educational establishment the Observatories have a good selection of instruments including an 8-inch Cooke refractor, an 8½-inch Newtonian, a 9-inch Cassegrain, a 15-inch astrograph and 15-inch visual refractor by Grubb, a radio telescope, a spectroheliograph and the new MAT. In addition there is, of course, a wide variety of ancillary equipment.

Throughout its 100 years the Preston Observatory has contributed much to astronomical education both for schools and for amateur astronomers. For several years it has been an important astronomical centre in the North West of England but, what is more, it has made a valuable contribution in advising other Local Authorities in England and in foreign countries where interest in introducing astronomy in schools has grown considerably in the last twenty years.

Professor V Barocas  
Former Director, Jeremiah Horrocks Observatory.



\* \* \* \* \*

The September issue of AAEnews will concentrate on ASTROPHOTOGRAPHY.

Any written contributions, designs for projects, first-hand experiences, problems encountered, etc., should be sent to the Editor in good time.

## ASTRONOMY IN SCHOOL - A PERSONAL COMMENT

In the educational departments of most of the major countries of the world, it is recognised that Astronomy is an important subject in the school curriculum. In the USA and USSR it is taught at primary, secondary and further education levels on a systematic basis. In Britain, despite the fact that, as far back as 1917, a Parliamentary Report recommended that children at twelve be taught "simpler astronomical phenomena", a proposed DES Course for March 1980 entitled "ASTRONOMY - THE NEGLECTED SUBJECT" had to be cancelled owing to lack of support!

It is difficult to ascertain the reasons for such longstanding neglect. If the avowed aim of our science teaching is primarily to give an appreciation of, and training in, scientific method, then Astronomy can join ranks with Physics, Chemistry and Biology. It is their equal in training pupils to observe closely, record accurately and deduce intelligently. Astronomy, however, has a surfeit of "built-in" advantages.

It is of topical interest and wide popularity. Today's children are space orientated. They watch "Dr. Who", "Blake's Seven" and "Star Trek" on television; their background reading embraces a comprehensive range of science fiction; one of their favourite games is "Space Invaders". Voyager is already as much an integral part of their world as the motor car is of ours. They will ask questions about extra-terrestrials, UFO's, ion drive rockets, space colonisation and black holes. I know of no other subject in our present curriculum which has such a ready-made bank of material to draw on. No teacher of Astronomy need sweat for hours devising elaborate scenarios in order to evoke an enthusiastic response.

As we move into the 'eighties, the phrase "Education for Leisure" takes on a fresh urgency. Under this heading the claims of Astronomy could be equally

compelling. It is peaceful, relaxing and rewarding. It is also remarkably accommodating. Astronomy is still able to provide amateurs with a meaningful and important pursuit.

At Hastings High School, we have provided a two-way approach to the idea of exposing pupils to Astronomy - the first through a School Club and the second by direct contact in the classroom.

We have found that for a school society, comprising mainly young members, the most rewarding activity is meteor watching. No expensive equipment is required. Watches may be held on any clear night and even the least able children can take part. Report forms used require only accurate timekeeping and an estimate of the brightness, duration and length of trail of the meteor. Once these techniques have been mastered solo or group watches at home, without teacher supervision, become commonplace.

Advanced work can be tackled by the experienced - e.g. tracking paths or calculating the height and size of the meteoritic particles. Photographers can try their luck too.

As always with young children, the "fun" element is a great incentive. A cooked evening meal provided by the domestic science department, an all-night watch (in shifts), and a continental breakfast in school all add spice to a procedure which could be tastelessly dull. An extra touch of sophistication may be added to make participation the event of a lifetime. Camp beds, sleeping bags, hot water bottles and a telephone on the school field, with direct communication to the "control room" (in our case, the Physics Laboratory) all help to create an ordered aura of youthful enthusiasm. We normally allow one side of a C120 cassette to roll for each watch. This enables us to check times, and re-assess reports in school the following day.

Children are not encouraged to treat the subject itself casually. In theory, at least, first year

observation is for naked eyes only; work with binoculars is introduced in the second year and telescopes in the third. Needless to say, what is advocated in theory is in this instance not adhered to in practice.

Although the subject had been taught within the school curriculum for some ten years as part of a third year general science course, it was later introduced as an individual option for academically able pupils. At that time we were not able to promise any defined plan or follow-up. However, the guarantee of an evening class made a vast difference. Last year we had twenty-six third year pupils who commenced working towards "O" level. This year there are only a dozen but all the indications suggest an even larger class for '82/83. A suggestion, made at County level to offset cuts in education spending, actually worked to our advantage. I now travel to John Cleveland College once a week where the necessary facilities for taking "O" level are provided free of charge .... a much better idea! I anticipate that most of last year's class will finish the course and sit the examination in June next year.

There is no satisfactory text-book on the market so we have built up our own library which covers all aspects of the subject and this is freely used by all pupils under teacher guidance. The absence of a suitable book does mean that the teacher must know the demands of the syllabus well and devise his own scheme and notes to cover all contingencies.

