

## The Institution of Civil Engineers' Library and Archives: a brief introduction

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It has been the care of the Institution to form a reference library containing all literature relating to the profession, and deemed to be worthy of permanent retention. This Library . . . is in its particular character unrivalled in its completeness. (J. H. T. Tudsbury, ICE Secretary, 1918)

The above quotation summarises the philosophy behind the development of the Institution's Library down to 1939. Almost from its foundation in 1818 the Institution has had a Library, and seen it as a necessary adjunct to what was its primary purpose at its foundation—a forum for the mutual exchange of latest information on developments in the field of civil engineering, based on personal experience. Today the Library and Information Service includes responsibility for the historical collections of the Institution, including its archives, and the activities of its Panel for Historical Engineering Works, in addition to providing up-to-date information on civil engineering for members. The historical collections are an integrated part of the Information Service, and seen as an important resource for today's engineers involved in refurbishment and redevelopment work. For the historian the Library, with its early foundation, is a major source of information on the development of engineering.

The non-current material held by the Library can be divided into various categories: books, pamphlets, periodicals, civil engineering archives, Institution Archives, and photographs, films, slides. It is intended to concentrate on material likely to be of interest to the construction historian, but it should be borne in mind that the collection covers all aspects of science and engineering, and the foreign material has always been collected.

### Books and Serials

The oldest books in the Library date to the early days of printing. Several early architectural works are held, including 39 editions of Vitruvius from the fifteenth century onwards. More than 4000 pre-1900 titles are held [1, 2], and several of these provide important illustrative evidence of how civil engineering work was carried out in the past. Notable examples are Perronet's "Description des projets . . . des ponts de Neuilly . . .", and Bourne's "London and Birmingham Railway".

In the case of serials, 130 pre-1900 titles are held. The emphasis is on the proceedings of engineering societies from the United Kingdom and overseas. For the construction historian, aside from the Institution's own publications, the most valuable resources are the sets of the *Builder*, *Engineer*, *Engineering*, and the *Civil Engineer and*

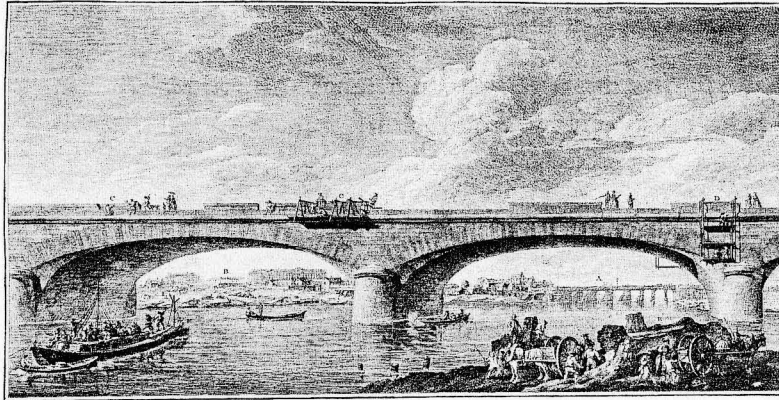


FIG. 1. Pont de Neuilly (from J. R. Perronet, *Description des projets . . .*, 1788).

*Architects Journal*. Many of the early volumes were bound complete with advertisements. The twentieth century collection includes *Civil Engineering*, *Concrete and Constructional Engineering* and the *Architects Journal* and an almost complete set of *Specification*. Although more than 700 current titles are received, very little of the trade press is retained.

#### Tracts

The 'Tract' collection is the richest historical resource in the Library. It has grown to more than 1200 volumes of reports, pamphlets, reprints and manuscripts. Although very little trade literature has ever been kept by the Library, much of that which has is bound in these volumes, including catalogues from firms such as J. H. Porter. The most famous parts of the collection are the early engineering reports, based upon the bequest of Thomas Telford, and gifts from Mrs Colonel (Frederick) Page, the Stevenson and Chapman families and the Smeatonian Society [3]. The collection also includes famous papers by leading foreign engineers and scientists such as Laplace and Mohr. The collection of canal pamphlets is possibly the largest in the country, and those dating from the railway age include material on the commercial and political development of the world's railway system, and not just its engineering aspects [4, 5].

#### Government Publications and Biographical Information

The Library contains a large collection of government reports, mostly relating to the United Kingdom and its former colonies, dating back to the seventeenth century [6]. Of particular interest are the Minutes of Evidence for various Bills and Commissions, which contain incidental biographical information on the witnesses, as well as an insight into what leading engineers of the time thought.

