[11] *Collapse of Flats at Ronan Point, Canning Town, Report of the Inquiry* (HMSO, 1968), p. 53.
[12] L. Esher, *A Broken Wave* (1981), p. 86.
[13] Ibid., p. 86.
[14] Compare *Chambers Universal Cyclopaedia and Dictionary* (1743).
[15] Sir D. Walker-Smith & H. A. Close, *The Standard Forms of Building Contract* (1963), p. xiv (quoting their introduction to the first edition, 1939).
[16] H. M. Colvin, *A Biographical Dictionary of English Architects 1660–1840* (1954), pp. 7–9.
[17] Ibid., pp. 24–5.
[18] F. Jenkins, *Architect and Patron* (1961), pp. 118 and 226.
[19] B. Kaye, *The Development of the Architectural Profession in Britain* (1960), table III, p. 175.
[20] Jenkins, *Architect and Patron*, p. 211.
[21] Ibid., p. 222.
[22] P. Malpass, 'Professionalism and the role of architects in local authority housing', *R.I.B.A. Journal*, 82 no. 6 (June 1975), supplement, pp. 6–29.
[23] J. Franks, *Building Procurement Systems* (Chartered Institute of Building, 1984).
[24] Sir H. Emmerson, *Survey of Problems Before the Construction Industries* (Ministry of Works, 1962), p. 9.
[25] Ibid., pp. 9–10.
[26] Sir H. Banwell, *The Placing and Management of Contracts for Building and Civil Engineering Works* (1964).
[27] National Economic Development Council, *Action on Banwell* (1967).
[28] G. Higgin & N. Jessop, *Communications in the Building Industry* (1963).
[29] *Building*, CCXLVIII no. 11 (15 March 1985), p. 23.

Abstracts of Periodical Literature

SIMON PEPPER

NICHOLAS ADAMS, **The Life and Times of Pietro dell'Abaco, A Renaissance Estimator from Siena (active 1457–1486)**, *Zeitschrift für Kunstgeschichte*, 48 no. 1 (1985), pp. 384–95. Maestro Pietro dell'Abaco was a mathematician and estimator, active on the major building sites of the Sienese Republic during the second half of the fifteenth century. This paper provides a professional biography of a figure whose workload embraced the teaching of applied mathematics, surveying, estimating quantities, measuring completed works and, on one occasion, acting as structural engineering consultant for the building of a dam. Data from the Sienese financial archives—the *Concistoro*, *Biccherna* and *Gabelle delle Contratti*—is used to give a comprehensive picture of Maestro Pietro's income and property, shedding much light on the status achieved by an early (non-architect) building professional.

NICHOLAS ADAMS, **The Acquisition of Pienza 1459–1464**, *Journal of the Society of Architectural Historians*, XLIV (May 1985), pp. 99–109. The transformation of the central Italian village of Corsignano into Pienza by Pope Pius II (Enea Silvio Piccolomini) required an elaborate series of property purchases. Through the discovery of hitherto unpublished notarial memoranda from the Archivio di Stato, Siena, it is now possible to consider the process of urbanisation as a distinct series of phases rather than simply as the result of papal will. These documents, recording the price paid for the property, its appurtenances, and the zone of the village in which it was located, reveal that the Pope developed different areas in sequence. Purchasers with a variety of relations to him and the Piccolomini family tended to buy in different areas. With these documents it is possible to begin to consider the Pope's intentions at each stage. It is also possible to use the documents to reconsider some traditional ownership attributions.

M. R. APTED, **The Building and other Works of Patrick, 1st Earl of Strathmore at Glamis, 1671–1695**, *The Antiquaries Journal*, LXVI part 1 (1986), pp. 91–115. The Glamis *Book of Record* was written between the years 1684 and 1689 and was intended, according to the Earl, to be a "Book of Record of all my transactions as debtor or creditor and with my Tenents & the effects of my estates And in a word of all my proceedings Beginning in the month of Januarie 1684, excepting my pocket money & petty desbursements". In fact it was much more, since it included the earl's autobiography . . . and describes in detail the planning and execution of his schemes for the improvement of his two estates, Castle Lyon (also known as Huntly Castle) and Glamis. As far as the latter is concerned the *Record*, together with contemporary documents preserved in the charter room there, constitutes a first-hand account of architectural and other developments at the castle . . . probably without parallel for any other building of the day in Scotland.

