RAILWAY FINANCE AND THE CRISIS OF 1866: CONTRACTORS' BILLS OF EXCHANGE, AND THE FINANCE COMPANIES*

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TRANSPORT history and financial history are often closely associated and perhaps nowhere more than in the study of the early Victorian capital market. Considerable attention has been paid to the ways by which the first railway companies raised their capital,[1] but there have been only a limited number of studies concerned with developments after the 'mania' of the mid-1840s.[2] It is evident that there was a change in the nature of domestic railway finance after 1845, with the contractor becoming increasingly responsible for the raising of funds. It is probable that with respect to railway construction overseas the contractor had always been a member of the financing syndicate; therefore after the collapse of the 'mania' of the mid-1840s, the financing methods proven for foreign railways were introduced at home. But how did the contractor raise finance? The purpose of this present article is to follow the signposts already erected in this journal by Pollins, and one in particular: "The great expansion of contractors' lines in the 1860s required sources of finance. . . . These came with the emergence of credit and finance companies. . . . Little enough is known about the detailed workings of these finance companies, but there is no doubt of the extent of their activities."[3] The finance companies were the most important source of funds, but a variety of financial practices was developed to meet the needs of railway contractors. This led to financial instability, which was revealed in the crisis of 1866.

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Railway investment in Britain between 1825 and 1875 took place in three long waves which peaked in 1840, 1847/8 and 1865/6, and had a duration of 13 to 16 years.[4] Two factors, profitability and the receptiveness of the capital market to railway securities, appear to have been at work in shaping the timescape of fluctuations in domestic railway investment during the third quarter of the nineteenth century. The railway

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companies were dependent upon fresh capital issues for expansion because their profitability was low. This was due in the 1850s to a surplus of capacity;[5] but the companies were dependent upon the level of dividends that they distributed, and hence upon their profitability, to attract subscribers to new issues of securities, particularly ordinary shares.

After the 'mania' of the mid-1840s the public railway capital market for domestic issues contracted and its development regressed. Speculative interest had subsided as the volume of dealings upon the Stock Exchange fell while 'rentier' investors became disenchanted because of the lack of distributed profits. In 1855 only ten English companies were paying a dividend of more than 5 per cent, while 28 companies, with an aggregate capital of £22m., were not distributing an ordinary dividend.[6] This situation, coupled with the statutory prohibition of 1847 on the payment of interest on calls,[7] led to a fall in share prices and a decline in share dealings of such an extent that many of the provincial stock exchanges formed during the 1840s disappeared.[8] Low ordinary dividends, or none, caused revolts by shareholders at company meetings and attempts at concerted action.[9] In spite of excess capacity, construction continued during the 1850s in order to tap a wider catchment area for traffic, but the costs involved reduced even further in the medium term the dividend-paying capacity of existing lines. As the *Economist* commented: "The sources of uncertainty and danger during recent years as regards the ordinary stock of many of the leading companies have been the formidable engagements to Branches and collateral companies, indispensable perhaps to the trunk line, but only to be nursed into profit by a long and tedious process".[10]

The difficult financial situation of the 1850s resulted in a low level of construction, the slump of the long swing. Investors were only prepared to take up ordinary shares in exceptional circumstances, for "since the panic of 1845 and 1846 the public have hardly ever ventured to take original shares, and they wait for the construction of even the soundest and most promising line; whereas preference shares having guaranteed interest and capable of immediate realisation have generally found a ready market".[11] It would appear that only when interest rates were at very low levels, as between 1851 and 1853 and from 1855 to 1856, did investors switch to domestic railway equity. Though issues of preference shares were readily subscribed, they were expensive for the issuing company and diluted the earning power of the existing equity. Similarly, debentures were costly because of their fixed servicing charges, could only be issued up to one-third of a company's equity capital, and could pose redemption problems as a result of their medium-term nature, being usually for five to seven years.

With the contraction of the public capital market, the railway companies turned to other sources of funds. Broadbridge's study of the Lancashire & Yorkshire Railway reveals the importance of bank overdrafts in the company's finances.[12] The willingness of banks to provide funds varied and the London & Westminster would only take short-dated debentures of "first-class railways".[13] Insurance companies were another source of loan capital and it has been estimated that 8 per cent of all life offices' funds were invested in railway debentures during the 1850s. As with banks, the proportion varied from company to company, being as high as 14 per cent in the case of the Rock Life.[14]

Banks and insurance companies were private but 'orthodox' sources of finance. The intermittent nature of the supply of funds from the new issue market led also to the development of other financial practices. These had occurred occasionally before 1850 and centred on the contractor as a source of capital. In addition, ironmasters and locomotive builders began to act, in some measure, as railway financiers. Ironmasters in particular had become providers of funds in order to sustain demand for rails during the slump of the late 1840s.[15] Similarly, contractors wished to keep employed the large work forces that they had built up during the 1840s. Thomas Savin provides one example of a railway contractor of the 1850s who not only built lines but also financed their construction. In partnership with David Davies, he built the Vale of Clwyd Railway and completed both the Llandiloes & Newtown and Oswestry & Newtown. They took unissued securities for payment, a common practice which in one case raised costs by as much as 25 per cent, and, unusually, worked the completed lines for a fixed percentage of the gross receipts.[16]

The securities which contractors took as payment had hardly any value until the railway was generating revenue. Some contractors, like Brassey and Peto, had amassed considerable wealth and so were in a position to hold securities until they were marketable. Not all contractors were in this fortunate position and they required cash during the construction period. Banks did make advances to contractors. One contractor, William Shaw, maintained that it was the custom to grant an advance equal to 10 per cent of the value of the contract when he opened an account with the Barnsley Banking Company in 1848.[17] The advantage to the bank was the amount that would pass through the account. Unfortunately few bank loan books of this period have survived, so it is difficult to establish the typicality of Shaw's relationship with the Barnsley Banking Company between 1849 and 1853, when he obtained credit lines totalling £54,000.

