

Abstracts of Periodical Literature

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These abstracts are selected from personal scrutiny of a large number of archaeological, architectural, art and historical journals which reflect my own interests and, I hope, those of readers. Where an abstract forms part of an original publication it is generally used, but it is often edited to bring out those aspects of the content which are likely to be of particular interest to the readers of this journal without - it is hoped - doing violence to the intention of the author(s). Where no abstract is provided, I have done my best to summarise the content and thrust of the argument, generally by extracting key sentences or short passages from the text. Some of the abstracts are written from scratch by myself.

*Readers are referred to the very comprehensive bibliography published annually as a supplement to *Technology and Culture*, the journal of the Society of the History of Technology (SHOT) whose valuable articles are so often abstracted in this section.*

I am very grateful to readers who have sent offprints of their own publications for abstracting in this journal. If readers are aware of papers published in journals which do not appear to be in my own sphere of interest and reading, I would be most grateful for the opportunity to follow up on suggestions.

M. J. B. BARTON, **Stamp End Railway Bridge, Lincoln**, *Lincolnshire History and Archaeology*, Vol. 33 (1998), pp. 55-6. Until recently it was thought that the Torksey Railway Bridge, completed in 1850 and opened after a lengthy dispute with the Railway Commissioners' inspecting engineer in 1851, was the oldest box girder bridge in Britain. The breakthrough in bridge design came at a critical stage in the mid-century expansion of the railway network when - before the availability of steel - engineers were struggling to optimise the use of cast iron (strong in compression) and wrought iron (strong in tension) in the aftermath of the collapse of Stephenson's Dee Bridge at Chester in 1847. John Fowler's box girder bridge at Torksey utilised rivetted wrought iron panels and a design which introduced the new concept of a continuous span structure, rather than the simply-supported beams universally employed to that point. The author of this article argues that Fowler - who served as engineer to the Manchester, Sheffield and Lincolnshire railway - and who had been associated with Fairbairn at Torksey, had pioneered the continuous box girder design as early as 1847-48 for the Stamp End Bridge. Although smaller and less adventurous than the later well known Torksey Bridge, the Stamp End structure is illustrated in Fairbairn's 1850 paper to the Institution of Civil Engineers. Still standing and only partly modernised, the author hopes to secure Railtrack's consent to a detailed survey.

BRIAN BLACK, **Construction Sites: Environment, Region, and Technology in Historical Stories**, *Technology and Culture* 40, 2 (April 1999), pp. 375-87. The first phrase of the title is misleading, although it caught my attention long enough to realise that this was another of the thoughtful review essays for which the journal is well known. Brian Black discusses four books which in different ways tackle the interaction between technology and the natural environment, treating the topic not as a gambit for condemnation but as an opportunity to advance our understanding of the historical forces at work. Mart Stewart's "*What Nature Suffers to Groe*": *Life, Labor, and Landscape on the Georgia Coast, 1680-1920* (Athens, University of Georgia Press,

1996) initially deals with the technology of marsh drainage and tidal rice paddy irrigation which was characteristic of the region's agriculture before the heyday of slavery and cotton created new social and environmental transformations. Robert Bunting's *The Pacific Raincoast: Environment and Culture in an American Eden, 1778-1900* (Lawrence, University of Kansas Press, 1997) deals with a region in which resources - chiefly fur and wood - fuelled an extractive ethos which shaped the place we know today. What might be called the "politics of water" has stimulated a lot of interesting research in the United States, and John Barry's *Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America* (New York, Simon and Schuster, 1997) and Martin Reuss's *Designing the Bayous: The Control of Water in the Atchafalaya Basin, 1800-1995* (Alexandria VA, US Army Corps of Engineers, 1998) both address it. Brian Black clearly prefers the more academic study from the pen of the chief historian of the Corps of Engineers.