MARIA LUISA SAN MARTINI BAROCECCHIO, **'La serie 'piano regolatore', Archivio della Prefettura di Roma 1871–1909: Sussidio alla ricerca di documenti conservati presso l'Archivio di Stato di Roma,** *Architettura Storia e Documenti*, 1 (1985), pp. 101–24. An inventory of sources in the Roman state archive dealing with the late-nineteenth and early-twentieth century restructuring of the Italian capital. The material relates to modifications of the street network, to the redevelopment of whole districts, and to the legal and administrative procedures employed in one of the great urban planning initiatives of the period.

MICHAEL BATT & GWYN I. MEIRION-JONES, **The Distribution of Somerset Roof-tiles in Brittany: a provisional assessment,** *Vernacular Architecture*, 16 (1985), pp. 20–24. Results of recent fieldwork show that significant quantities of Bridgewater tiles, manufactured by Colhurst, Symons & Co. Ltd, were imported into northern Brittany during the late-nineteenth and early-twentieth centuries. Their surviving distribution is largely confined to the northern Côtes-du-Nord where they testify to an important phase of roof-covering between the almost universal roofing with thatch and the now ubiquitous slate covering. The presence of these tiles is a further example of trading and cultural links across the western seaways which have existed since prehistoric times.

SAMUEL CAMERON, **Strike Activity in British Building in the Inter-war Period,** *Journal of Social History*, 20 no. 2 (Winter 1986), pp. 291–300. This paper examines interwar building disputes, applying and testing a number of economic and political modelling techniques. Economic models gave 'poor' results; in particular, there being no support for an inverse strike-unemployment relationship. The extension to a political model (in the manner of E. Shorter & C. Tilly, *Strikes in France 1830–1968*, Cambridge, 1977) proved highly successful, however, and demonstrated a "strong positive relationship of strikes to trade union density".

GIANLUIGI CIOTTA, **'Officiers' e 'ouvriers' italiani nella Valle della Loira e in Normandia nel primo decennio del Cinquecento: Bilancio Storiografico,** *Architettura Storia e Documenti*, 1 (1985), pp. 31–47. The return of Charles VIII from Italy in 1495 brought Italian artists and master builders to Amboise and the Loire area, particularly in the first ten years of the sixteenth century. Ciotta's article discusses the influence of Italian 'officers' over local 'workers' and masons in one of the best recorded examples of the importation of foreign culture and technology.

HOWARD COLVIN, **The Beginnings of the Architectural Profession in Scotland,** *Architectural History*, 29 (1986), pp. 168–82. In Scotland, as in England, architecture was not a fully-developed profession until well into the nineteenth century. In the absence of anything resembling the English Office of Works, many of Scotland's leading architects (Mylne, the Adams brothers, Playfair) sought their fortunes in London. Potential building designers learned their skills in the Edinburgh and Glasgow building trades and mixed the 'practice' of architecture with contracting, in some cases rising to proto-professional status by service on Edinburgh's Guild Court (enforcing the city's building regulations) and as a 'sworn measurer' (an impartial measurer of building work employed by the city authorities). This paper provides numerous insights into the eighteenth and early nineteenth century building world.

PATRICIA CUSACK, **Francois Hennebique: the specialist organisation and the success of ferro-concrete: 1892–1909,** *Transactions of the Newcomen Society*, 56 (1984–85), pp. 71–86. The initial period of reinforced concrete (that is, the latter half

of the nineteenth century and beginning of the twentieth) was one of diverse patented (and unpatented) systems or methods of disposing reinforcements. By the first decade of this century, the most widely popular system was François Hennebique's. This paper focuses not on Hennebique's system itself, but on Hennebique's commercial achievement in propagating it. It traces the beginnings [in the 1890s], consolidation and spread of Hennebique's specialist business organisation which both advertised and executed works in his system, and the corresponding proliferation of 'Hennebique' works . . . with particular reference to Britain.

PATRICIA CUSACK, **Lion Chambers: a Glasgow experiment,** *Architectural History*, 28 (1985), pp. 198–211. Lion Chambers in Hope Street, Glasgow, was designed and built in 1904–07 using Hennebique's system of reinforced concrete construction. An eight-storey shop and office building, it is of interest both as an early British example of this form of construction, and as a curious instance of concrete 'architecture' with a form quite different from the pioneering buildings of the European Modern Movement. Its architects, John Gaff Gillespie and James Salmon, incorporated the generally problematic 'thinness' of reinforced concrete in a design which derived its stylistic character partly from features of old Scottish castles perceived as appropriate to the material, and partly from English Tudor houses with a nod in the direction of contemporary Glaswegian Art Nouveau.