Some London discount houses made advances to contractors on the security of shares and bonds; Overend, Gurney granted loans totalling £3·5m. between 1857 and 1861. This move away from dealing in bills came after the death of Samuel Gurney and the retirement of his nephew, David Barclay Chapman, in 1857.[18] However, the low level of domestic railway construction during the 1850s meant that there was not a large demand from contractors for this form of finance. Only 80 new railway companies were incorporated between 1850 and 1857, and most were small concerns with capitals of less than £0·5m.[19]

Capital, raised both publicly and privately, financed the construction of railways abroad during the 1850s. Certain securities were easily marketable, such as Indian railway shares which from 1849 were enhanced by a government guarantee,[20] French railway securities which in 1855 were yielding 5 per cent,[21] and shares of American eastern lines which from 1853 paid a regular dividend of 6 to 8 per cent.[22] The brief

British depression of 1853/4 coupled with difficulties on Wall Street in 1853 led to waning of interest in American securities[23] and a repatriation of capital invested in European lines.[24] This left Indian securities as the main overseas railway paper which was marketable publicly after 1854. British contractors continued to build railways on the Continent but their attention was now focused on southern, eastern, and central Europe. They were associated in their activities with Anglo-French financing syndicates which were first established during the 1840s for the construction of Belgian and French railways.[25] Many of these syndicates continued in some form until the early 1860s when they were transformed into investment banks.

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Domestic investment increased by 105 per cent between 1859 and 1865 and reached, probably for the first time, the 'magic' level of 10 per cent of national income.[26] One of the major components of domestic investment was railway construction which had moved ahead during the late 1850s and by the early 1860s was of boom proportions. Total English railway investment, which had amounted to £8·25m. in 1859, was £21·13m.[27] in 1865. The upswing of the third long wave in railway investment was the main domestic stimulus of the boom of the first half of the 1860s. Railway construction was not checked as a result of the downturn in exports after 1860 and may have benefited from the short recession in overseas trade through the freeing of productive resources.

The financial constraint on new domestic construction was lifted during the late 1850s. Profits increased as capacity was utilized, the level of dividends on ordinary shares rose, and share prices on the London Stock Exchange appreciated. In December 1860 the *Economist* commented:

> Time is rapidly rendering profitable even the most sluggish of branches, connecting lines – as, for example, the City lines in the metropolis – are opening up new sources of traffic to lines already established. Improved credit enables the companies to borrow on debentures at lower rates of interest. The principles of traffic management are better understood; and a generation of railway servants has grown up free from many of the prejudices and faults of the pioneers who were benumbed by the early excess of railway speculation.[28]

With this improvement in their financial position, the railway companies were able to make new issues of capital. The nominal value of the share capital of the U.K. railway companies increased by £7·007m. in 1858, £10·918m. in 1859, and £12·506m. in 1860.[29]

The railway contractor after 1860 had a considerable volume of work, both at home and abroad, on his hands. Until 1863 the financing of domestic construction was primarily through the public market. But thereafter investors switched to other securities, the railway companies no longer having a monopoly of the privilege of limited liability. The main attractions were financial shares, with 130 out of the 1,041 joint stock companies publicly formed between 1862 and 1866 being either banks, discount companies or finance companies. This group of companies between 1863 and 1866 accounted for 36·4 per cent of the capital offered to the public and 27·1 per cent of the capital subscribed publicly.[30]

The competition for funds in the public capital market certainly had an adverse effect upon the ability of the domestic railway companies to obtain finance. In 1863 the London & North Western was one of a number of established and profitable companies which found it difficult to raise capital.[31] The rise in interest rates during the autumn of 1863, but particularly during the early summer of 1864, depressed railway share prices on the London Stock Exchange which in turn militated against the success of new issues.[32] The private investor still smarted from the experience of the 1850s and consequently was only interested, primarily, in subscribing to issues of debentures and preference shares on which the return was stipulated and guaranteed. The geography of new construction was unfavourable for raising funds locally. In the 1860s lines were built mainly in the West Country, East Anglia, Wales, Scotland and Ireland, areas which had been little affected by industrialization and so consequently had a lower level of savings per capita than the national average.

Similarly, lines abroad were being built in regions where savings were both diffuse and inadequate. Probably about one-third of overseas investment during the 1860s was concerned with railway building. Foreign opportunities of railway contracts were shaped and influenced by the factors which governed the general direction of the export of capital. The Civil War diminished the importance of the United States, though construction there was not totally brought to a halt. Further building in Canada was adversely affected by the financial difficulties of the Grand Trunk. Concession hunters had gone to Constantinople during the Crimean war[33] and their expectations were given a fillip by the cotton famine. In western Europe, the Rothschilds, the *Crédit Mobilier* and its affiliates, together with other indigenous financial institutions, had achieved dominance in the finance of railway construction during the second half of the 1850s, but their ascendancy had not completely shut the door to British contractors and funds. This was particularly so in central and southern Europe where new nation states, as a matter of policy, were interested in fostering railway construction. Economic liberalism aided the penetration of British capital both in Europe and South America. Austria returned to private enterprise for railway building in September 1854 and, after the downfall of Juan Manuel de Rosas in 1852, Argentina encouraged an inflow of foreign capital.[34] The mere opening of doors was not enough; capital had to be attracted, and one of the main methods was for a government to guarantee either a company's annual net revenue or a specific return on its securities. In the case of the Lemberg–Czernowitz railway concession, the Austrian government guaranteed an annual net revenue of 1·5m. silver florins and exempted the operating company from income tax for five years.[35]

By 1864 the public supply of finance to railway projects, foreign as well as domestic, was beginning to dry up. Consequently the financial practices which had been developed during the 1850s were brought back into use. They centred upon the contractor accepting securities instead of cash as payment for work done. However railway building was at a considerably higher level than it had been during the previous decade. This placed extreme pressure on the contractor in his role as financier unless there was a new type of financial intermediary which would provide him with funds. The finance companies, formed during the 1860s boom, could, with caution, meet this need. The *Economist* considered that this was the companies' main function:

