MINING HISTORY AND THE INTERNET

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Paper presented at the NAMHO Conference, Forest of Dean, 25th -26th September 1999

Abstract: This presentation examines the nature of the Internet and the role it can play for the mining historian. It is set intended satisfy all degrees of interest. It begins with a general explanation of the Internet, its history and structure, and the means of establishing a connection, along with the various protocols and the way in which they are used. It moves on to a review of the resources available to the mining historian on the Internet. It looks towards the future, at the developments which might be expected and the way they can be utilised to the benefit of mining history research.

INTRODUCTION

The Internet is not intended as a replacement for the conventional resources used by mining historians. Physical, printed and manuscript sources still remain the primary resource for effective research. However, the Internet can be used to supplement, and in some cases enhance, access to those conventional resources. In particular it provides access to material in digital formats - formats that can be searched rapidly to yield the required information. It is also an effective aid to communication and the dissemination of information.

WHAT IS THE INTERNET?

In physical terms the Internet is a collection of computers connected by telephone lines. Developed in the search for an alternative means of communication during the Cold War period and initially used by researchers to communicate ideas, it took off to grow into an international network in the early 1990s. The Internet is not owned by any one grouping. It is a co-operative venture - uncontrolled but not anarchic - relying on a common language or protocol known as TCP/IP (Transmission Control Protocol / Internet Protocol). Most Internet linked computers were initially in academic and government institutions but there are a growing number of commercial Internet Service Providers or ISP. At the same time landline facilities are improving in response to demand. There are also a number of commercial online services - Compuserve, AOL , etc. - which have separate networks outside, but with access to, the Internet.

MAKING A CONNECTION

If you work in an academic, government or large commercial organisation with a mainframe computer dedicated to the Internet you can access that machine directly or have the benefit of a direct connection from your personal computer, be it an IBM clone or a Macintosh. The majority of users will, however, rely on a dial-up connection through a modem in their PC or Mac. That places some added restriction on the speed at which data can be transferred but the efficiency of the equipment is improving all the time.

Free connection is offered by a number of providers - TescoNet, Dixons Freeserve, and others - but for regular users one of the experienced commercial providers - Demon, Ndirect, etc. - may give a better service.

SERVICES ON THE INTERNET - THE BASIC TOOLS TO ACCESS RESOURCES

1. **Electronic mail (e-mail)** - often referred to as the cornerstone of the Internet - is the original reason for its development and is a very effective communications tool. Everyone with a connection to the Internet has an e-mail address - for example P.F.Claughton@exeter.ac.uk - the last two digits indicate the country in which the ISP is located (there is a code for the United States of America but you don't often see it) and the preceding two or three digits indicate the type of organisation (ac or edu for academic servers, co or com for commercial, etc.). Using e-mail you can send a simple text message to single or multiple addresses, attaching more complex files to the message if required. The speed with which it is possible to communicate is its greatest asset. An extended use in recovering and sharing information is considered further below under resources.

2. **FTP** - file transfer protocol - allows the Internet user to move files from one computer to another. Files can be in any format - the limitations are only on the ability of the recipient to read the file. Specialist FTP software is available making it a simple procedure to move your own files to a mainframe computer at your ISP - for example, if you wish them to be accessible on the World Wide Web - or to recover files from dedicated public archives on remote sites.

3. **Telnet** allows the user to login to and use the software on a remote computer. This might be to access a database - for example, an online library catalogue - or to access your own e-mail account from a remote location. Again there is software which makes access to the ISP mainframe, and thus to Telnet, a simple procedure from your PC.

4. **Usenet** - a bulletin board service based on the Internet. Literally thousands of newsgroups with specific interests allowing members to post messages (using e-mail), read and respond to the messages of others. The appropiate software is commonly available on the browser applications used to access the World Wide Web discussed below.