In spite of those early difficulties we did achieve a certain measure of success. I know of three ex-pupils who have built their own telescopes, and two who have joined local societies. I have heard of one teaching Astronomy in the North of England and three at Universities reading Astrophysics. As much as anything else this demonstrates the hold that the subject maintains and the determination to succeed that it engenders even under adverse circumstances.

Pupils wishing to take Astronomy as an examination subject have five, thirty-five minute periods

per fortnight taken from an "option" area of the timetable, which includes extra design, extra P.E. and some careers advice. Basic subjects are not affected. They also have one form period of twenty minutes per week usually devoted to topics such as "debunking Däniken" or assessing the real possibilities of space travel.

This provides a further valuable exercise in "scientific method" and helps them arrive at considered assessments of such things as UFO reports. Acceptance in the class is normally conditional on membership of the club, with guaranteed regular attendance, in order to complete the necessary practical and observational work. This adds up to four hours per week, plus homework, plus other voluntary work undertaken.

Two years should suffice to cover the London University "O" level course, which consists of one two-and-a-half hour written examination and the submission of signed practical notes on three observational projects chosen from a wide spectrum of practical Astronomy. All pupils at Hastings intend to submit "meteor watching" in one section, sunspot observation in a second and one other. Astrophotography and planetary observation seem to be the most popular.

The much newer Oxford and Cambridge "O" level paper has dispensed with practical work but sets two two-hour theory papers, thus enabling all the ground-work to be covered in normal school hours.

At sixth form levels (even among non-scientists) I would wish to see sufficient Astronomy assimilated to allow effective discussion of the current trend of promotions such as the widespread belief in UFO's or the propositions of Erich von Däniken. It was, perhaps, the very lack of astronomical education which allowed a distorted UFO mythology to develop. The USAF "Blue Book", no less, states - "Over 90% of the 13,000 sightings would have been recognised as normal physical phenomena by a person who had studied

astronomy at school." This process of enlightenment would need to start at an early age, I believe, not later than the second year of secondary education.

It is difficult to prescribe exact requirements for a teacher wishing to introduce the subject. Like many others, I started by "keeping one lesson ahead". It works, but is clearly unsatisfactory.

Thanks to adequate TV coverage of the latest space probes any interested teacher will already have a fair knowledge of the Solar System and should also be able to make intelligent comment on the more popular theories arising from current research.

There are certain areas, however, where the would-be teacher will need help. He will need a guided tour of the heavens by an experienced observer. (It can be done with a book, of course, but it takes hours!). He will need instruction in observing techniques. He will need to be refreshed on some principles of elementary physics particularly those related to gravitation and optics. A three-day course may initially suffice provided a couple of clear nights can be guaranteed! Alternatively, teacher training courses will need to have a portable planetarium at their disposal and that may prove difficult.

In conclusion, perhaps it is relevant to note that recent official reports have criticised the standards and style of both Science and Religious Education teaching in our schools. Astronomy, with its cosmic perspective, provides not only the link between these two disciplines but almost, by its very nature, demands the sort of "open ended" approach so often advocated but rarely realised in practice.

I think I can see the Astronomy class of the future filling a vast, twentieth century, educational void as a subject to stretch the mind to its limits as philosophy did for the ancient Greeks and



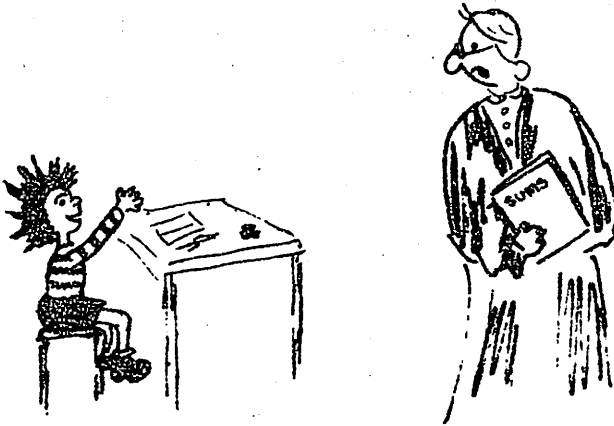
the natural sciences did for the nineteenth century. It is a subject that can induce a proper humility of mind and a feeling of awe to re-awaken the soul .... there is an eternal search but no final answers.

What we do have, beyond doubt, is new light in the world of science which has revealed some of the secrets that have been hidden from the mind of man since the dawn of intelligence. There are even glimmers of understanding concerning the nature of the universe and man's place in it.

Our children have a right to participate in this unveiling of the cosmos.

C. S. Goodman  
Hastings High School, Burbage.

\* \* \* \* \*



"Please, Miss, is it true that an earwig can crawl through your ear and attack your brain?"

"The only beastie likely to attack your brain would be a Space Invader!"

## AAE ANNUAL MEETING

1982, 15 May

The 1982 Annual Meeting of the Association for Astronomy Education will be held at the Old Greenwich Observatory, National Maritime Museum on Saturday May 15th (10.00 hr - 18.00 hr).