> The railway contractor who is now paid in bonds can offer only a species of obligation, the value of which is contingent on the completion and opening of the line, and the earning of an adequate revenue. Still he requires present advances. A banker of ordinary prudence will grant such advances to only a limited extent. A discount broker may perhaps be more venturesome according to his command over large and certain deposits. An insurance office will not look at the security at all. Here, then, is the field of the Financial Company.[36]

The railway building industry and the finance companies were no strangers to each other. Directors and associates of many of the companies[37] had been involved in the finance and the construction of railways at home and abroad during the 1840s and 1850s. Blount, Uzielli, and Laing of the General Credit & Finance were members of the syndicates which had financed the Paris–Rouen–Le Havre line in the 1840s and the Lombard–Venetian in the 1850s.[38] Uzielli, a partner in C. Devaux & Co, together with Laing and Brassey, who was also on the board of the General Credit, in 1856 had tried to form the 'Imperial National Bank of Turkey'; their purpose being not so much to obtain the Ottoman banking concession but rather Turkish railway contracts.[39] Laing, the chairman of the General Credit & Finance, in addition had by the 1860s considerable knowledge of domestic railway affairs. After being Henry Labouchère's private secretary, he served in the Railway Department between 1840 and 1845, and in 1848 was made chairman of the London, Brighton & South Coast Railway.[40] Edward Blount, the expatriate Parisian banker, was Brassey's partner;[41] while also on the board of the General Credit & Finance were W. P. Andrew, chairman of the Scinde, Punjab & Delhi Railway, and J. T. Mackenzie, deputy chairman of the Eastern Bengal Railway.[42]

None of the other major finance companies was as closely linked with the railways. J. S. Morgan, a partner in G. Peabody & Co, the Anglo-American house which had played an important role in introducing American railroad securities onto the London market, was a director of the International Financial Society.[43] Directors of the London Financial Association included John Borradaile, chairman of the Calcutta & South Eastern Railway, and J. E. C. Koch, a director of the Mid Wales Railway.[44] C. E. Mangles and G. B. Townsend, who sat on the board of the English & Foreign Credit Company, were joint concessionaries for the South East of Portugal Railway,[45] while

Mangles was also chairman of both the Bodmin & Wadebridge, and the London & South Western, and a director of the Exeter & Crediton, Salisbury & Yeovil, and the Great Southern of India.[46] Neither the Imperial Mercantile Credit Association nor the Crédit Foncier and Mobilier of Great Britain had either 'railway' or 'contracting' directors, though Sir Morton Peto was a major shareholder in the Imperial Mercantile Credit.[47] While Brassey and Peto were connected with certain of the finance companies, they were in no way fettered by these ties and gave consultative advice to, and received funds from, other companies. The International Financial Society asked the opinion of both contractors with respect to proposals concerning a projected Moldavian railway and the Lisbon & Cintra Railway, with the result in the latter case that in conjunction with Brassey a "competent person" was sent out to make a field report.[48]

As well as the 'general' finance companies, a number of investment banks were formed specifically to fund railway construction. The first of this type to appear publicly was the Public Works Credit Company of London and Paris, the board of which consisted of British and French bankers and railway directors, though of the major English companies only the Great Western was represented.[49] The Contract Corporation was financially stronger and made greater impact upon the London capital market than the Public Works Credit Company.[50] Together with the Mercantile Credit Association,[51] Contract Corporation floated the capital of Smith, Knight & Co. Ltd, a contracting company which henceforth was to work closely with its founders.[52] There were other similar concerns but they were of little substance despite the publicity that their prospectuses obtained.[53] The only other important bank was the International Contract Company, established in April 1864 during the second wave of finance company flotations.[54] Away from the public gaze a number of small contractors converted their firms into companies, as for example the General Contract Company which was the incorporation of Rowland Brotherhood.[55]

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The finance companies acted as issuing houses for the flotation of railway securities during 1863 and the early part of 1864. However, some issues may have been the transfer to the investing public of blocks of shares which had been taken up privately during the late 1850s and early 1860s. This was probably the case with the flotation of 20,000 5 per cent £10 preference shares of the Mid Wales Railway made by the London Financial Association in July 1863.[56] Koch, both a director of the London Financial and chairman of the Mid Wales, had in 1862 privately provided the railway with funds to allow construction to continue, and the share issue of 1863 was probably the funding of this finance. The rise in share prices during 1863 and the spring of 1864 encouraged investors to subscribe to new issues and the finance companies aided such flotations by managing and, in some cases, underwriting them. However, even at this stage some of the first-rank finance companies were occasionally wary of commitments to railway companies; the International Financial Society turning down proposals connected with the Argentine Central Railway in September 1863 and the Metropolitan Railway in December 1863.[57]

The fall in domestic railway share prices from April to November 1864[58] brought new issues undertaken by the finance companies to a temporary halt. After a marked recovery in December 1864, railway share prices weakened again but then rose to reach a peak for the 1860s boom in November 1865. This fluctuation in share prices may be associated with changes in interest rates, with the Stock Exchange recovery during the first half of 1865 being preceded by a fall in interest rates between December 1864 and June 1865. The improvement in conditions on the secondary market led to a reappearance of railway security issues under the aegis of the finance companies. In May 1865 the Credit Foncier and Mobilier offered £1,212,000 A stock of the Metropolitan Extensions of the London, Chatham & Dover Railway on which Peto, the contractor, was to guarantee a dividend of 6 per cent,[59] 1 per cent above the norm for such securities. The London Financial made two issues during the summer of 1865. In July it offered, by public tender, £130,000 5 per cent stock of the Kettering, Thrapston & Huntingdon Railway, and in the following month acted as agents for the issue of capital of the Belfast & Bangor Railway & Land Company.[60] Issuing securities by tender was an uncommon method of flotation during the 1860s and is an indication, as is the higher rate of interest on the stock of the London, Chatham & Dover, that, despite the recovery of share prices, considerable inducements were required to attract subscribers to railway securities in 1865.