5. **The World Wide Web (WWW or the Web)** is probably the best known sector of the Internet to users and non-users alike - famous as much for its misuse as it is for its use as a powerful means of presenting a wide range of information. It is an efficient front-end to the Internet utilising browser software - typically Netscape or Microsoft Internet Explorer - to display both text and graphics. Using a protocol known as HyperText Transport Protocol (http), links embedded in documents allow a rapid connection to data files anywhere on the Internet. The

location of those files is specified by a Uniform Resource Locator (URL) - pronounced 'earl' by the Americans. These start 'http://', often 'http://www', and in text are conventionally enclosed within back and forward facing arrows < >. Text files for use on the Web are written in HyperText Markup Language (HTML) which the browser software interprets to present a user friendly interface with the Internet. All the user has to do is 'click' on a text or graphical link and new information appears on his screen.

Many online journals are now using Portable Document Format (PDF) for larger articles, combining text and graphics which can be downloaded and read using additional software embedded in browsers like Netscape. Adobe Systems <http://www.adobe.com/> provide their Acrobat software free for this purpose if it is not already incorporated in your browser. This is just one of the 'Multimedia' aspects of the Web where additional software can be used to display video images and sound files.

The Internet is, however, a fast changing environment with many new protocols being developed. Whilst the World Wide Web, and http format, may be dominant at present it has not been around for very long - an excellent book on the Internet published only three years ago (Thomas 1996) could only justify allocating 20 percent of its text pages to the web - and new formats like xml are already on the horizon.

AVAILABILITY OF RESOURCES FOR MINING HISTORY

Mining history is a broad subject area, crossing into a number of disciplines and each has relevant resources accessible via the Internet. History, at the core of our subject area, has a number of elements to it each with resources worth exploring. Those with interests limited to mining in a particular geographical area would benefit from access to local history resources, whereas a wider view might encompass economic or political history. Archaeological and metallurgical interests are particularly well served on the Internet, as are transport, geology and mineralogy. Even a mine explorer will find links with the like minded amongst the caving fraternity.

Categorising those resources according to the tools used to access them -

1. E-mail - this, as I said earlier, is essentially a communication tool but it can be used to access resources. There are a large number of e-mail discussion lists which allow the exchange and dissemination of information. Most of them have an archive from which files can be retrieved using text simple commands in the body of an e-mail message. However, the growth of the Web means that most users today access the archives using browser software. Once subscribed to a discussion list the user automatically receives all messages posted to the list - unlike Usenet (below) where the user has to actively search for messages. A list member can, however, opt to receive a regular digest of messages.

There are two lists of primary interest to mining historians - mining-history (provided by a UK Higher Education server) and MiningHistory (US based on a commercial provider - yahoogroups.com). The latter being orientated towards mining in North America. I will concentrate here on the mining-history list, established with UK and Irish mining in mind but with an international membership and coverage.

The service is provided by jiscmail, operated by CLRC at the Rutherford Appleton Laboratory, Didcot, on behalf of the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils for England, Scotland and Wales and the Department of Education for Northern Ireland (DENI). The list is therefore primarily for academic use but with a large body of expertise in the mining history community outside higher education we cannot afford to be restrictive in our membership and all are welcome. Joining, or subscribing - a confusing term as the service is free - is quite simple. Send the following e-mail message to jiscmail@jiscmail.ac.uk -
join mining-history *your-first-name your-last-name*

You will then receive a confirmation message from jiscmail. Reply to that message to confirm your e-mail address and you will be added to the list. A series of introductory files including details of user commands will be sent to you by e-mail, either print them or store them in digital form for future reference. The rules, as for all JISC lists, are straightforward - basically no abusive language, no file attachments and no advertising. It is intended as a forum for the discussion of all aspects of the history of mining and associated activity, including ore preparation, on-site smelting, transport systems, social conditions, etc. If you already have an Internet connection, for more details go to
<http://www.jiscmail.ac.uk/lists/mining-history.html>
to see the list Web pages.

2. FTP - There is the potential to set up file archives related to mining history, retrievable by FTP, but to my knowledge none exist at present.

3. Telnet - Most university and major reference libraries use Telnet to provide access to their catalogues - Online Public Access Catalogues (OPAC). Typical of these is the National Library of Wales (NLW) <telnet 193.61.220.4>. They allow the user to search for specific books or periodicals by title, author or subject. In case of that for the NLW at Aberystwyth a reader can also request an item in advance of visiting the library. It is also possible to access the catalogue of the Department of Maps at the NLW allowing a search to be made for mine plans, but the login procedure is not defined if you enter directly via Telnet. A problem with Telnet is finding the address for a particular site - in most cases it is quicker to use a Web interface and access the OPACs via a listing site like NISS
<http://www.niss.ac.uk/lis/opacs.html>

4. Usenet - I must admit that I'm not really a fan of the Usenet bulletin board system - finding them cumbersome to access compared with the e-mail lists. There are some relevant newsgroups out there, particularly for those with an interest in mine exploration - uk.rec.caving for example - and messages can be searched for, and read, using Web sites like Deja News <http://www.deja.com/>.

