

The Antiquarian Astronomer

Journal of the Society for the History of Astronomy

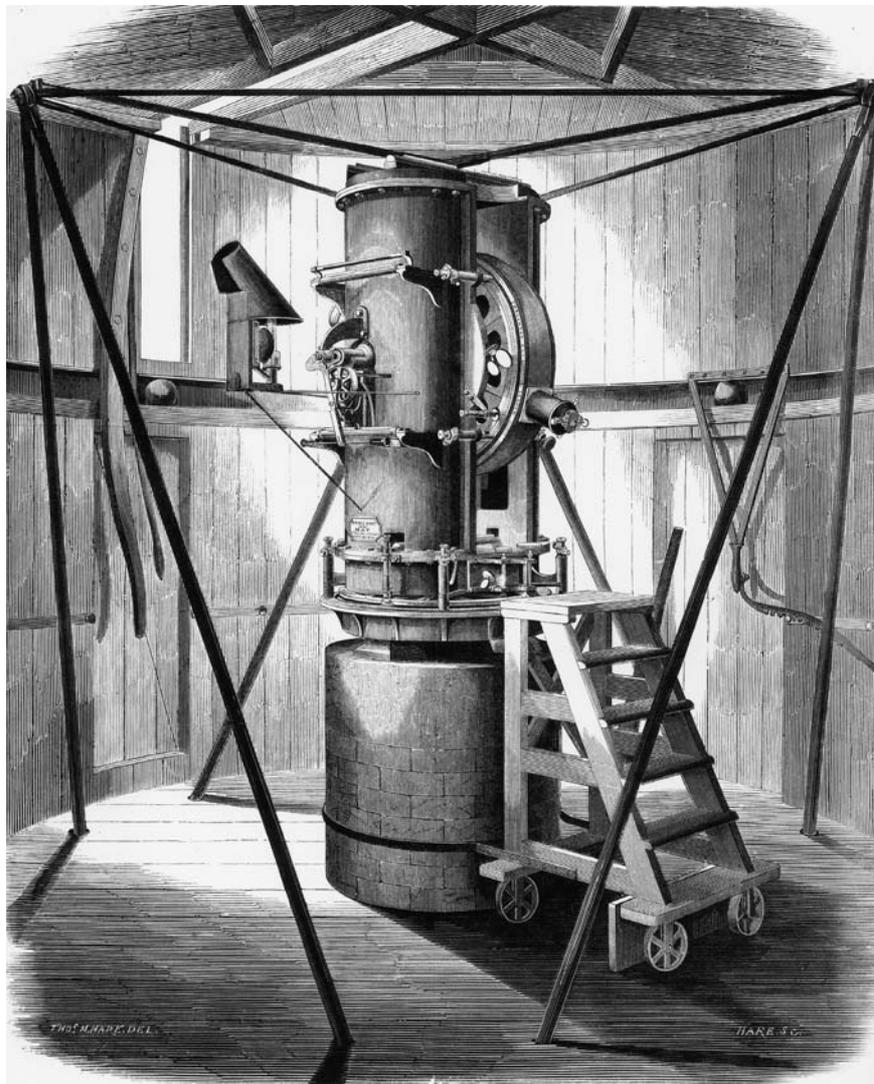


Image by courtesy of the Science Museum, London

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The cover illustration

Airy's Altazimuth

One hundred and sixty years ago, in May 1847, at the Royal Observatory, Greenwich, the first observations were made with a new instrument that was to make an invaluable contribution to astronomical knowledge. The year 2007 also marks the 110th anniversary of its final observations - in November 1897.

The instrument was designed by the seventh Astronomer Royal, Sir George Airy, specifically to increase the number of measurements of the Moon's position, especially in those parts of its orbit where it cannot be observed with meridian instruments; it was originally known as the Altitude and Azimuth Instrument, but was soon renamed by its creator the Altazimuth, and proved to be an outstanding success.

With it, the number of positional observations of the Moon was almost doubled, and these were a major contribution to the refinement of the theory of the Moon's complex motion and hence to greatly improved ephemerides of its future position.