The main source of biographical information is the Institution's own archives. Although the majority of leading engineers had published memoirs in the Institution's Minutes of Proceedings from 1837, many thousands did not [7]. For these, information can be gleaned from the members' Application Forms, which were printed as Candi-

date's Circulars from 1872 onwards. It is possible to trace their subsequent careers and dates of death from Membership Lists. There are large collections of photographs of members of about 1890, and of those who died in the two World Wars.

#### Archives

The Application Forms are the most frequently used part of the Institution's archives, which date back to 1817. The Archives include a complete set of Council Minutes, and Manuscript Minutes of Meetings and Annual General Meetings prior to c. 1840 when the published record took over. Minutes of most of the Institution's various committees since c. 1890 have survived, and much of the significant correspondence since the Second World War is held in either the original or on microfilm. There are sets of correspondence dating from the mid-nineteenth century when Charles Manby was Secretary. Although some of the early Account Books survive, much other nineteenth century material is lost, presumably when the Institution premises were rebuilt in the 1890s and subsequently moved just before the First World War.

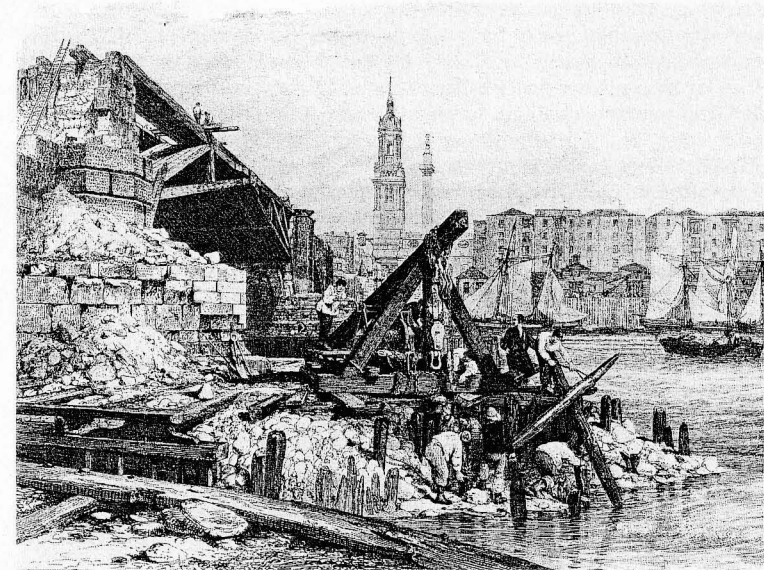


FIG. 2. Demolition of Old London Bridge (from E. W. Cooke, *Views of the old and new London Bridge*, 1833).

The largest group of engineering archives are the generally unpublished 'original communications', c. 2000 papers presented from 1818 onwards. Before 1836 no papers were published. Subsequently some of the early papers were published in the *Transactions* (1836-42), but most have never been. For this period the collection appears intact, but after a period of uncertainty during the early years of the publication of

*Minutes of Proceedings* (1837–), from the 1840s a decision was made to destroy all published papers. This policy, with one or two exceptions was rigorously applied.

The Original Communications remain a largely untapped resource, and it is the collections of engineers' papers which attract most researchers. Foremost amongst the papers are those of Telford [8]. They chiefly comprise drafts of Telford's outgoing correspondence, and letters from his resident engineers and contractors.

They provide an insight into how Telford worked, and how civil engineering contracts were organised in the early nineteenth century [9, 10, 11]. The Telford bequest is, unfortunately, no longer complete as in 1906 the Institution's drawings collection was broken up and many drawings including Telford's were given to the owners of the structures—local authorities, railway and dock companies, etc. [12]. Some of the drawings were retained including those of the Runcorn Bridge proposal and the characteristic iron bridge designs from Bonar onwards.

The Telford material is complemented by the Report Books of John Rennie and his sons George and Sir John which give an insight into how Telford's contemporaries organised their work [13]. Although some Account Books are also held, much of the remaining Rennie material is held in the National Library of Scotland [14].

By the time of Telford and Rennie, civil engineering had emerged as a profession, and to a large extent this was due to the work of John Smeaton. The Institution has the largest surviving collection of Smeaton's papers, including microfilms and transcripts of those not held in the original [15, 16]. Many of the manuscripts are difficult to read, and are far less attractive than the Report Book of his near contemporary John Grundy junior. This contains interesting drawings of some of the country's earliest earth dams [17, 18, 19].