PATRICIA CUSACK, **Architects and the Reinforced Concrete Specialist in Britain 1905–08,** *Architectural History*, 29 (1986), pp. 183–96. The success of Louis Gustave Mouchel in establishing the Franco-Belgian Hennebique reinforced concrete system in Britain during the early years of this century, provoked opposition to what threatened to become a monopoly by 'specialists and patentees' and the foundation of three organisations dedicated to study of the new construction technique, and the education of professionals in its use. The activities of the R.I.B.A. Joint Committee on Reinforced Concrete (1905), the journal *Concrete and Constructional Engineering* (1906), and The Concrete Institute (founded 1908) provide the raw material for this important study of professional response to technological change.

THOMAS E. DAVIDSON, **Computer-correcting Historical Maps for Archaeological Use,** *Historical Archaeology*, 20 no. 2 (1986), pp. 27–37. Although historical maps contain much that is of potential value to archaeologists, many early maps exhibit planometric distortions that make them difficult to use directly. A regression analysis procedure is proposed that will both evaluate the accuracy of historical maps and also geo-correct the cultural data on those maps. Davidson's techniques will also be of interest to students of surveying and cartography.

THOMAS DAY, **Did Brown Design the Broughton Suspension Bridge?,** *Industrial Archaeology*, 17 nos 2–4 (n.d.), pp. 202–10. In April 1831 the Broughton suspension bridge (built in 1825–26 near Manchester) collapsed while a company of the 60th Rifles was crossing—the first well-documented case of a suspension bridge designed for vehicular traffic failing under the impact of loading from the tread of marching men. In the course of a paper discussing the rival claims for authorship of Samuel Brown (1774–1852), the well-known bridge-builder, and Robert Stephenson (1788–1837), brother of George, much useful information is given on the structural details of the ill-fated design.

RICHARD J. DENT, **On the Archaeology of Early Canals: research on the Patowmack Canal in Great Falls, Virginia,** *Historical Archaeology*, 20 no. 1

(1986), pp. 50–62. The Patowmack Canal is an important artifact of early post-colonial development in the United States. Under construction in 1785 the canal system utilised the channel of the Potomac River in conjunction with five canals built to by-pass rapids and falls [allowing goods to move 218 miles inland, overcoming an almost 2000-foot drop in the Potomac—over three times the elevation overcome by the later Erie Canal]. This paper examines the historical context of this undertaking along with archaeological investigations at the Great Falls by-pass canal in Virginia . . . [revealing] the various technological elements of this first generation canal system.

FRANCESCO PAOLO FIORE, **La traduzione da Vitruvio di Francesco di Giorgio**, *Architettura Storia e Documenti*, 1 (1985), pp. 7–30. The manuscript attributed to Francesco di Giorgio Martini (1439–1502) in the Biblioteca Nazionale, Florence, is the first Renaissance translation of Vitruvius. Fiore corroborates the originality of the translation, and the importance of the theoretical work of Francesco di Giorgio, one of the leading architect-engineers of his time, who worked extensively in Naples and Urbino as well as his native Siena, and who wrote one of the most important Italian language treatises on architecture, engineering and construction.

RAINER GAEFE, **Zur Formgebung von Bogen und Gewolben**, *Architectura*, 16 no. 1 (1986), pp. 50–67. Studies the history of catenary principles as revealed in hanging models for arches and vaults. Examples are taken from the sixteenth to the early twentieth century; particularly the works of Wren, Soufflot, Tappe, and Gaudi.

MARY HOLLINGSWORTH, **The Architect in Fifteenth-century Florence**, *Art History*, 7 no. 4 (December 1984), pp. 385–410. An important contribution to the continuing discussion of the origins, identity and role of the 'architect', this paper draws upon a wide variety of documents relating to the fifteenth-century Florentine world of art and building to discuss the nascent professional as 'supervisor' of building works, 'adviser' of building committees (as described in theory by Vitruvius, Alberti, Francesco di Giorgio and others) and as 'patrons and designers'. The paper concludes: "We are very precise in our definition of the role of the 'architect' to the extent that we presume the existence of someone performing an identical function regardless of his title. Such a simple understanding conceals basic truths which are essential to a realistic interpretation of art historical data.

ERIC HOPKINS, **Working Class Housing in Birmingham during the Industrial Revolution**, *International Review of Social History*, XXXI part I (1986), pp. 80–94. Of the major British industrial cities, Birmingham has received less attention for its housing than any other—save in connection with Joseph Chamberlain's slum clearance and civic improvement scheme of the 1880s. This paper attempts an overall view of the development of working class housing in Birmingham during the second half of the eighteenth century and the first half of the nineteenth century, the classic period of population growth and increasing industrialisation.