A number of vertical circles had previously been used successfully, notably by Giuseppe Piazzi at the Palermo Observatory, but in order to achieve the stability and accuracy required for lunar positional observations a fresh approach to its design was required. Airy's considerable grasp of engineering principles, as well as the astronomical requirements, enabled him to achieve this, and his Altazimuth proved to be the first of a number of instruments designed by him which were all to remain in use for many decades, and to influence the design of generations of later instruments.

This woodcut, by Thomas Hare, was made shortly after the instrument's completion and was originally published in the September 1847 issue of the *Illustrated London News*. It was also used, with permission, to illustrate Airy's description of the instrument in *Greenwich Observations* for 1847. It is reproduced here by courtesy of the Science Museum, London.

In his description Airy comments: "The step-ladder, it will be seen, turns in a circle round the central pier. It has been found convenient to attach to the revolving frame two boards, whose edges are in a plane parallel to the plane of the vertical circle; the eye being directed along these to view the object, the instrument is placed very nearly in the proper azimuth; and then the telescope is directed accurately by the ring-finder." These boards are not shown in the illustration.

An account of this important instrument appears on pages 83 to 94 of this issue of *The Antiquarian Astronomer*.

Compiled by G. E. Satterthwaite

The Society for the History of Astronomy Survey of Astronomical History

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The Society for the History of Astronomy was formed to encourage research into astronomical history at the local level. To aid this research, the Society has created the Survey of Astronomical History as a way of collating findings and making them available to others. The Survey is a database in which information is recorded on web-pages that have a geographical basis - the 120 historic counties of Britain and Ireland. The systematic structure of these pages makes them easy to use both to record data and to search existing data. This paper describes the Survey and advises on resources available to researchers.

One of the main aims of the Society for the History of Astronomy (S.H.A.), as set out in its Constitution, is¹:

“ To encourage new research into the history of astronomy, especially amateur research at the local level.”

The Society has created a means to aid such research, and to record its results - The Survey of Astronomical History. What prompted the Society to embark on the Survey? Prior to the Society's formation, Stuart Williams, now our Secretary, had been researching local astronomers, in particular W. Henry Robinson², in his job as Senior Archives Assistant at Walsall Local History Centre. It was this research that led to his contact with Dr Allan Chapman. Realising the huge gaps in the local history of astronomy revealed especially by Chapman's book *The Victorian Amateur Astronomer*³, Williams proposed to set up a national survey of such astronomy, and to encourage similar, coordinated research across Britain. Chapman suggested the formation of a specialist society to organise this, which Williams undertook to establish. This initiative culminated in the formation of the Society for the History of Astronomy. Many of the amateur astronomers who contributed information to Chapman's book subsequently became members of the Society.

In recent years a great deal has been written about amateur astronomers, from Chapman's book to the many papers submitted to astronomical journals, including the Society's journal *The Antiquarian Astronomer*. Local societies have contributed a great deal too, with articles in their own magazines. Nevertheless much of the astronomy that went on locally in the past still awaits discovery by local historians and amateur astronomers.

The need for the Survey

A typical example of the local astronomy history that awaits recording for the first time is shown by a case of mine (Figure 1)⁴. Who was this smart, young gentleman with the fine Grubb telescope?