ANNE GLENDINNING, **Gas and Water Feminism: Maud Adeline Brereton and Edwardian Domestic Technology**, *Canadian Journal of History* XXXIII, 1 (April 1998), pp. 1-24. Although a number of excellent recent studies narrate the development of domestic technology and its impact on housewifery, these works do not include the contributions of the women employed by manufacturers and utility companies as lady demonstrators and publicists, who initially promoted new and unfamiliar technology to female consumers. The gas industry - more than the electricity companies, it is argued - made a particularly strong commitment to promotion aimed at women of all classes, a commitment which is traced to the work of Maud Adeline Brereton with the British Commercial Gas Association in focussing the attention of the gasmen on the needs of female customers. Her work continued an earlier feminist concern for domestic housing reform, and anticipated the movement for scientific home management that was to preoccupy the interwar feminists. Headmistress of Baroness Burdett Coutts's school in Highgate and Principal of the Homerton Training College in Cambridge, she left teaching in 1897 after marriage and became a woman of affairs. By means of journalism, consultancy to the Ministry of Food during World War I, and membership of a variety of professional bodies (she was the first honorary fellow of the Institution of Sanitary Engineers) she exercised considerable influence on sanitary affairs, domestic sciences and the promotion of household technology.

DAVID R. GREEN, **Lines of Conflict: Labour Disputes in London 1790-1870**, *International Review of Social History* 43 (1998), pp. 203-233. This paper examines labour disputes via their coverage in working-class newspapers, and covers 294 disputes in the period, the large majority of which were strikes. Building featured disproportionately in disputes, the propensity for building workers to strike being explained partly by the nature of the work and partly by high levels of employment fostered by urban expansion, particularly from the 1850s. The nature of building itself and the scale of operations - particularly on large construction projects - meant that different groups of workers were required to cooperate and made it more likely that a dispute in one branch would spread to others. Furthermore, since bricklayers, carpenters, painters, plumbers and glaziers sought to maintain rough parity in pay and conditions, changes in one trade would rapidly be transmitted to the rest. On many occasions, therefore, specific claims or grievances spread from one branch to encompass the building trades as a whole.

CRAWFORD H. GREENWALT and MARCUS L. RAUTMAN, **The Sardis Campaigns of 1994 and 1995**, *American Journal of Archaeology* 102, 3 (July 1998), pp. 495-505. The movement of construction materials in the ancient world is now a serious concern of archaeologists, and the latest report on the excavations and materials testing at Sardis in Asia Minor suggest that much of the marble was transported from quarries near Ephesus. The modern overland route is about 100

kilometres, but involves the crossing of a 450 metre-high pass. Whether a water route by the Hermus River to the Aegean was navigable for stone carrying barges is not known, but if this was possible the open sea connection from the Hermus estuary to the port of Ephesus involved circumnavigation of the Karaburun peninsula. Either way, the transport of major quantities of construction stone represented a substantial achievement.

ADRIAN JARVIS, **James Cropper, Liverpool Docks and Liverpool & Manchester Railway**, *Journal of Transport History* Vol. 19, 1 (March 1998), pp. 18-32. The Liverpool and Manchester railway is widely recognised to be the first modern railway, and it is not surprising that its promoters have been seen as far sighted men, to whom posterity owes a debt of gratitude. Those who opposed the project are portrayed as reactionaries, "an unholy alliance of the vested interests of canal and turnpike proprietors." James Cropper has certainly been demonised as the pitiless critic of George Stephenson's railway construction and its cost over-runs. Adrian Jarvis's fascinating analysis of the administration of the first railway project and the scandal which surrounded the construction of Liverpool's Princes Dock (18H-21), which cost ten times as much per acre as other contemporary dock projects, disentangles a series of interlocking business promotions in railway and dock construction which involved many of the same circle of North-West businessmen as well as many of the leading names in early nineteenth-century engineering. Jarvis's research at the Merseyside Maritime Museum is setting new standards in the business history of construction.

NANCY L. KLEIN, **Evidence for West Greek Influence on Mainland Greek Roof Construction and the Creation of the Truss in the Archaic Period**, *Hesperia* 67, 4 (October-December 1998), pp. 335-74. Research on Greek roof construction has always involved a special kind of detective work because the timbers are not commonly preserved and their sizes and arrangements must be reconstructed from indirect evidence such as the holes, slots and other cuttings on stone members. Most Greek temple roofs used simply-supported horizontal beams, and achieved their characteristic triangular form by means of props carrying higher lintels, until the ridge beam itself was reached. But questions remain to be answered on the structure of the widest roof spans encountered in the Western Greek colonies of southern Italy and Sicily. Did the Western Greeks use trusses, or did they have access to better quality structural timber? The most thorough study of the subject is Trevor Hodge's *The Woodwork of Greek Roofs* (1960), which recognised two basic forms of geison (the horizontal blocks carrying rafter ends), the sloping-topped variety and the flat-topped stones. Hodge, however, maintained that the two types revealed no chronological or geographical pattern. The author of this important paper uses much the same evidence from geison blocks to support the case for a distinctive Western Greek style of roof design, and suggests moreover that Sicilian architects may have devised a proper tie-beam truss for the roofs of some of their largest buildings. The evidence is, necessarily, partly circumstantial but hinges upon the fact that the holes for the main beams in stone blocks at Selinus - where the longest spans were recorded - are in fact significantly smaller than those from temples with shorter spans.