### MORNING SESSION: 10.00 - 12.30

The morning session will be informal. We hope that participants will use it as a forum to exhibit their project work, swap ideas and take a look at the work going on at Greenwich today.

Participants are requested to register (£3 fee) in the Half-Deck in the East Wing of the National Maritime Museum, where Coffee will be provided at 10.00. Those bringing exhibition materials will be able to set them up in the Half-Deck from 9.30 onwards.

The morning's programme will also include a show in the Greenwich Planetarium from 10.30 to 11.30.

Demonstrations of the great 28-inch refractor (and possibly a few of the other instruments) at 11.00, 11.30, 12.00.

Guided tours of the historical exhibits at the Old Royal Observatory at 11.00 and 12.00.

### AFTERNOON SESSION: 14.00 - 18.00

14.00 Annual General Meeting, to include ratification of the Constitution of the AAE.

15.00-16.30 There will be a number of short contributions from members. These will include:-

Colin S Goodman (Hastings High School, Leics)  
*RUNNING A SCHOOL ASTRONOMY CLUB*

Judith Turpin (Inner London Ed. Authority)  
*ASTRONOMY IN THE PRIMARY SCHOOL*

→

Lou Marsh (Hatfield Polytechnic Observatory)  
*A QUESTION OF SAFETY*

Percy Seymour (Plymouth Polytechnic)  
*ASTRONOMY AND ART*

A representative from Armagh Planetarium  
*TEACHING ASTRONOMY BY VIDEO*

17.00 Invited lecture:

Nigel Henbest, Astronomy Consultant, New  
Scientist Magazine.

*ASTRONOMY - THE NEXT TEN YEARS*

18.00 END OF MEETING

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AAE members should already have received Enrolment  
Forms. Others wishing to attend are welcome.

Requests for exhibition space and enquiries about  
the day should be put to:

Ms Heather Couper  
The Planetarium  
Old Greenwich Observatory  
National Maritime Museum  
Greenwich, London SE10 9NF  
Tel: 01-858 1167, Ext. 28

REMINDER



£ £

AAE Treasurer Raymond Butt will be in attendance at  
the Annual Meeting and will be happy to receive the  
subscriptions of members in respect of 1982/83.

£ £

## PONLAF

Under this uneuphonic acronym, the Polytechnic of North London Astronomy Forum was officially launched on 25th September, 1981. It is hoped that PONLAF will not be just another astronomical society or club, and we do not intend to usurp the functions of such societies already in existence. As its name implies, PONLAF is a *forum* at which people interested in Astronomy may come together and discuss their mutual interests.

Although centred at the Polytechnic of North London, membership is open to everybody, whether or not members of the Polytechnic. We welcome *anyone* interested in Astronomy, of any age (within reason) and, although we are in London, membership is not restricted to any geographical area. As well as individual membership, we invite Astronomical Societies to affiliate and so to participate in running the Forum and helping to organise its activities.

A programme of talks has been arranged; these will take place on the last Friday of each month during the Polytechnic term time. The meetings commence at 6.30 pm and take place at the Holloway Precinct of the Polytechnic (this is two minutes' walk away from Holloway Road underground station on the Piccadilly line).

PONLAF will make available to its members (by arrangement) the use of telescopes situated on the roof of its tower block building, and will lend out more portable instruments. Other equipment, such as projectors, is available, as well as a slide collection which may be useful for anyone giving a talk. Members are also able to use the Polytechnic Library, which has an extensive Astronomy section. The Library is open daily, except weekends and holidays.

Further information may be had from Eric Zucker, Department of Physics, The Polytechnic of North London, Holloway, London N7 8DB (tel: 01-607 2789, ext. 2182).

## "SCHOOL ASTRONOMY"

A workshop in conjunction with the DES

Alston Hall, Longridge, Preston

1982 November 2nd - 4th

This course is intended as an experience in Astronomy for teachers in all types of schools. There will be a series of common core lectures on various aspects of astronomy, with workshop sessions in small groups when members will study topics at their desired level.

In structuring the course this way, we invite both Primary and Secondary teachers to attend. This assists us to provide a low cost course, yet one which is capable of providing personal satisfaction at any academic standard desired.

Speakers:- Mr. P. Smith, HMI  
Prof. V. Barocas  
Capt. P. Richards-Jones  
Mr. J. Ravest

Topics covered will include The Sky at Night, Sun Moon and planets, What the stars can tell us, Photography, Resources and simple telescope building.

Opportunity will also be given for practical observations.

Cost approx. £30. Residential places limited to 36. Non-residents welcome.

Course organiser: D. J. Harris.

Accommodation enquiries:- Mrs A. Lightfoot,  
Principal, Alston Hall.

Enquiries + enrolment details from D. J. Harris,  
Bilston College of F.E., Westfield Road, Bilston,  
WOLVERHAMPTON WV14 6ER.

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Articles, ideas, views and Letters to the Editor for publication should be sent to:

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