DAVID M. JACOBSON, **Hadrianic Architecture and Geometry**, *American Journal of Archaeology*, 90 no. 1 (January 1986), pp. 69–85. "All the threads of evidence point to the Greek world of the Hellenistic period as the fountain-head of the 'ruler and compasses approach' to design, embodied in the centralised buildings of Hadrian's reign [A.D. 117–138] that represent one of the highwater marks of the 'Roman architectural revolution'. Analysis of the plans of six of these buildings in Rome, Tivoli and Baiae, some having an Imperial association, reveals how important geometrical

principles were to advanced Roman architectural design." The paper also contains valuable insights into early surveying techniques.

ALISON KELLY, **Coade Stone in Georgian Architecture**, *Architectural History*, 28 (1985), pp. 71–101. Eleonor Coade's artificial stone is so often taken for carved natural stone that the true importance of this material—widely used for capitals, plaques, quoins, string courses, friezes and chimney pieces, as well as statuary—has been overlooked. Yet from 1769 to the bankruptcy of William Croggon (Coade's successor) in 1833, the firm's products (running to many hundreds of items in their catalogues) graced most leading Georgian buildings and laid a firm foundation for the expansion of the Victorian terracotta industry's wares into a much humbler class of construction. Using the catalogues and surviving commercial records of the Coade stone works and showrooms, this paper outlines the use of this important and highly effective Georgian building material.

M. J. T. LEWIS, **Roman Methods of Transporting and Erecting Obelisks**, *Transactions of the Newcomen Society*, 56 (1984–85), pp. 87–110. The biggest Egyptian obelisk stood over 100 feet high and weighed more than 500 tons. Their original installation, and later transportation and re-erection by the Romans, has always been one of the wonders of early building technology. Using ancient sources, modern engineering science, and descriptions of more recent re-installations (notably Domenico Fontana's movement of the Vatican obelisk in 1586), Lewis provides an authoritative account of these impressive operations.

ROBERT MARK & PAUL HUTCHINSON, **On the Structure of the Roman Pantheon**, *Art Bulletin*, LXVIII no. 1 (March 1986), pp. 24–34. Robert Mark of Princeton has studied both Gothic structure (*Experiments in Gothic Structure*, 1982) and Wren's structures (H. Dorn & R. Mark, "The Architecture of Christopher Wren", *Scientific American*, CCXLV (July 1981), p. 168ff.) and here collaborates with Paul Hutchinson, an engineer practising in Seattle, in this investigation of a classic Roman structure. Hadrian's Pantheon (*c.*118–128 A.D.) has been seen as a high point in the 'architectural revolution' that accompanied the development of a superior *pozzolana* concrete that lent itself to the forming of unitary, three-dimensional structures. The Pantheon's use of concentric stepped rings, the lightening of the dome by coffering, and the use of graduated lightweight aggregates have all been seen as important factors in achieving its enormous free span. Mark and Hutchinson's numerical-computer modelling of the structure, however, "revealed that the stepped rings induced higher, rather than lower, critical stresses in an uncracked dome model. But by allowing the model to crack freely, a salutary effect was caused by the rings. The cracked model closely simulated the behaviour of the actual dome, which was discerned to act structurally as an array of arches. In fact, the configuration of the dome seems to indicate that the builders understood this—which points to the conclusion that the late Roman architectural development was not so closely tied to structural innovation as has been generally believed".

J. DAVID MCGEE, **The 'Early Vaults' of Saint-Etienne at Beauvais**, *Journal of the Society of Architectural Historians*, XLV no. 1 (March 1986), pp. 20–31. The vaults of the initial bays in the nave aisles of Saint-Etienne (or Saint-Vaast) have long been considered among the earliest rib vaults in northern France, although their exact date has never been determined. In the late-1950s excavations under the present Late Gothic choir uncovered evidence that the original choir may also have been rib-vaulted. This paper analyses these unpublished excavations and their implication for

the extant vaults of the nave aisles, indicating strongly the existence of a fully-ribbed choir at Saint-Etienne, together with a unified campaign of construction encompassing the choir, transept and the initial bays of the nave aisles. Most significantly, a date as early as the 1170s is suggested for the vaults of the choir, making them the earliest known rib vaults in medieval architecture.