The fall in railway share prices during the summer of 1864 led to railway companies and contractors being forced to obtain funds privately in order to continue construction. There had been occasional resort, even in 1863, to private sources of finance. The International Financial Society in December 1863 advanced £15,000 to the Isle of Wight Railway on the security of £20,000 5 per cent debentures for a commission of 2 per cent, to be paid in cash, not in securities.[61] Private finance appears to have been more important for overseas construction throughout the 1860s. The contractor W. Price financed the construction of two lines, the South East of Portugal[62] and the Smyrna-Cassaba,[63] until finally the burden exhausted his credit and personal resources. He paid for rolling stock and locomotives with securities as the following extract from Beyer, Peacock's order book clearly shows:

> [we desire] two more locomotive engines; they must be tank engines to work about ten miles of railway with a gradient of one in a hundred for almost two miles; the traffic will be principally in passengers; these are all the data Mr. Price gives, he leaves to you the power and general arrangement of the engines as he says you understand the matter and will do what is right... Mr. Price wishes to pay for these engines as for those you have in hand, viz. in preference shares of the Smyrna and Cassaba Rly. Co.[64]

The *Economist* doubted the legitimacy of many of the private financial transactions and thought that they resulted from an increase in the supply of credit.

> Just now [April 1864] in London, lenders are running about after borrowers. So many Banks and Credit Companies are beginning work, that they are at a loss for customers to begin upon. Petty contractors, makers of Welsh railways and so forth, are obtaining large advances from new institutions; and we confess to great doubt whether such advances ought to be given, or whether they will ever be repaid.[65]

The finance in some cases consisted of accepting short-term paper backed by the security of railway shares and bonds; Bagehot appears to have been well informed of the circumstances concerning the origin of contractors' bills:

> Prior to the monetary pressure in the Autumn [1864], a good deal of attention was directed to what were called 'finance bills', then to be met rather abundantly in the London market. These bills came into existence in the following way: Contractor A came to Company B, and applied for, say £50,000 for 12 months on the security of debentures issued by a railway company in process of construction, but expected to be finished and open within nine or ten months. B said in reply "Yes we will lend you the £50,000, not in cash but in our own acceptances to your order at 6 months. These acceptances you can take into the market and discount, and in that way procure the ready money you require". In other words, the lender B not having £50,000 in cash waiting to be employed, but expecting to have it at the end of 6 months by the collection of some of its loans or the sale of its assets, desired in the meantime to make a profit by the use of its name and credit.[66]

The arrangements were lampooned by R. M. L. Meason in the guise of 'City Man', who revealed how Mr Delk, the railway contractor, built 'the Bamford and Newington Extension Junction Railway' with the aid of Mayby, a solicitor, Howard, an engineer, and the Financial & Credit Company.[67]

The International Financial Society was less active in the field of railway finance than the other major finance companies but its papers do provide a number of detailed examples of transactions between a finance company and the railway construction industry. In June 1864 the Society was approached for a loan of £400,000 for 18 months to enable the Malaga–Cordoba Railway to be completed. The funds were granted with interest at 7 per cent or Bank Rate, whichever was the higher rate, and a commission of one-half of 1 per cent for every three months. The loan was paid over in six equal instalments of £66,666 13*s.* 4*d.* (£66,666·66) between July and December 1864 in the form of three months' bills accepted by the International.[68] During 1865 the International made a number of loans to members of Thomas Savin's Welsh railway construction group including £15,000 for six months to Benjamin Piercy, the engineer, at 6 per cent interest and a commission of 5 per cent on the security of £20,000, nominal, bonds of the Wrexham, Mold & Connahs Quay Railway,[69] and £6,000 for three months at Bank Rate plus 1 per cent to R. S. France, on the security of his acceptance and £7,000, nominal, debentures of the Shrewsbury &

North Wales Railway.[70] During the year the Society also made a loan to Shrimpton, the contractor for the Northampton & Banbury Junction Railway, and in 1866 accommodated both Thomas Savin and the Bristol & North Somerset Railway. Though the bills used in the advances were discounted by the International, this finance company was anxious to keep such accommodation paper with its name on out of general circulation. The International Financial Society did have a connection with the National Discount, the most prudent of the new corporate discount houses, but in the case of the loan to Piercy, the National refused to undertake not to rediscount the bills unless the International paid 8 per cent.[71]

TABLE I

Railway Securities Portfolio of the London Financial Association, 1867

	Securities	£
	Debentures	330,743
	Lloyd's bonds	250,140
	Preference shares	730,580
	Ordinary shares	919,785
		2,231,248

Amounts distributed			
in England	£619,650	in 9 railways on	£998,330 nominal
Wales	437,000	in 10 railways on	736,410
Ireland	152,975	in 4 railways on	258,913
foreign	26,744	in 1 railway on	101,560*
sundries	115,578		
small advances	29,833		

*Central Argentine Railway
Source: *Bankers' Magazine* (1867), 1048.

The London Financial Association was probably the most important company in the field of financing railway construction. It would appear to have been involved in this type of transaction from its inception. The Association made loans upon finished or nearly completed lines, taking a first mortgage as security,[72] and during the 1860s boom it advanced at least £1·4m. to 24 companies on securities with a nominal value of £2·4m. (see table 1). Unfortunately it is difficult to identify the 23 British lines which the Associaton assisted. As well as the Mid Wales, the Kettering, Thrapston & Huntingdon, and the Belfast & Bangor mentioned above, three others can be established: the Neath & Brecon,[73] the Newry & Armagh,[74] and the Swansea Vale.[75]

Two other examples of railway financing are worth mentioning because of the events of the 1866 crisis. The methods used by McHenry to raise funds for the Atlantic & Great Western have been examined by Jenks[76] and more recently by Adler.[77]

Briefly, McHenry, with the support of Peto, raised money in various ways from the Joint Stock Discount Company, I. Barned & Co., a Liverpool private bank, the Bank of London, the Consolidated Bank, the International Contract Corporation, and the Imperial Mercantile Credit Association. The only omission in Adler's lucid account is the issue of three-year 8 per cent debentures, guaranteed by the Consolidated Bank, undertaken in the autumn of 1864 by the Imperial Mercantile Credit,[78] the company in which Peto, McHenry's new financial ally, was a major shareholder. The validity of the securities was doubted by the London Stock Exchange which as a result refused a quotation, though not a special settlement.[79]

The other railway whose finances were to become notorious was the London, Chatham & Dover. It had been a 'contractor's line' from its inception, having relied initially on Sir Charles Fox of Fox, Henderson & Co. for finance.[80] In the 1850s the railway company made an arrangement with its contractors, Peto & Betts, which subsequently became a standard part of its way of raising funds. The contractors applied for the equity capital as it was issued which allowed the company to utilize its borrowing powers, but the contractors also took up the debentures and issued them to the public.[81] With the formation of the finance companies, Peto & Betts turned to these intermediaries for the funds that they required to build the London, Chatham & Dover.