LYNNE LANCASTER, **Building Trajan's Column**, *American Journal of Archaeology*, Vol. 103, 3 (1999), pp. 419-439. Trajan's column is best known for its sculptured spiral frieze celebrating the Emperor's victories in the Dacian Wars, but it is also a complex architectural monument representing an impressive feat of engineering. The column is made up of 29 blocks of Luna marble each weighing from 25 to 77 tons, the highest of which had to be raised 38.4 metres above ground. This paper discusses the evidence both for the construction of the column and for the organisation of the building site. Excavations earlier in this century revealed an unusual use of brick ribbing in

the vaulted substructures of the north portico, which it is suggested was reinforcement for the vaults over which the individual blocks for the column were manoeuvred before being lifted into place. This implies that the work site for the blocks lay to the north of the column courtyard, the area most easily accessible from any unloading point along the Tiber. Finally, a hypothetical reconstruction of a lifting device for the blocks is suggested, based on evidence from other sites, on ancient descriptions of building methods, and on calculations of the bearing capacities of timbers, ropes and capstans.

HENTIE LOUW and ROBERT CRAYFORD, **A Construction History of the Sash-Window, c. 1670 - c. 1725**, *Architectural History* Vol. 42 (1999), pp. 173-239. The revolutionary new window type that emerged from the London joiners' workshops in the late seventeenth century demonstrated two novel features; the introduction of a glazed wooden sliding frame or "sash", and the invention of a counterbalancing mechanism that allowed large sashes to be easily opened and closed. In a northern European climate window design inevitably represented a compromise between lighting, ventilation, draughts (much commented upon as a source of ill-health) and the glass/ frame/ wall ratios which determined so much of the character of Early Modern facades. Hentie Louw's original doctoral work on the sash-window, its origins, evolution, and mechanisms has been expounded in a number of papers (some of them published in *Construction History*) which show how apparently minor innovations can exercise a profound impact on a whole period of architectural development as well as the quality of environmental control. *Architectural History* has now published what can be described as the definitive account of the development of the sash-window in two substantial parts. This risks serious understatement of both the scope and scale of publications that read more like monographs than journal articles, and which - taken as a series - contain more solid material than is to be found in many books. Essential reading for students of seventeenth and eighteenth century architecture, as well as for those who recognise the significance of key components.

ROBIN LUCAS, **Dutch Pantiles in the County of Norfolk: Architecture and International Trade in the 17th and 18th centuries**, *Post-Medieval Archaeology* Vol. 32 (1998), pp. 75-94. Given the ubiquity of the pantile as the characteristic roof covering material in Norfolk, it requires some mental adjustment for observers of English architecture to accept that the tile was not of local origin and that the idea of using such tiles (as opposed to the common flat English tile), the artifacts themselves, and the word pan to describe them came originally from the Netherlands. From the late-sixteenth century, pantiles were one of the products with which the Netherlands balanced its trade in woollen cloth, grain, malt and coal from Britain. That this was a genuine trade in a quality product, rather than ballast, is established by the author who not only chronicles the manufacture and import of the tiles from the Netherlands (and to a lesser extent from Denmark), but provides a masterly study of a region's roof coverings (which of course includes thatch) and the economic factors which provide a context for the importation and finally the local manufacture of an important Early Modern construction material.