GWYN ROWLEY, **British Fire Insurance Plans in the 19th and 20th Centuries assist Industrial Historians**, *Industrial Archaeology*, 17 nos 2–4 (n.d.), pp. 166–74. "In Britain during the later eighteenth century Fire Insurance Plans (FIPs) developed from the requirements of the fire insurance underwriters. Their pressing needs demanded both an understanding of the physical characteristics of a structure to be insured and a consideration of the spatial concentration of policy holders so as to limit a company's liabilities and losses in the event of a conflagration. Those requirements led to the emergence and development of FIPs as specialised cartographic productions. For the industrial historian the FIPs provide intriguing and important source material." The historian of building construction will also find them useful.

PETER STANIER, **The Granite Quarrying Industry in Devon and Cornwall: Part Two 1910–85**, *Industrial Archaeology Review*, IX no. 1 (Autumn 1986), pp. 7–23. The first part of this article (*Ibid.*, VII no. 2, 1985, pp. 171–98) described nineteenth century granite working techniques, with an outline history of the south-western industry (centring on the firm of John Freeman and Sons) which supplied the building material that was so important to Victorian civil engineering. It ended with the turn-of-century crisis brought about by competition from Scandinavian quarries. Part Two describes twentieth century developments. Despite a short-lived revival following 1910, and another brought about by the monument-building boom which followed the Great War, the story has been one of a continued decline in the face of foreign competition and the growing use of reinforced concrete.

CAROLINE STANLEY-MILLSON & JOHN NEWMAN, **Blickling Hall: the building of a Jacobean mansion**, *Architectural History*, 29 (1986), pp. 1–42. Extensive building accounts which survive among the Lothian papers in the Norfolk Record Office, throw light on the construction and decoration of this great mansion (main phase 1618–1628) by the architect Robert Lyming. The paper provides particularly valuable information on seventeenth century building costs and estimating techniques.

MANFREDO TAFURI, **Documenti sulle Fondamente Nuove**, *Architettura Storia e Documenti*, 1 (1985), pp. 79–95. Tafuri publishes documents concerning the construction of the *Fondamente Nuove*, the new commercial quay system developed in Venice at the end of the sixteenth century. The paper discusses the instruments used to establish the foundations in the lagoon, and the many problems of construction.

ROBERT L . THORP, **Architectural Principles in Early Imperial China: structural problems and their solution**, *Art Bulletin*, LXVIII no. 3 (September 1986), pp. 360–78. While no buildings survive from the early Imperial period, i.e. the Quin and Han dynasties (*c.*250 BC–AD 200), new archeological information, combined with literary and archaeological information, allows a preliminary inquiry into the architectural principles of this early age in China. Five important sites are analysed, particularly with regard to their plans and structural features. The manipulation of pounded earth beds, cores, and footings, of engaged columns as well as free colonnades, and of timber frames and bracketing, distinguishes the early Imperial period from Bronze Age practices and later conventions as attested by extant structures.

DAVID YEOMANS, **Inigo Jones's Roof Structures**, *Architectural History*, 29 (1986), pp. 85–101. When Inigo Jones introduced Italian architectural ideas into Britain in the early seventeenth century, he also brought a new kind of roof structure that facilitated the construction of large-scale spaces. Instead of the arched or hammer-beam roofs used in open halls, or the massive tie beams used in early flat-ceilinged spaces, Jones supported his own ceilings and roofs from the trusses already used in Italy and illustrated by Palladio and Serlio. These efficient structures allowed large spans from relatively small timbers, particularly for the tie-beam which no longer needed to carry the full weight of the roof or to be built in a single length. Contemporary treatises and drawings of Jones's roof structures are analysed to identify the use and spread of this important new structural technique, and its understanding (and sometimes misunderstanding) by architects and carpenters.

GORDON YOUNG, **Colonial Building Techniques in South Australia**, *Vernacular Architecture*, 17 (1986), pp. 1–20. The colony of South Australia was created in 1836. During the first decades of its settlement groups of immigrants arrived from various parts of the British Isles and central Prussia. They brought to the colony a variety of traditional building methods. The South Australian Centre for Settlement Studies has carried out extensive surveys of pioneer buildings in the early settled areas of the State. . . . Although there was a general preference for solid wall construction, timber framing was at first widely used in the construction of slab huts and farm outbuildings. The buildings erected by the German settlers employed sophisticated and ancient framing techniques. A significant discovery has been the widespread use made by all settlers of earth-fast post construction, either as framing for their slab huts, or as a supporting framework buried within masonry walls.