Grundy's Report Book is probably the best known of several notebooks by lesser-known engineers. Collectively the notebooks provide an insight into the work of civil engineers from *c.* 1740 through the eighteenth and nineteenth centuries to the mid-twentieth century. They are complemented by the diaries of engineers from the eighteenth century onwards. The earliest are those of James Brindley, the most famous probably Sir Marc Brunel's Thames Tunnel Diaries, and the most recently researched those of Thomas Gooch [20]. There are still many volumes awaiting analysis.

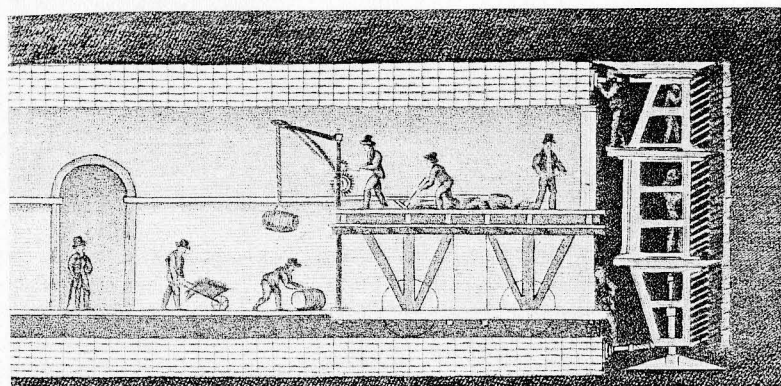


FIG. 3. 40' Section of Thames Tunnel (from Sir Marc Brunel's Thames Tunnel Diaries, 1839).

Brunel's diaries are only part of the largest collection of material the Library have relating to a single project—the Thames Tunnel Scheme. This collection includes drawings, report books, diaries, correspondence and scrapbooks. There are a few other projects where large volumes of material are held: the main drainage of London, the Forth Railway Bridge, Sydney Harbour Bridge, and Waterloo Bridge. Otherwise only a notebook, a printed report, contract drawings or photograph(s) are held. This makes it very difficult to gain an overall impression of a single project. Collectively, however, the Library and Archives make it possible, by relating different types of material on separate projects, to trace the development of civil engineering.

### Engineering Drawings

The ICE Drawings collection is relatively small. The most famous drawings are those of Telford, and some important examples by John Rennie are also held. Apart from these major donations, other drawings held by the Institution include sets relating to the Severn Railway Tunnel and the High Level Bridge at Newcastle upon Tyne.

Since the establishment of an Archives Panel in 1975 the Institution has been the recipient of several important groups of drawings. The Panel has played an active part in encouraging firms and other relevant bodies to preserve engineering drawings and documents [21]. Although the Institution has only limited accommodation itself, drawings from Sir Alexander Gibb and Partners, John Taylor and Sons, and Coode Blizzard have greatly strengthened the collection. Other important archival material has been deposited by Freeman Fox and Partners, and Rendel, Palmer and Tritton. The Archives Panel is not just interested in old material, and recent modern acquisitions are a set of contract drawings relating to the M1, and a collection of construction accident reports and statistics from the late George Raymond Brueton [22].

In addition to such presentations in the last two years the Library has bought some early nineteenth century documents. These include material from the contractor Thomas Townshend. Townshend worked with Telford, Locke and Robert Stephenson, and we now have some of his contract documents, ledgers, tenders, specifications, and his discharge from bankruptcy. Drawings of the Great Western Railway and London and Birmingham Railway have also been bought, the most recent acquisitions including two drawings signed by Stephenson and Townshend. The Purchase of Edwin Clark's annotated copy of Fairbairn's account of the Britannia and Conway Tubular Bridges was an important addition to material already held on possibly the most notable British structural engineering achievement of the railway age.

### Photography and Other Research Material

The railway age was also the first era of construction history to be recorded in photographs. The photographs in the Institution date back to the 1850s and include more than 30 albums relating to specific projects, such as the Manchester Ship Canal, individual prints, and a large number of glass slides dating from the late nineteenth century onwards including many of early reinforced concrete structures. The collection has been enriched by the gift of the late J. G. James who gave the Institution thousands of slides and photographs, chiefly of bridges and iron structures [23]. James' greatest achievement was his collection of index cards. Relating chiefly to the development of bridge and structural engineering prior to 1850, they include refer-

ences to firms and individuals as well as structures and technological developments [24]. This research collection is a worthy companion to the collections of Sir Alexander Gibb's papers on Telford [25], and Skempton and Hadfield's papers on William Jessop [26]. It is hoped they will eventually be joined by the papers of Geoffrey Binnie relating to early dam engineers [27].