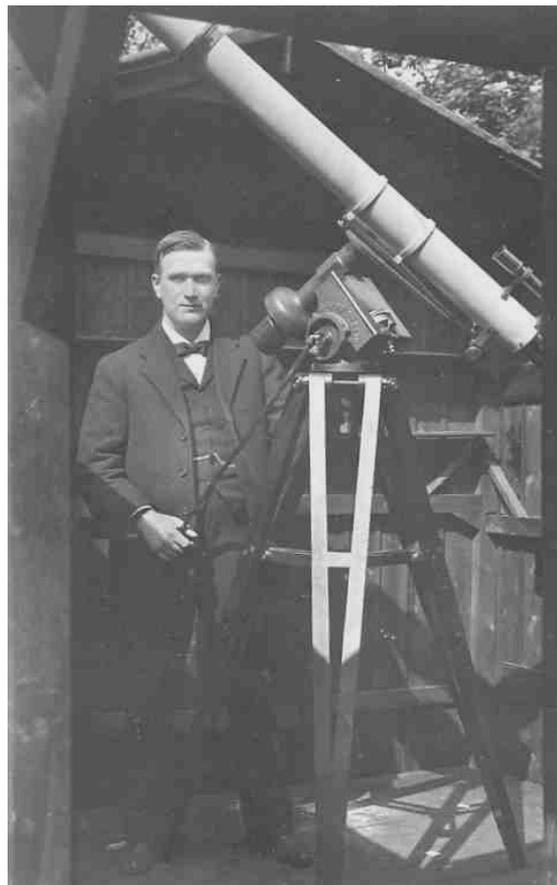


Figure 1

An unidentified, bygone amateur astronomer

From a postcard in the author's collection.

He was probably a very dedicated amateur, as testified by having his own small observatory. This is a photographic postcard from my own collection. The man is not identified, but is one of the many unknown amateurs about whom the S.H.A. is trying both to discover more and to record permanently. Of course, if we had his name we may have a better chance of discovering more about him. Perhaps he was a member of the British Astronomical Association, or a Fellow of the Royal Astronomical Society (R.A.S.). If so, he might have contributed to one of their journals; there may even be an obituary of him. We may never discover anything about this particular person, but if we do, the Survey will help to preserve that knowledge for the benefit of future historians.

Many individuals will, no doubt, have researched people and places of astronomical interest on their own account; but it is possible that the fruits of their research will never have reached a wide audience. This is where the S.H.A. has a vital rôle to play. The main vehicle for recording and disseminating the results of research is 'The Survey of Astronomical History' - an on-line repository of information about people, places, equipment and information connected with astronomy. Naturally, we should focus our efforts on subjects that are not already well researched and well documented - hence the emphasis on amateur astronomers and local history.

To the best of our knowledge, a Survey of this kind has never been attempted. We are therefore encouraging all our members to contribute to the Survey in any way that they can. It can be both exciting and rewarding to discover on your doorstep an unrecorded fellow astronomer. Ideally, we would like well researched and referenced contributions to include in the Survey. Whilst this is one of the Society's long-term aims, we would be delighted if, in these early stages, members would submit anything of interest; details can always be added at a later date. For example, simple lists of names and places associated with astronomy in your local area would make an encouraging start.

Setting up the Survey

As a new society, founded only in June 2002, we started the Survey with a blank sheet⁵. The S.H.A. Council asked me to be its coordinator. I therefore sought an easy-to-follow method of recording information that would lend itself to on-line use, both to add data and to view and 'mine' existing information on the Survey database and in other

databases linked electronically via the internet. Where did I look for inspiration? I immediately thought of my own research into family history, and remembered the many useful genealogy sites I had found on the internet. In Britain and Ireland, many of these were based on the county structure, and contained numerous links to archives, libraries and local record offices. It seemed sensible to follow the 'county' route in setting up the Survey. Because the Survey is concerned mainly with the 'history' of astronomy, I decided to disregard the new administrative areas, and base the Survey on the centuries-old county structure as it existed before the large-scale re-organisations in 1974⁶. The Survey therefore uses as its basic components the 120 ancient counties of England, Wales, Scotland, Northern Ireland and the Republic of Ireland.

Progress of the Survey

The county pages for England, Wales and Scotland can now be viewed on the Society's website at www.shastro.org.uk (Figure 2). These pages were designed to fulfil several functions. As an aid to doing research, links on the pages connect to some of the repositories in each county where relevant records are held. These include local history centres, county record offices, local astronomical and historical societies, universities and observatories. As an aid to recording the results of research, space is allocated to enter details of local astronomers and places of interest. This allows new researchers to go to the Survey pages, click on a county and discover what, if any, research has been carried out on the locality. It must be emphasised that the Survey database constantly changes; at the moment, many counties carry only minimal information. One of the main aims of this paper is to encourage readers to add more information, and so help to build the database.

What is included in the Survey?