5. The World Wide Web. There are principally three types of site on the Web. Those that provide links to resources across the Web, those that provide information on specific subjects, and those which access catalogues of resources, largely non-digital, ie. printed or manuscript material.

The latter includes many of the OPAC's referred to under Telnet (above) which will have an interface with the Web which, as in the case of the Department of Maps at the NLW, is often easier to use. The major catalogue of printed books and journals, at the British Library (St Pancras, Colindale and Boston Spa) <http://www.bl.uk/> has never been available on Telnet. It was trialled as a discrete software link and is now only available via the Web. There is a disadvantage of being closed on Sundays and after 23:00 hours on weekdays but if, for example, you need to borrow a book on Inter Library Loan it is useful to know that a copy is available at Boston Spa and be able to quote the shelf

number to your county librarian. There are even a limited number of volumes of the *Mining Journal* available.

Of much greater importance to researchers is the new Public Record Office online catalogue <<http://www.pro.gov.uk/>. Important because it can be searched or browsed very quickly using the online software - all from the comfort of your desk at home, in many cases saving hours of labour at Kew. The Historical Manuscripts Commission also have a website <http://www2.hmc.gov.uk/main.htm> with links to the National Register of Archives, including a searchable database <http://www2.hmc.gov.uk/nra/nra2.htm>. A useful listing of Accessions to Repositories is also available but is not linked from their main page - and has to be searched for using the commercial search engines - the current list is at <http://www.hmc.gov.uk/accessions/1997/97digests/intro.htm>.

There are two major sites providing a range of links to other sites of interest to mining historians - Roger Burt's 'Mining History Network"
<http://www.exeter.ac.uk/~RBurt/MinHistNet/> - the primary source for international mining history with many links and conference details - Adrian Pearce's 'British Mining Database' <http://www.ap.pwp.blueyonder.co.uk/bmd.htm> - as its name implies this site should link you to all the relevant sites in Britain and Ireland. It also provides links to a number of UK mining history groups and societies. Details of the co-ordinating association for mining history groups in the UK and Ireland can be found at the new NAMHO site:
,http://www.namho.org>
including the Newsletter and conference details. One encouraging trend on the Web is the publication of detailed information, original research papers, and in some cases primary research material. A few sites for mining history material already exist. My site at Exeter <http://www.exeter.ac.uk/~pfclaugh/mhinf/welcome.htm> to some extent fulfills that role and I would encourage others to follow suit. Dave Williams has already included an impressive range of statistical material on the Peak District Mines Historical Society's (PDMHS) website at
<http://www.tidza.demon.co.uk/>, providing a picture of the industry in 1896.

The trend to publication is more pronounced in other subject areas. There is an excellent online archaeological journal - Internet Archaeology <http://intarch.ac.uk/> - funded by a group including the Council for British Archaeology. Mining archaeologists might consider submitting papers to such a journal pending the arrival online of a mining orientated journal. Last year the United States National Park Service journal - Cultural Resource Management (CRM), with both conventional and online versions - published a themed edition (21,7) <http://tps.cr.nps.gov/crm/issue.cfm?volume=21&number=07> on the subject of America's Mining Heritage. I mention this because it is a good illustration of online publishing practice using PDF, mentioned above, and a number of the papers have a relevance to the problems of mining conservation in this country. There was some discussion recently on the mining-history concerning the preservation of modern fluorspar mining plant, particularly the mills - the redundant Gwynfynydd gold mill might also be included in that category - and a good example of the problems of mill preservation, albeit at Silverton, Colorado, will be found in one of the papers - Beverly Rich, The Mayflower Mill; Reclamation and Re-use.