#### Current Developments

The Development of the Institution's Library and Information Services is at the heart of the Institution's Corporate Plan. This includes new Archives accommodation, designed to the latest standards. The Institution's commitment to a high standard of accommodation for its historical material has encouraged the Concrete Society to decide to deposit its proposed collection of material on the history of concrete at ICE. Access to the collection is being improved by computerisation of the 13 Library Catalogues and an on-line database of all Library material. In July 1988 work on an on-line index to all ICE publications since 1836 was started.

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#### References

- [1] The main source of information on the Library's oldest holdings remains: Institution of Civil Engineers, *Catalogue of the Library, 1895* (5 vols. 1895-1904).
- [2] Professor Skempton gives ICE as the location for approximately half the material listed in: A. W. Skempton, comp. *British Civil Engineering 1640-1840: a Bibliography of Contemporary Published Reports, Plans and Books* (1987).
- [3] A. W. Skempton, comp. *Early Printed Reports and Maps (1665-1850) in the Library of the Institution of Civil Engineers* (1977).
- [4] G. Otley, comp. *A Bibliography of British Railway History* (1983). This lists ICE as a location when no other locations are known.
- [5] Institution of Civil Engineers, *Catalogue*.
- [6] *ibid*.
- [7] Published obituaries are indexed in the cumulative indices to ICE Publications, and appeared 1837-c. 1974. Since then a file has been maintained in the Library.
- [8] Historical Manuscripts Commission, *National register of archives*. Telford MSS in the Library of the Institution of Civil Engineers. Papers indexed covered: Birmingham-Liverpool Railroad; Gloucester-Berkeley Canal; Gotha Canal; Holyhead Road, Huddersfield Canal; Liverpool Manchester Railway; London Bridge/Port of London; London-Liverpool Railway, Moreton-in-Marsh; Newcastle-Carlisle Road; Scottish projects; Shaftesbury-Honiton Road; South Wales Roads; Thames-Medway Canal; Trent-Mersey Canal. There is material on the Edinburgh and Glasgow Union Canal and Dublin Docks as well as sketch books of the Caledonian Canal, etc. Inventory compiled by R. A. Storey in 1970. This is incomplete.
- [9] The Telford manuscripts have been referred by most major biographers. Notably Gibb's, and 10 and 11 below. A. Gibb, *The Story of Telford* (1935).
- [10] L. T. C. Rolt, *Thomas Telford* (1958).
- [11] *Thomas Telford: Engineer* (1980). The papers by Paxton and Skempton in particular drew heavily on the ICE collection.
- [12] A. Penfold, *A Guide to Sources for the Study of the Life and Work of Thomas Telford* (1977).
- [13] See C. T. G. Boucher, *John Rennie 1761-1821* (1963).
- [14] National Library of Scotland, *Rennie Papers: Inventory of Papers of John Rennie Senior and of the Rennie Family* (AZ 5111) (Edinburgh, 1970).
- [15] See A. W. Skempton, *John Smeaton, FRS* (1981).
- [16] A. P. Woolrich, 'John Farey and the Smeaton Manuscripts', *History of Technology*, 10 (1985).
- [17] J. Grundy, Reports, Volume 2, c. 1740-1760. Until recently this was the only Grundy report book whose whereabouts were known, although Joseph Banks had owned 17 in the late eighteenth century (Woolrich 16 above). The others have recently been found in the Brotherton Collection at Leeds University.
- [18] A. W. Skempton, *The Engineering Works of John Grundy (1719-1783)* (Lincoln, 1984).
- [19] G. M. Binnie, *Early Dam Builders* (1987).
- [20] M. Robbins, 'Thomas Longridge Gooch 1808-1882', *Newcomen Society Transactions*, 56 (1984-1985), pp. 59-69.
- [21] Institution of Civil Engineers. Archives Panel, *Save Engineering Drawings* (1977).
- [22] Brueton's earlier work is analysed in: G. R. Brueton, 'Erection and Demolition of Structures', in *Safety on Construction Sites: Proceedings of the Conference* (1969). Subsequent reports have been analysed by I. P. Haigh, FICE, of the Institution's Archives Panel, and the most significant are to be bound in 10 volumes for reference.
- [23] *New Civil Engineer* (3 March 1988, 12 May 1988, 29 Sept. 1988).
- [24] *Ibid*.
- [25] The Gibb material comprises the research files compiled by Sir Alexander Gibb and his research workers for his book.
- [26] These papers comprise the photocopies of most of the references in: C. Hadfield & A. W. Skempton, *William Jessop* (Newton Abbott, 1979).
- [27] Binnie, *Early Dam Builders*.