We have given ourselves a wide remit and intend to cover anything and everything astronomical. We want to know where astronomers and people involved in associated work or study, both amateur and professional, lived and worked in the past. (Not just the distant past; the 20th Century spans a period of very great activity amongst amateur astronomers.) What was their occupation? Did they have their own observatories? Are there any remains of these buildings today, and can they be found on old maps? Are there photographic or artists' images of these buildings? Did these people

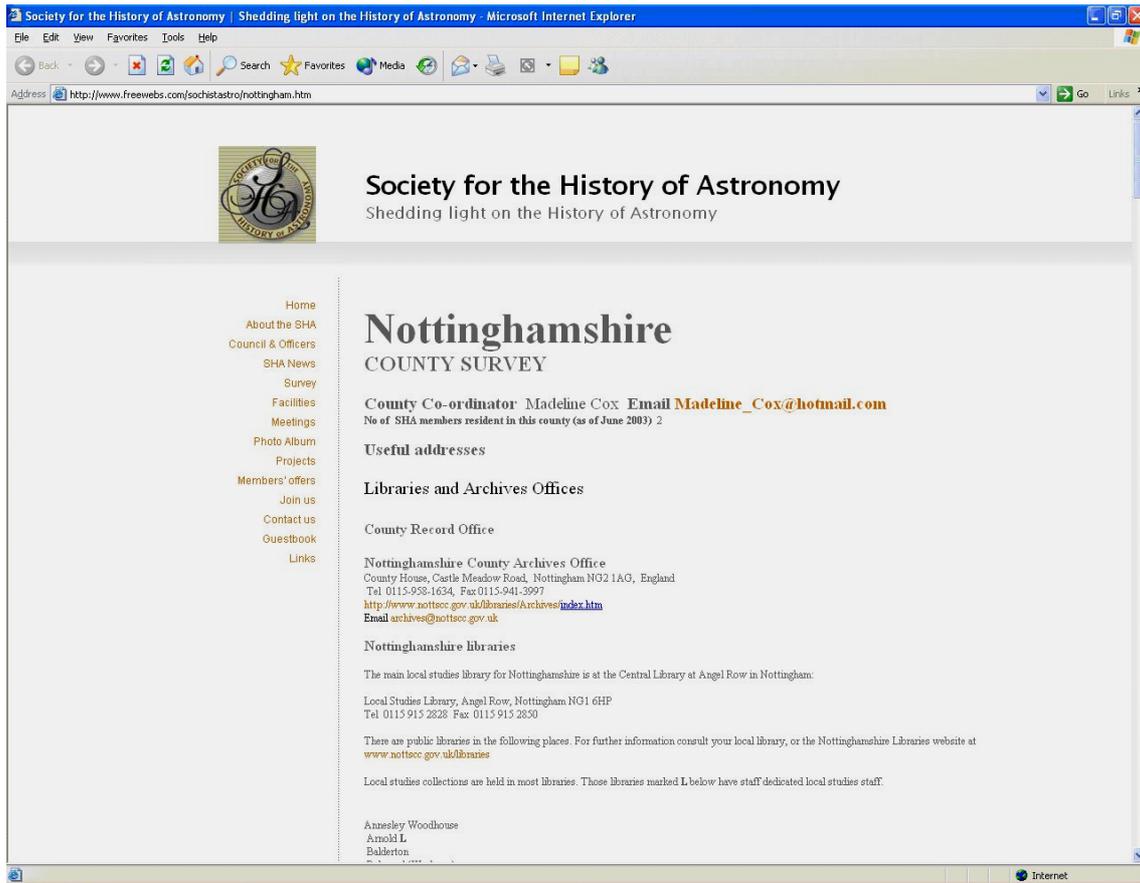


Figure 2

One of the county pages in the Survey of Astronomical History

The content of these pages is wholly dependent on contributions from researchers.

leave records such as observing books, star charts, diaries, business records, publications in journals *etc*? Do the census records tell us anything about their astronomical activities? A search through the online 1881 census of Great Britain⁷ produces many results from queries using the words 'astronomer' and 'observatory'. An example will show how the census information can aid research. Where was Howard Grubb, the Irish telescope maker, on census night? We know that he was not in Dublin making telescopes, but in London at the Tavistock Hotel, an establishment as I understand it, suitable for bachelors; room rate 1 shilling and 6 pence per night. What was he doing there? A perusal of the other hotel guests entered on the census return reveals no-one who had an obvious connection with Grubb. Perhaps, then, he was attending a meeting of the Royal Society or of the R.A.S., or he could have been in London *en route* to Vienna to report on the progress of the new 27-inch refractor which had just seen first light at his Dublin works⁸.