MAUREEN OGLE, **Water Supply, Waste Disposal, and the Culture of Privatism in the Mid-Nineteenth Century American City**, *Journal of Urban History* 25, 3 (March 1999), pp. 321-47. The fame of mid-nineteenth century municipal engineering achievements such as New York's Croton Aqueduct, Boston's waterworks, or Chicago's sewerage system has obscured the fact that for most Americans these grand projects were the exception, not the rule. Although the technology for public systems existed, private privies, cesspools, cisterns and wells survived in large numbers until well into the second half of the nineteenth century despite the efforts of a vocal sanitary reform

movement. Individualism provided a strong underpinning to what has been called the "private city." Even when advanced American indoor plumbing (serving baths, showers and water-closets) was in place, these installations often worked from private springs, wells or rainwater collecting cisterns and discharged into private waste systems. The author describes a number of such systems as part of a wider discourse on the philosophy of public versus private sanitary provision which was only resolved in favour of the wider community in the late nineteenth century.

WARWICK RODWELL AND OTHERS, **Holy Trinity Church, Bradwell-juxta-Coggeshall: A Survey of the Fabric and Appraisal of the Norman Brickwork**, *Transactions of the Essex Society for Archaeology and History*, Vol.29 (1998), pp.59-114. The church of the title stands alone in the countryside and is in a remarkable state of preservation, retaining much evidence of the mid-twelfth century construction techniques. Particularly notable are the oak caps to numerous putlog holes, and the survival of all of the primary dressings - quoins and the framing to window and door openings - in original brick and tile. The walls of this small church form a simple rectangle of coursed rubble construction (probably largely recycled Roman material), and careful analysis of the rubble coursing and putlog holes has enabled the archaeologists to reconstruct in considerable detail the "lifts" of the different scaffolding platforms, as well as the size and the probable framing of the scaffolding's structural members. The putlog holes themselves were not excavated, but surface examination establishes that the holes were rectangular in section, rather than circular, that the putlogs were made from prepared timber up to 15 cms/ 6 inches thick, and that the putlogs were withdrawn and saved for future re-use and not - as sometimes happened elsewhere - sawn off flush with the wall face.

Rassegna di Architettura e Urbanistica, Vol. XXXII, no 94 (April 1998) issue on "Storia e costruzione" edited by Federigo Gorio contains the usual interesting selection of items from the Italian journal which once a year most closely resembles our own. Nicola Arico contributes a piece on the "diaspora" of the marble workers from Carrara during the principate of Alberico I in the 1560s. A census of Carraresi living abroad identified significant numbers of masons and stonecutters and a few more specialised specialists, such as intagliatori (inlay workers, or mosaicists), together with assorted farmers, soldiers, shoemakers and servants resident in cities all over the peninsula. The marble capital of Italy evidently exported masonry workers on a similar scale to the material itself, with a consequent diffusion of marble working and decorative technique. Giulio Lupo discusses the debates amongst a variety of specialists consulted on the reconstruction of the Doge's Palace in Venice following the fire of 1577. Lamberto Ippolito contributes a study of the construction of Florence's "other dome", that over the baroque chapel of the Princes in the church of San Lorenzo. Mario Grazia D'Amelio writes on the projects for bridges over the straits of Messina by Armando Brasini (1879-1965), one of those unusual talents who cannot easily be classified but figures in Venturi's *Complexity and Contradiction* in company with many household names. Patrizio Bonifazio discusses the system of planning control exercised in turn-of-the-century Paris by the *Conseil des Batiments Civils*.

MATTHEW W. ROTH, **Mulholland Highway and the Engineering Culture of Los Angeles in the 1920s**, *Technology and Culture* 40, 3 (July 1999), pp. 545-75. The Mulholland Highway is a 22-mile twisting roadway along the ridgetops of the Hollywood Hills. Its name memorialised "Our Bill" Mulholland, the engineer who had built the Los Angeles (or Owens Valley) Aqueduct which opened in 1923 and carried water 233 miles to the burgeoning city from the eastern Sierras, one of the great triumphs of West Coast engineering. But Mulholland had nothing to do with the highway that bears his name. It was promoted by property interests, who hoped to recoup on betterment value in a hitherto undeveloped area of the city, but who failed to ensure that services paralleled the

highway, underestimate the forest fire risk, and ended with a commercial white elephant. And it was built by engineers who hoped to relive the experience of the aqueduct project to "build with nature" and avoid the frustrations of opposed boulevard construction in the more heavily urbanised parts of a city which increasingly relied upon its cars, but - unsurprisingly - has never loved the highways which are so much part of its late twentieth century character. Roth's exploration into the historical context of a failed highway construction project sheds interesting light on the city of freeways as well as the attitudes of the city engineering department which helped to shape it.