Only a fragmentary record of the dealings of Peto & Betts has survived but it does provide an indication of the methods used to raise money. Coleman was both a partner in the London stockbroking firm used by Peto & Betts and a director of the Imperial Mercantile Credit, the finance company of which Peto was a major shareholder. The finance company in June 1864 agreed, through Coleman, to place £356,000 6 per cent debentures of the Metropolitan Extensions for a commission of 1½ per cent. Unknown to the Imperial Mercantile, Coleman was obtaining the debentures from Peto & Betts at 95 and then passing them over at the agreed price of 98½.[82] As a result, the contractors were having to pay two commissions in order to obtain finance to maintain construction. In May 1865, another period of stringency in the public capital market, Peto & Betts offered a commission of £266,787 to the Credit Foncier and Mobilier to induce it to issue £1,212,000 A stock of the Metropolitan Extensions.[83] The commission was paid in securities, not cash, and little of the A stock was taken up by the public,[84] as had been the case with the previous flotation of 6 per cent debentures by the Imperial Mercantile.[85] Also in May 1865, Cazenove, a London stockbroker, invited the International Financial Society, for whom he acted, to join a loan of £375,000 to Peto & Betts to be secured on their promissory notes and the engagement of the London, Chatham & Dover, with £1·25m., nominal, of ordinary stock of the railway as collateral. The International's management committee declined the proposal, without referring it to a full board meeting, stating that "in consideration of the blame which might be thrown upon the Directors in the event of any loss arising on the transaction the committee think it best not to take any part in the proposed loan".[86] The London Financial Association appears to have followed the same 'cautious' policy and made no major loans to Peto & Betts, their account with the Association standing at £2–3,000 in 1866.[87] Peto & Betts, in their search for funds in 1865, approached the Royal Exchange Assurance Company, but it refused their request for a loan of £50,000 for 6–12 months on the security of preference shares with a 40 per cent margin.

The finances of the London, Chatham & Dover throughout the first half of the 1860s had been poised delicately because of the time lag between the construction of new line and the generation of traffic. By the opening months of 1866 it was facing an acute cash shortage and on the verge of bankruptcy. As a remedy, some land at Blackfriars, considered 'surplus', was sold to Peto, who then used it as security for two advances, one of £135,000 from the Imperial Mercantile Credit and a second of £160,000 from the General Credit and Finance. No cash was to change hands; instead the two finance companies accepted "Bills of Exchange to be from time to time drawn by firms or individuals resident on the Continent of Europe" which Peto was to discount, mainly with Overend, Gurney. The bills were to be either renewed or replaced when they matured and the whole operation was to last for a year. The finance companies charged a commission of 5 per cent and, if they were forced to take up any of the bills, Peto was to pay interest at Bank rate plus 4 per cent with a minimum of 12 per cent.[89] The funds were to be used to build a metropolitan goods depot, for the ambitious London, Chatham & Dover wished to stop leasing part of the London, Brighton & South Coast's depot.[90] When the new depot was completed, its financing was to be funded by a mortgage on the land and buildings with the Rock Insurance Company,[91] but the transaction was interrupted by the 1866 crisis.

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Unfortunately it is not possible either to measure or even to make a cautious estimate of the amount of funds obtained by railway companies and contractors through the 'private' market. All the finance companies acted as railway banks to some extent, but the readiness to provide funds was determined by their individual conceptions of the proper liquidity structure of their assets. During the early part of the 1860s boom they had been able to float securities to the public, but conditions in the new issues market deteriorated after the spring of 1864 and by the second half of 1865 investors were very unreceptive. Private advances were the alternative to security issues and a switch to this method of financing appears to have occurred during the summer of 1864 and from after the spring of 1865 until the early months of 1866. The finance companies were not the only suppliers of bill finance; they were joined in this 'private' business by some of the new banks and discount houses formed during the boom. Inverted pyramids of credit were built up for railway companies and contractors to finance long-term capital requirement by, in some cases, almost incestuous relationships between the new financial institutions.

It would appear from the studies of Hughes and Nishimara that during the mid-nineteenth century, contrary to the tenets of contemporary monetary theory, the volume of bills was positively, not negatively, related to the level of interest rates. As interest rates rose, the volume of bills increased. This was because most bills drawn before the 1870s had a commercial origin and were created as a result of the profit motive. Profit rates are more volatile than interest rates and consequently during a boom are above interest rates, even when the latter are at a high level.[92] Dear money may have depressed both share prices and the expectations of investors, and led company promoters to abandon their schemes, but it did not cause merchants and manufacturers to alter their views of the immediate future. It had even less effect on railway contractors, who, forced to accept securities in lieu of cash for payment, had to rely on bill finance. The provision of bill finance was both lucrative and risky, and a field to which the finance companies turned, with varying degrees of enthusiasm, after the decline of activity in the new issue market.