Where does one start?

Starting the research is often the main problem. As Williams wrote⁹:

"In researching local astronomical history, luck, dedication, hard work and the skills of a veritable Sherlock Holmes are needed as local records are often patchy and rarely indexed for astronomy or astronomers. Members can however make worthwhile and unique discoveries simply by visiting local history centres and applying that most advanced of research tools ... the brain."

Nowadays we have two additional tools at our disposal - the personal computer and the internet. So do not leave home without first doing some desk-top research. First, check the Survey pages for what is already entered. Then, type into a search engine the locality of interest (county, town *etc.*) and words such as: 'astronomer, observatory or telescope'. You will get dozens of links. Also try the county name and 'local history'. This will give you contacts for local societies with members who may know about the lives of local astronomers.

Next, visit your local history centre, county record office or library¹⁰. All will have an index system, on either cards or a computer, so start by looking up keywords such as ‘astronomer, observatory, telescope, comet, meteor, fireball, eclipse, transit, aurora, etc’. This should give some interesting leads. Search back copies of local and national newspapers, particularly around the dates of known events such as eclipses, meteor showers and comets. Newspaper editors often relied on local amateur astronomers to tell them what was going on in the night sky, and their names are often given in the article. The national astronomical societies are often excellent sources of information. For example, in the past, the membership lists of the R.A.S. included members’ addresses.

Another source of information is announcements of public lectures. Most large towns and cities had venues in which such lectures were held, and these were usually well publicised. The announcements included the names of the astronomers on the lecture circuit, particularly in the late 19th and early 20th centuries. For example, when I was carrying out research on Sir Robert Ball I discovered that he had lectured in Walsall where I live. So I searched in back copies of local newspapers held at the Walsall Local History Centre. He visited the town on nine occasions, at the request of W. Henry Robinson, who was Secretary of the Walsall Literary Institute. I have found announcements and reviews of all his lectures there, and in many other towns.¹¹

When the names of astronomers have been found, the real investigations can start. For example, occupations can be checked in census records¹² (see the Section on censuses below). For towns and cities these are usually held in the local history centre; for the whole county by the county record office. The Survey county pages already include excellent examples of research, including Ken Goward’s work on Suffolk and Madeline Cox’s on Nottinghamshire. Between them they list almost 40 astronomers, some well known, such as G. B. Airy, but many previously unknown to most historians of astronomy.

Other Electronic Resources

The internet is the fastest growing source of information, and it can supply the researcher with numerous leads. It hosts several excellent sites for astronomy historians. The NASA Astrophysics Data System (A.D.S.) site¹³ is an invaluable tool in that it contains scanned images of thousands of astro-

nomical documents including *Monthly Notices of the Royal Astronomical Society*. Typing ‘obituary + fellow’ in its search engine brings up more than 800 obituaries published by the R.A.S. A2A or Access to Archives¹⁴ is another online catalogue with impressive search facilities. Typing in the word ‘observatories’, returns, for example:

“ John Smeaton, the 18th century engineer famous for the 3rd Eddystone lighthouse and the Forth canal also designed Observatories.”

Here is another example, from a search on A2A using the word ‘planets’:

“ Astronomical sketches by Gideon Turner Davis of Reading and others ... Volume compiled in 1891 by G[ideon] Turner Davis of 13 Donnington Gardens, Reading, as a guide for novice astronomers, ‘to show what a small telescope can show in Reading’. Includes sketches of observations of the Moon, planets, comets, sunspots, stars and a nova in the Andromeda nebula, made 1877-1891, with additional observations, 1896-1897.”

The words ‘observatory’ and ‘telescope’ give results such as:

“ At Broomhill, Southborough, Kent, Sir D L Solomons built a water tower surmounted by a telescope. He was an able scientist and installed electricity in the 1880s.”

“ At Cragside, Northumberland, William Armstrong built an observatory on his house with a glass dome.”