ETTA M. SAUNDERS, **Urban Planning and Aristophanes, a New Note on Av. 995-1009**, *American Journal of Archaeology* 103, 2 (1999), p. 311. Aristophanes paints a humorous tableau of the mathematician Meton as he instructs the inhabitants of Cloudcuckooland on the fine art of laying out a city. He measures and draws various lines, and inscribes a circle; the end result is an image that looks to his audience much like a circular star with radiating lines. The instruments used by Meton and the resulting "radiating" plan have long been a source of discussion for scholars of both Greek and classical town planning. They are examined in this paper in the context of ancient urban planning, looking beyond the lampoon and its modern misinterpretation. When the passage is read in context with other ancient theoreticians such as Vitruvius, Aristotle and Thales, Meton's radiating plan which "squares the circle" is closely related to subject such as site and wind directions which were of real concern to Greek and Roman surveyors. Although the first records of surveying and urban practice were written in the fourth century BC, they were based on a rich tradition that existed as early as the eighth century in the grid planning of cities in Magna Graecia and Sicily.

DAVID SHERLOCK, **Aydon Castle Kitchen and its Roof**, *Archaeologia Aeliana*, Vol. XXV (1997), pp. 71-86. The kitchen range of Aydon Castle was added very soon after 1305 in coursed rubble (using very different course dimensions for the two storeys, suggesting different phases of construction). The surviving roof dates from shortly after a change of ownership in 1541 and consists of a very well preserved early truss, with principal rafters morticed into a substantial tie-beam which is itself dovetailed into the wall plate. Secondary rafters are supported by substantial purlins and a ridge beam, and are slotted into the wall plate to prevent their slipping outward. This mid-sixteenth century structure is an interesting transitional form, demonstrating understanding of truss principles and the forces involved, but still employing massive, slightly curved members which recall medieval cruck construction.

NORMAN A. F. SMITH, **Edward Wright and his Perspective Glass: a Surveying Puzzle of the early 17th Century**, *Transactions of the Newcomen Society* 70 (1998-99), pp. 109-22. Between 1609 and 1611 London's New River was surveyed and back-surveyed no less than three times by the Cambridge cartographer and mathematician, Edward Wright, thereby establishing the feasibility of a water-supply aqueduct from springs near Ware, in Hertfordshire, a drop of 18 feet over 18 miles in a straight line, or 18 feet in the 38 miles of the completed channel. A contemporary noted that Wright was accustomed to fasten a "perspective glass" or telescope parallel to the sights of his levelling instrument. Was this the first telescopic level? By the end of the seventeenth century telescopic levels with proper cross hair sighting devices were certainly in use. The author concludes eventually that the "perspective glass" employed for the New River survey was more likely to have been a device to assist communication between the leveller and the staff men (for hand, or even written, signals). But this is to spoil a story that takes the reader on a fascinating excursion through the early history of surveying and its instruments, and the standards of accuracy in large scale civil engineering construction that could be achieved from Roman to Early Modern times.

RONALD STENVERT, **Textile Mills for Twente: the Case of Beltman Versus Stott**, *Industrial Archaeology Review*, Vol. XXI, 2 (1999), pp. 101-16. A great deal is now known about the design of pioneer industrial buildings in Britain, but not much about the activities of British designers abroad, nor about the competition they faced from local specialists in Europe's industrial heartland of the Netherlands and Germany in the late nineteenth and early twentieth centuries. This article charts the development of textile mills in the Netherlands town of Twente, discussing the early influence of the Lancashire manufacturers who supplied much of the equipment, as well as the architects and engineers from the same region who built some of the largest spinning mills and weaving sheds. In a cut-throat competitive economy the building work was eventually dominated by local professionals better qualified to exploit the new technology of fireproof reinforced concrete when their British competitors continued to employ cast iron. This rivalry focussed on the competition between Sidney Stott (who had built no less than 25 mills in Oldham and 55 elsewhere in Lancashire between 1877 and 1925 as well as many others in Germany and Holland) and the local Beltmans, father and son, who eventually triumphed in Twente. The cost factors which drove the design of these industrial structures is particularly well described.