The finance companies during the second half of 1865 became increasingly either unwilling or unable to meet the demands of contractors for bill finance. This put financial pressure on the railway companies and their contractors which in turn reacted against the financial institutions. The base of the finance bill system was the contractor and this foundation was removed during the opening months of 1866 as one contractor after another went bankrupt because of the shortage of funds. This was the opening phase of the crisis of 1866. The demise of the contractors rendered illiquid sizeable proportions of the finance companies' assets, the securities placed with them for the bills that they had accepted. The bills could not be met and this endangered the liquidity of other institutions which had discounted them, the whole process reaching a climax with the failure of Overend, Gurney which held both a considerable book of contractors' bills and a portfolio of railway securities.

The inability of the finance companies to provide further funds in the volume required after the summer of 1865 can be traced to the actions of the Bank of England and a growing lack of confidence. The Bank of England was a major discounter during the 1860s boom[93] but it would appear that the Bank reduced the volume of discounting that it was prepared to undertake when its note reserve fell below the level of bankers' deposits that it held.[94] The second occasion when this happened during the boom was October 1865. Thereafter until March 1866, apart from assistance to the money market at the time of the quarterly 'shuttings', discounting by the Bank fell to a low level. With Bank Rate never below 6 per cent the Bank was able to reverse the outflow of bullion and restore its reserves.[95] These actions put a squeeze on credit facilities generally, which certainly affected the liquidity position of the finance companies. The International Financial Society was acutely short of funds during the autumn of 1865 and as a result was forced to borrow from its associated banks, its own bankers, and the Bank of England. It obtained two one-month loans from the latter at Bank Rate, the first of £70,000 in September, and the second of £17,000 in December for which it had to deposit bills as security.[96]

The frail fabric of financial confidence had begun to tear as early as August 1865 when it was announced that the Great Eastern Railway had exceeded its statutory borrowing powers.[97] The growing feeling of unease was heightened in October when the investigating committee of the shareholders of Smith, Knight & Co. Ltd, the contracting 'auxiliary' of the Contract Corporation, reported. The committee thought that the shareholders of the company were likely to lose their existing capital, stated that further calls were needed to meet the company's liabilities, and alleged that at the time of its flotation the company "was practically worse than valueless involving the assumption of a large number of contracts not merely unremunerative, but also burdensome".[98] The Stock Exchange was already discounting the possible effects and during 1865 the shares of the new limited liability companies, predominantly banks, finance companies and discount houses, fell by 75 per cent.[99]

The structure of credit and capital in railway contracting, built up over the 1860s boom, crumbled during the first half of 1866. In January the contracting firm of Watson & Overend failed with liabilities of £1,514,330,[100] while Thomas Savin, who had provided Watson & Overend with finance, went bankrupt on 5 February.[101] Bills either accepted or discounted by the finance companies for these contractors were now valueless, as the pledged security (the bonds and shares of various railway companies) was completely unmarketable until the lines were finished and generating revenue. The London Financial Association had advanced approximately £402,000 to Watson & Overend,[102] and the International Financial Society had granted Savin a loan of £50,000 just one month before he had gone bankrupt.[103] The other financial institutions embarrassed by these particular failures were the Contract Corporation and the Joint Stock Discount Company.[104] The Contract Corporation went into liquidation at the end of March[105] while the Joint Stock Discount was placed in extreme difficulties.[106] The share prices of all the finance companies fell sharply on the Stock Exchange[107] which led to a withdrawal of term deposits placed with the companies,[108] their main source of capital in most cases. This forced some of the finance companies to call up further equity capital which depressed their share quotations even more.[109] There is considerable evidence that by April large bear accounts had been opened in finance company shares with the speculators spreading rumours in order to further depress prices.[110] The suspension of Barned's Banking Company, which had only recently been incorporated, brought a further fall in financial shares during the third week of April.[111] Blind panic broke out on Friday 11 May following the failure of both Peto & Betts and Overend, Gurney Ltd, which in turn brought down the Imperial Mercantile Credit Association and the Consolidated Bank, both which had been financing McHenry and Peto & Betts.

* * *

The crisis of 1866 considerably affected the financial sector but especially the finance companies and the system of railway finance which had been developed since the early 1850s. Domestic railway finance was thrown into a chaotic situation and a number of companies were forced 'into Chancery', the most notorious cases being the London, Chatham & Dover and the Great Eastern. Their problems stemmed from dubious borrowing practices, including the illegal issue of debentures.[112] Both large and small companies faced financial difficulties, including the Bristol & North Somerset, which was a debtor of the International Financial Society, the Midland, the North British, the Great Western, the Caledonian, and the Metropolitan. This widespread financial embarrassment caused railway security prices to be depressed for the rest of the decade and new investment consequently declined. The third long wave in domestic railway investment reached a peak in 1865/6 with the following down swing being initiated by the 1866 crisis and sustained by its results. Shareholders reacted to the depreciation of their invested savings and the fall in dividend distributions in the same way as they had in the 1850s. Protective alliances were formed of which the most important was the Manchester Railway Association.[113] Railway debenture holders, the hardest hit, were called "the timid part of the public" by the *Economist*, but it was acknowledged that such securities, which had appeared to be almost riskless, were held by trustees, bankers, and the Bank of England.[114]

The 1866 crisis brought down most of the smaller second- and third-rank finance companies. Only the five important companies survived and they all faced, to a varying degree, the common problem of realizing their now illiquid railway assets. The London Financial was the most affected; in 1867 it had loans outstanding of £1·38m. secured on £2·23m., nominal, securities.[115] It was not able to realize any of these investments until 1871[116] and in the process incurred further expenditure. In 1875 42·4 per cent of the International Financial Society's assets, then valued at £1,035,233 were illiquid and had been acquired before the 1866 crisis, but some, such as the Cambrian Railway securities pledged by Savin, did yield some revenue. The weight of these illiquid assets crippled all but one of the five remaining companies and none were able to continue into the 1870s as effective investment banks.