Naturally, all such information must be confirmed by using other resources. This is because errors are not uncommon, such as this reference to Sir Robert Ball:

“ FILE - Volume of papers - ref. Accession 618 - date:1798-1905. item: Letter from Robert S Bath at the Observatory, Co Dublin, to Sir Henry Barkly as Secretary of the Royal Institution at Finsbury Circus, agreeing to give two lectures at the London Institution on the subject of the Astronomical Theory of the Great Ice Age - ref. Accession 618/101 - date: 9 July 1886.”

For researchers with interests in the London area, A1M25 gives detailed descriptions of archives in and around the capital¹⁵. In addition, there are the many genealogy and local history sites, discussion groups and message boards, which may be of use to find the ancestors or living relatives of your subject. Several local authorities use a search system called DScovey¹⁶. This does a combined search of all a local authority’s library, museum and archive holdings. Just enter a single word, for example, ‘astronomy’, and it will produce a list of results for the whole authority.

Census data

Data from the seven censuses between 1841 and 1901 is now available online, though some information can be obtained only by subscription or pay-per-view. Try your local library or local history centre, as they may allow free access via their library account. The 1881 census is free online, and in more detail than any other. Many local history societies have transcribed and indexed census data onto their websites. It is worth mentioning that some census data can be unreliable and there are many enumerator and transcription errors. For example, in the 1881 census Howard Grubb is listed as Grubby. Edwin Dunkin is listed as Junkin.

Maps

The website at www.old-maps.co.uk is an ideal source for late 19th century maps of the British Isles, which can reveal actual or suspected observatory sites. The site lists 51 addresses containing the word ‘observatory’ (Figure 3). Type in ‘Hakin’ and you will be taken to a spot just outside Milford Haven where the word Observatory is printed. S.H.A. member Bryn Jones tells us that although a building was erected here for astronomical purposes, it never operated as an observatory.

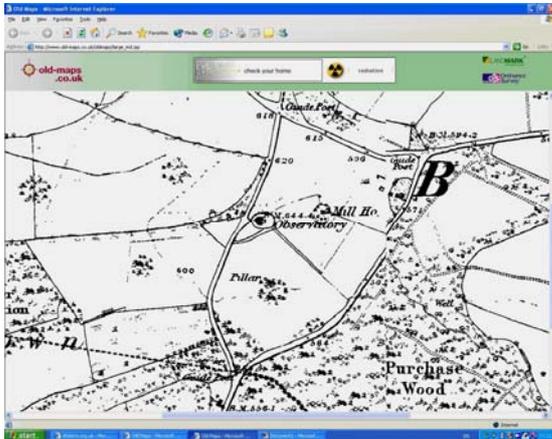


Figure 3

An example of information available on maps

This screenshot is from www.old-maps.co.uk. It shows the site of the early 19th century observatory of ‘Mad’ Jack Fuller at Brightling, East Sussex, England.

S.H.A. Newsletters

In Issue 1 of the S.H.A. Newsletter (November 2002), Sir Patrick Moore, Stuart Williams and Ken Goward all wrote introductory articles on local astronomy. Williams also wrote an article about researching the history of local astronomy. My own article on A2A states that it contained 4 million

catalogued items. Today, just four years later, the site contains 10 million items. It is a real treasure trove for the researcher. An amusing reference occasionally turns up, such as:

“ Herefordshire, a wealthy gentleman, Henry Southall purchased a telescope. His son remarked ... ‘its principal use will be to astound the ignorant gentry of Ross with Papa’s great scientific knowledge and attainments.’”

Diaries, Journals and Letters

Many diarists and men of letters wrote about the night sky in their journals. Gilbert White, for example, is best remembered for his *Natural History and Antiquities of Selborne*, but his journals¹⁷ contain many astronomical references, including:

“ 25 October 1769 - A vast aurora borealis which like a broad belt stretched across the Welkin from east to west. This extraordinary phenomenon was seen the same evening in Gibraltar.

“ 9 February 1774 – Jupiter and Venus approximate very fast – Venus is bright and makes strong shadows on the floor and walls.