MICHAEL STRATTON, **New Materials for a New Age: Steel and Concrete Construction in the North of England, 1860-1939**, *Industrial Archaeology Review* XXI, 1 (June 1999), pp. 5-24. The years around 1900 saw the erection of the first steel-framed and the first major reinforced concrete buildings in Britain. Earlier studies have tended to dismiss them as being few in number and conservative in design, most making little show of their revolutionary structure, which was often concealed under skins of masonry or terracotta. This article (which was presented as the Rolt Memorial Lecture of 1997 to the Association of Industrial Archaeologists by the author before his early death) considers the chronology of these materials in Britain, focussing on the "lost decades" from the 1860s to 1900 when steel became available on a large scale and reinforced concrete was the subject of experiments in the north-east of England (at a time when the most advanced construction was not sanctioned by the London authorities). A number of the pioneering cast and wrought-iron projects are used to begin a story which finishes with a number of large-scale steel and concrete structures at the end of the inter-war period. As an economical survey of the subject, with an explicit regional focus, it has considerable merit.

JOEL A. TARR, **A Note on the Horse as an Urban Power Source**, *Journal of Urban History* 25, 1 (March 1999), pp. 434-48. The use of horses to pull carriages, drays, omnibuses and streetcars is the subject of a growing literature (and increasing awareness of some of the traffic congestion and environmental problems which predated the motor car). This paper concentrates on the use of horse power in machinery, much of which was employed by the construction industry for clay cutting, brick presses, sawing machines in lumber yards, and of course for hoisting apparatus and cranes on construction sites. The author provides numerous references which could profitably be pursued by those attempting to obtain a complete picture of power sources in the industry before the supremacy of steam engines was established.

VALERIE TAYLOR, **William Lockwood - An Unknown Surveyor 1778-1836**, *Yorkshire Archaeological Journal*, Vol. 71 (1999), pp. 207-23. The discovery of an unknown surveyor's diary and account book in 1981 prompted the research which has yielded, not merely the identity of the diarist, but a great deal of information shedding light on the varied professional activity of a country surveyor and attorney at the turn of the eighteenth and nineteenth centuries. To his dismay, William had in 1796 been recalled to Easingwold in the Vale of York, to serve as articled clerk to his father

a solicitor and surveyor. The diary begins shortly after this event and records his acquisition of equipment (including a theodolite, plane table and drawing pens) as well as his work on timber valuation, rental surveys, land surveys, cartography and township valuation in connection with enclosure processes. Surveying accounted for some fifty per cent of his mixed workload, which may well have been typical of many other contemporaries whose activity spanned the fields covered by more than one modern profession.

D. L. B. THOMAS, **Bridges on the Teign Rivers**, *Report and Transactions of the Devonshire Association for the Advancement of Science, Literature and the Arts*, Vol.129 (1997), pp.145-83. Bridges on the River Teign and its tributaries form a microcosm of rural bridge-building from earliest times, from the fallen tree trunk and the single spanning stone slab, to the latest sophisticated reinforced concrete designs. The majority bridge type throughout the kingdom - the masonry arch structure - is also the biggest category to emerge from this systematic study, but also recorded are transitional late medieval structures (timber over masonry abutments and piers), post-Reformation structures (decline in the use of pointed arches rapidly follows the end of church involvement in bridge construction), and the bridges constructed by turnpike trusts in the early nineteenth century. The author is good at disentangling the various phases of bridge construction often encountered in a single structure, and discusses the difficulties that can flow from the uncritical use of plaques and inscribed dates. An appendix lists more than one hundred bridges on this Devonshire river system.

FRANCES M. WILLMOTH, **Dugdale's "History of Imbanking and Draining": A "Royalist" Writer in the Sixteen-Fifties**, *Historical Research* 71, 176 (October 1998), pp. 281-302. The politics of water engineering is at the cutting edge of much recent American research (see under Black, above) and this article proves that it was always so. William Dugdale is best known as the author of *Monasticon Anglicanum* (1655) and *The Antiquities of Worcestershire* (1656), books which were to inspire Pugin's generation of romantic antiquarians but which in their time represented landmarks of document-based history. The "Royalist" author (who held a minor heraldic post under the Crown) also applied his talents to a history of the drainage of the great levels in the Fens, and the author of this fascinating article disentangles for us the context for a controversial project that had begun in the reign of Charles I. From the outset its promoters had encountered opposition from other vested landholding and river navigation interests, and the project had been further politicised by the potential profits of the Crown as well as by doubts about the legal basis for the scheme. Restructured during the Commonwealth to secure its position, the project then came under renewed scrutiny at the Restoration when Dugdale's *History of Imbanking and Draining of Divers Fenns and Marshes, Both in Foreign Parts and in this Kingdom, And of the Improvements thereby* (1662) was published in an effort to secure the promoters' interests.