The financial problems caused by the railway companies' loan capitals were solved during the decade after 1866. The existing medium-term debentures were replaced by perpetual debenture stock. This method of financial reconstruction was begun by Laing, the first chairman of the General Credit & Finance, who introduced long-dated debentures in 1867 to meet the pressing problems of the Great Eastern. The impasse in domestic railway finance was one of the factors which accentuated the depth of the financial depression after 1866 by removing from the range of outlets for savings one class of securities which had apparently combined income with liquidity. It was not until the spring of 1870 that domestic railway securities recovered on the Stock Exchange, but the appreciation varied from company to company and depended upon the extent to which debentures had been converted from medium-term bonds to long-term, or perpetual, stock. The Great Northern had converted £2,889,275 with £1,364,868 remaining; the Great Western still had to deal with £11m. of bonds, the London & North-Western with more than £11m., and the North Eastern still had £10m. to convert.[117]

The English finance companies were in no way exceptional in acting as railway banks. This was a common characteristic of the investment banks formed throughout

Europe during the third quarter of the nineteenth century. Before the mid-1870s, in most countries, they played little part in assisting domestic manufacturing industry, but in the main aided railway development. This was certainly the case with regard to Austria,[118] France,[119] and Germany,[120] and here the banks, as in England, fell easy prey to any financial crisis. Until now the role of the finance companies in England as railway banks has barely been recognized.[121] The second-rank concerns, and some of the larger ones too, were involved in dubious financial practices and fraud, but they did play a key role in the third wave of domestic railway investment. The finance companies were also important in the funding of construction abroad. The formation of the finance companies is an indication of the degree of responsiveness of the financial sector to the demands placed upon it. The English investment banks shared the characteristic of impermanancy with their Continental counterparts and this was due primarily to the poor development in London, and more so in other European financial centres, of the secondary market.

Probably the peculiarly English feature of the operations of the finance companies was the use of the bill of exchange as the medium for advances to railway contractors. The crisis of 1866 threw this form of financing into severe disrepute, and may have ended the use of the 'finance bill', not only by railway contractors but also by others who resorted to this unstable financial device. It was this particular form of 'City' activity which disgusted Thompson Hankey and confirmed his opposition to free lending by the Bank of England in times of crisis, as proposed by Bagehot.[122] The decline in the number of 'finance bills' drawn after 1866 may have been one of the factors responsible for the fall in the volume of bills during the last quarter of the nineteenth century. Nishimura's estimates, which have a margin of error of 12 per cent, show a peak for the total volume of bills of £1,781m. in 1873, while inland bills alone reach a peak either in 1864/5 or 1873.[123] He attributes the subsequent fall in their volume to the world transport revolution which reduced the general level of inventories. This is a sound argument, well made, but a subsidiary factor may have been the decline in the use of the 'finance bill'.

Hughes has shown that the bill of exchange was a destabilizing factor in the 1850s.[124] If anything, the bill gave rise to even greater instability in the 1860s. During both decades the volume of bills had a positive relationship with interest rates, but in the 1860s, as Hankey pointed out, the large proportion of finance bills were in practice not bills at all, but mortgages. "They may be promises to pay, so, such a document is, indeed, provided and given with every mortgage of land, but there is no ordinary provision incident to the document which will secure that on the date of the Bill becoming due there will be assets forthcoming to meet it".[125] They were not in any way liquid, being dependent upon the completion of the line for funds to meet them. The bankruptcy of the contractors during the first half of 1866 rendered the railway finance bills totally illiquid, and brought down the financial institutions holding them. The crisis of 1866 was thought to have been the worst since 1825 and its harvest of failures depressed the economy until the autumn of 1869 and railway investment until 1870.

The railway finance bill was no longer required after 1866 and its unstable influence upon the economy was removed. The major railway companies, from the mid-1870s until the end of the century, were able to raise finance through the public capital market.[126] The new issue market for overseas railway companies both widened and deepened during the 1870s, particularly with respect to American securities.[127] As railway finance turned back to the pattern established in the 1840s, for domestic lines at least, the contractor began to lose his additional function of being a financier. Contractors' lines and finance company lines did not disappear overnight after 1866,[128] but they were no longer a major characteristic of railway construction both at home and abroad.

NOTES

1. See G. H. Evans, *British Corporation Finance 1775–1850* (Baltimore, 1936); H. Pollins, 'The Marketing of Railway Shares in the first half of the Nineteenth Century', *Economic History Review*, 2nd ser., VII (1954–5); S. A. Broadbridge, 'The Early Capital Market: the Lancashire and Yorkshire Railway', *Economic History Review*, 2nd ser., VIII (1955–6), reprinted in an enlarged version as 'The Sources of Railway Share Capital, in M. C. Reed (ed.), *Railways in the Victorian Economy, Studies in Finance and Economic Growth* (1969) and S. A. Broadbridge, *Studies in Railway Expansion and the Capital Market in England, 1825–1873* (1970); M. C. Reed, 'Railways and the Growth of the Capital Market', in Reed (ed.), *op. cit.*; J. R. Killick and W. A. Thomas, 'The Provincial Stock Exchanges 1830–1870', *Economic History Review*, 2nd ser., XXIII (1970), and 'The Stock Exchanges of the North of England, 1836–1850', *Northern History*, V (1970); W. A. Thomas, *The Provincial Stock Exchanges* (1973); and mention too should be made of the imminent publication of M. C. Reed's thesis, *Investment in Railways in Britain 1820–1844; A Study in the Development of the Capital Market* (forthcoming).

2. See L. H. Jenks, *The Migration of British Capital to 1875* (1971); H. Pollins, 'Railway Contractors and the Finance of Railway Development in Britain' in Reed (ed.), *op. cit.*, a revised version of an article which was first published in the *Journal of Transport History*, III (1957–8); and J. R. T. Hughes, *Fluctuations in Trade, Finance and Industry: a study of British Economic Development, 1850–1860* (1960), Ch. VII.

3. Pollins, 'Railway Contractors', *loc. cit.*, 224–5.

4. A. G. Kenwood, 'Railway Investment in Britain, 1825–1875', *Economica*, n.s. XXXII (1965).

5. On the long swing and the railway development cycle see A. G. Ford, 'British Investment in Argentina and Long Swings, 1880–1914', *Journal of Economic History*, XXXI (1971), reprinted in R. Floud (ed.), *Essays in Quantitative Economic History* (1974).