A web site which provides elements of all the above is the South Wales Coalfield Collection (SWCC) at Swansea <http://www.swan.ac.uk/swcc/>. There you can search the archive catalogue, view the photographic collection and link through to other relevant sites. And there are other similar sites across the Web. In fact there are many more sites which I could possibly list - those highlighted above are only a representative selection. Others will be found in 'surfing the Net' providing a fascinating journey along the information highway. However you must remember that there is a lot of junk out there as well - discretion is required in sorting out what is relevant to your particular field.

WRITING FOR THE WEB

At first glance there may appear to be some magical formula in displaying information - text and graphics - on the World Wide Web. In reality writing documents for the Web is well within the capability of all Internet users. Text in digital form can either be pasted into a separate file and edited to include instructions in HTML using MS Notepad or similar.. Alternatively you can use a dedicated HTML editor or a similiar facility included in word processor applications like Lotus Word Pro. Basic instruction on HTML is available on the Web and there are comprehensive books on the subject - see bibliography. For examples of the former go to - HTML Course Notes:
<http://www.ex.ac.uk/brad/course/welcome.html>

THE FUTURE

The Internet is a rapidly changing environment. New formats, new projects are continually appearing and the available audience is constantly expanding. New resources will come online and there is a case for extending those generated within the mining history community.

Access to Archives Project.
With the PRO catalogue now online there are developments towards establishing the English national archive network with A2A - Access to Archives. For more details go to their website at <http://www.pro.gov.uk/archives/a2a/>. Eventually I would expect archive holdings throughout the UK to be available on the Internet.

A Mining History Database Project ?
There has been occasional discussion on such a project, providing links to existing databases, over the last couple of years without really getting anywhere. A major stumbling block is that such databases are in private hands, often in formats not readily accessible to all, many being a component of ongoing research which an author might not wish to be in the public domain. My feeling is that if such a project was to go ahead it would have to be scaled down to a realistic level.

Immediate aims should be restricted to the construction of a Metadata index to mining history databases and digital archive files, to be made available on the Internet. The standard for such an index has already been developed - the Arts and Humanities Data Service (AHDS) <http://www.ahds.ac.uk/> already uses Metadata indexes to provide details of resources. For example go to the Archaeology Data Service catalogue: <http://ads.ahds.ac.uk/catalogu//>
where you will find over 4000 items of mining interest - just search for 'mining' - having risen from 1600 two years ago.

3D modelling
There has been some discussion on mining-history on the subject of applying computer generated 3D modelling to mine plans and there are a number of people already working on the idea. If the results are made available on the Web they will certainly help our understanding of the structure and development of mining.

Archiving Internet material

If you want immortality as a mining historian don't publish on the Web - fail to maintain your account and your Web pages will die with you. The problem of archiving digital material is slowly being addressed. AHDS - the Arts and Humanities Data Service - was set up with this in mind and I know that some disciplines, archaeology in particular, have archiving arrangements in hand. As the amount of mining related material grows this is something which individual societies or NAMHO as a whole should consider.

CONCLUSIONS

The Internet is an effective tool for mining history research. It will not replace time spent in the field and the record office but it can provide access to resources which allow you to use that time more effectively.

As a postscript I have an illustration that the Internet does work. Earlier this year I put together a presentation on the Llanfyrnach Silver Lead Mine, in Pembrokeshire, a mine which through its most productive period was in private hands with only limited archive material in the public domain. With the text of the presentation to hand in digital form, it was simple enough to post it on to web pages at the Exeter site at <http://www.exeter.ac.uk/~pfclaugh/mhinf/llanfyr.htm>.

Within days I had an e-mail message from a member of the family of the last lessee of the mine and his son who acted as manager. He provided useful information on their subsequent activities and presented me with drawings of machinery at Llanfyrnach and two other mines in which they had an interest.

BIBLIOGRAPHY

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Thomas, Brian J. 1996 *The Internet for Scientists and Engineers*, 2nd Edn, OUP.

This paper has been updated from the original text as presented, to take into account subsequent known changes in URLs and Internet organisation.

Peter Claughton is the co-owner of the mining-history e-mail discussion list: see, for details
http://www.jiscmail.ac.uk/files/mining-history/

Mining history pages:
http://www.exeter.ac.uk/~pfclaugh/mhinf/