MARGARET WILLS, **William Newton and Gibside**, *Archaeologia Aeliana*, Vol. XXVI (1998), pp. 105-14. William Newton (1730-98) was the first professional architect native to Northumberland to specialise in country houses. Elsewhere the author has chronicled commissions for work at the Newcastle Infirmary and the design of the corporation's Lunatic Asylum, as well as speculative building at Charlotte Square in Newcastle. Not all of his work has yet been identified or recognised, but this paper seeks to map out the early commissions by which he established his country practice, in particular his involvement with the Gibside estate in County Durham where for over forty years his name recurs in the records in connection with the Green House and other garden buildings.

MARGARET L. WOODHULL, **Building Identities: Women and Architectural Patronage in Early Imperial Rome**, *American Journal of Archaeology* 103, 2 (1999), p. 303. Although the role of women as patrons of monumental architecture is now well established in Renaissance and post-Renaissance Europe, it has received little attention in the literature on antiquity. Modern scholars following ancient literary sources attribute to Augustus building projects named for imperial women, such as the porticoes of Livia and Octavia. The author argues that evidence exists for Livia and Octavia themselves having authority over these projects, and that the lead given by the female elite of Rome was followed by other women outside the capital. In the wake of massive urban renewal in Rome which included the Livian and Octavian projects, a corresponding rise in architectural patronage by women in other areas of the empire can be identified. In the Roman colony of Pola, Salvia Postuma Sergia erects the monumental arch of the Sergii to honour her family, ostensibly her male relatives. Salvia's commission, however, includes biographical information about herself through inscriptions, a personal genealogy and a portrait statue. The emphasis here is on the way that women construct their identities, but - as in other periods - our knowledge of the forces driving certain kinds of building commission is enhanced.

DAVID YEOMANS, **Review article on Engineering Histories**, *Journal of the Society of Architectural Historians* 58, 2 (June 1999), pp. 233-7. In 1996, when the International Council on Monuments and Sites appointed a new scientific committee to consider structural aspects of historical monuments and buildings, it at once encountered two constraints: the relatively small number of historical studies on construction and the shortage of engineers trained to deal with this work. As David Yeomans points out, the two issues are of course linked. The recent publications reviewed in this substantial and thoughtful critical essay therefore represent a welcome burst of publishing activity. They include contributions on Roman construction, Medieval masonry structures, and the rise of complex nineteenth and early twentieth century structures, including the skyscraper (now the subject of sufficient study to allow serious contrasts in approach) as well as more broadly based studies. Yeomans's critique raises a number of interesting points about the methodologies and associated mind sets at work in an interdisciplinary field which is always going to present a mixture of archaeological and historical problems, together with the difficulty of reconciling contemporary analyses with an appreciation of the level of technological understanding current in other times. Can we unknow what we know in order to imagine how structures were understood when they were built? The texts in question are: Jean-Pierre Adam, *Roman Building: Materials and Techniques* (trans. Mathews, Bloomington: Indiana University Press, 1994); Cecil D. Elliott, *Technics and Architecture. The Development of Materials and Systems for Building* (Cambridge, Mass: MIT Press, 1992); Donald Friedman, *Historical Building Construction, Design, Materials, and Technology* (New York: Norton, 1995); Jacques Heyman, *The Stone Skeleton. Structural Engineering of Masonry Architecture* (Cambridge: Cambridge University Press, 1995); Sarah Bradford Landau and Carl W. Condit, *Rise of the New York Skyscraper, 1865-1913* (New Haven: Yale University Press, 1996); Robert Mark (ed), *Architectural Technology up to the Scientific Revolution: The Art and Structure of Large-Scale Buildings* (Cambridge, Mass: MIT Press, 1993); Tom E. Peters, *Building the Nineteenth Century* (Cambridge, Mass: MIT Press, 1996).