“ 1 March 1783 – Mercury was visible all the first half of the month, but partly the bad weather and partly for want of an horizon, I never was to get sight of him.”

Collecting Astronomical Ephemeris

Hidden gems are still to be found that relate to astronomy. I include here news cuttings, advertisements and brochures for telescopes and accessories. I collect postcards, and have found many depicting telescopes and observatories. Some of the most interesting are those of solar eclipses taken in the early part of the 20th century. I have one fine example of a partial eclipse taken from my home town of Malvern in 1905.

Contributing to the Survey

There are a number of ways in which researchers can contribute to the Survey. First, they can become the co-ordinator for a particular county. This will involve acting as a liaison between the S.H.A. Council and researchers of the chosen county; supporting those researchers; and collating information to build the Survey database. The rate and direction in which each county develops will depend on the contributors. At first, co-ordinators might have to work alone, doing the ground-breaking work themselves.

Researchers not wishing to take responsibility for a whole county can still make a substantial contribution. Their chosen subject or field of interest may be a single person or observatory, a

school or a college where astronomy flourished in the past, or perhaps an instrument or lens maker. Data on these subjects will always be pertinent to the Survey and we encourage you to contribute your findings to it. Anyone can view the web-site and make contributions. However, only members of the S.H.A. can become county co-ordinators. An aspect of the Survey that will need to be attention is the question of quality control of the content. The best way to do this is being considered.

The Society Archives

When research on a particular topic has been completed and written up, a copy should be deposited in the S.H.A. Archives, held at the Institute of Astronomy, Cambridge. A suitable link, and a short summary of the findings, will be entered on the county page on the S.H.A. website. Even when research is ongoing, reference can be made to it on the website, allowing others to see that work is in progress. In this way researchers will be able to collaborate and compare findings on a particular subject, whilst at the same time avoiding duplication of effort. Members are also strongly encouraged to donate further copies of their work and original documents or photographs to relevant local history centres and record offices, where they may reach a local audience, preserved under archival conditions for posterity.

Conclusion

This paper has been published at this time to encourage historians of astronomy who have completed an aspect of their research to submit their findings to the Society so that we can grow the Survey database. It is our wish to do this incrementally, as the research findings will assist other researchers. In addition, we hope that this paper will encourage every reader to engage in this very worthwhile and fulfilling pursuit. We look forward to receiving your contributions.

S.H.A. point of contact for the Survey

Comments and questions on any aspect of the Survey can be raised with the author by e-mail (roger.jones@shastro.org.uk) or by standard mail (12 Stencills Drive, Walsall, WS4 2HP, England.) Suggestions for improvements to the website will be particularly welcomed.

Acknowledgements

Specific references and credits are given below, but I could not have penned this paper had I not read and taken in what had already been written on this subject, in particular by Allan Chapman and Stuart Williams, and by the encouragement of the S.H.A. Council whenever the Survey has been discussed at our meetings. Reg Withey, of course, was most helpful with the drafting of this paper.

Notes and References

1. Constitution of the Society for the History of Astronomy. Section 2. Objects and aims. Sub-section ii.
 2. Stuart Williams. W. Henry Robinson: Popularising astronomy in Victorian Walsall and Birmingham. *The Antiquarian Astronomer: Journal of the Society for the History of Astronomy*. Number 1. 2004. 44-51.
 3. Allan Chapman, *The Victorian Amateur Astronomer: Independent Astronomical Research in Britain 1820-1920*. London: Wiley. 1998.
 4. A postcard from the author's collection. Date and publisher are unknown.
 5. The Survey of Astronomical History (formerly named The Survey of the Astronomical Geography of the UK) was launched 22 February 2003 at the Annual General Meeting of the Society for the History of Astronomy held at the Royal Observatory, Greenwich.
 6. The Local Government Act (1972; effective 1974) amalgamated some existing counties and established new ones. The Survey is based on the county structure that existed prior to these changes.
 7. Data from the 1881 census can be searched online, free of charge at www.familysearch.org.
 8. I. S. Glass. *Victorian Telescope Makers: The Lives and Letters of Thomas and Howard Grubb*. Bristol: IOP Publishing Ltd. 1997.
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