6. Hughes, *op. cit.*, 187.

7. Pollins, 'Railway Contractors', *loc. cit.*, 215.

8. See Killick and Thomas, 'Provincial Stock Exchanges', *loc. cit.*

9. *Economist*, 26 January, 1856, 83; and Civis, *The Railway Question* (1856).

10. *Economist*, 8 December 1860, 1360.

11. 'Railway Finance', *The Quarterly Review*, XXI (1867), 496.

12. Broadbridge, *op. cit.*, 92–102.

13. British Parliamentary Papers, 1857, X; *Select Committee on the Bank Acts*, evidence of D. Salomans, director of the London & Westminster Bank, Q. 1206.

14. B. Supple, *The Royal Exchange Assurance: a History of British Insurance 1720–1970* (1970), 315, 327–8.

15. D. R. Adler; M. E. Hidy (ed.), *British Investment in American Railways, 1834–1898* (Charlottesville, 1970), 25–44.

16. R. Christiansen and R. W. Miller, *The Cambrian Railways*, I, *1852–1888* (1967), 22–3, 35, 41, 123; see also C. P. Gasquoine, *The Story of the Cambrian, A Biography of a Railway* (1922).

17. Midland Bank Archives, London; Barnsley Banking Company, A14, *Loans and Credits 1845–1860*, 17 January 1848, 14 February 1849, 28 December 1850, 9 November 1853.

18. *Economist*, 30 October 1866, 1361–2.

19. Hughes, *op. cit.*, 200.

20. On Indian railways see D. Thorner, 'Great Britain and the Development of India's Railways', *Journal of Economic History*, XI (1951), and W. J. Macpherson, 'Investment in Indian Railways, 1845–1875', *Economic History Review*, 2nd ser., VIII (1955–6).

21. Hughes, *op. cit.*, 186–7.

22. On American railways, in addition to Adler, *op. cit.*, see A. W. Currie, 'British Attitudes towards Investment in North American Railroads', and R. W. Hidy and Muriel E. Hidy, 'Anglo-American Merchant Bankers and the Railroads of the Old Northwest, 1848–1860', both in the Transportation issue of *Business History Review*, XXXIV (1960).

23. Adler, *op. cit.*, 21–4.

24. R. E. Cameron, *France and the Economic Development of Europe* (Princeton, N.J., 1960), 213, 229.

25. Jenks, *op. cit.*, 141–44, 150–1.

26. Calculated from C. H. Feinstein's estimates as adjusted by G. R. Hawke; Hawke replaces Feinstein's estimates of domestic railway investment with those of B. R. Mitchell. G. R. Hawke, *Railways and Economic Growth in England and Wales, 1840–1870* (1970), 209.

27. *Ibid.*, 209, 220–1.

28. *Economist*, 8 December 1860, 1360.

29. Calculated from G. R. Hawke and M. C. Reed, 'Railway Capital in the United Kingdom in the Nineteenth Century', *Economic History Review*, 2nd ser., XXII (1969).

30. From the lists of companies publicly formed compiled by Messrs. Spackman which were published annually by *The Times* on 31 December from 1860. The lists for 1863 to 1867 were reprinted in the *Commercial History and Review*, an annual retrospective supplement to the *Economist*. The list included only companies which were advertised publicly "as many never got beyond registration, and others are registered for private purposes". Until 1863 the list provides only a few details but thereafter more particulars, including paid-up capital, were provided.

31. Pollins, 'Railway Contractors', *loc. cit.*, 215.

32. See the *Economist*, 7 May 1864; 6 August 1864.

33. See J. H. Jensen and G. Rosegger, 'British Railway Builders along the Lower Danube 1856–1869', *Slavonic and East European Review*, XLVI (1968), 105–28.

34. Cameron, *op. cit.*, 219: W. R. Wright, 'Foreign-owned Railways in Argentina: a case study of Economic Nationalism', *Business History Review*, XLI (1967), 63–4; and C. Lewis, 'Problems of Railway Development in Argentina, 1857–1890', *Inter-American Economic Affairs*, XXII (1968).

35. Public Record Office, London (cited hereafter as P.R.O.), BT31/907/1048c.

36. *Commercial History and Review of 1863*, 3; supplement to the *Economist*, 20 February 1864.

37. On the finance companies, see Jenks, *op. cit.*; W. T. C. King, *History of the London Discount Market* (reprinted 1972), 217–56; D. S. Landes, *Bankers and Pashas* (1958); P. L. Cottrell, 'The Financial Sector and Economic Growth: England in the Nineteenth Century', *Revue Internationale d'Histoire de la Banque*, IV (1971), 'Anglo-French Financial Co-operation 1850–1880', *Journal of European Economic History* (forthcoming) and Cottrell, thesis.

38. Jenks, *op. cit.*, 141, 144; Cameron, *op. cit.*, 224.

39. A. S. J. Baster, *The International Banks* (1935), 83

40. H. Parris, *Government and the Railways in Nineteenth Century Britain* (1965), 233.

41. S. J. Reid (ed.), *Memoirs of Sir Edward Blount* (1902), 49.

42. For the prospectus of the General Credit & Finance, see the *Economist*, 23 May 1863, 588.

43. Hidy and Hidy, *loc. cit.*, 152–3.

44. For the prospectus of the London Financial Association, see the *Economist*, 2 May 1863, 504. Christiansen and Miller confuse J. E. C. Koch, a director of the London Financial, with J. H. Koch, his brother, who was the Association's secretary; Christiansen and Miller, *op. cit.*, 106, 111, 116.

45. P.R.O., BT31/482/1889.

46. *Bradshaw's Railway Manual, Shareholder's Guide and Directory* 1869 (reprinted 1969).

47. *Bankers' Magazine* (1866), 167.

48. International Financial Society, Minutes of Board Meetings, 18 August 1863, 17 December 1863, 31 December 1863, 3 March 1864, 10 May 1864 (hereafter cited as I.B.).

49. *Economist*, 23 May 1863, 588.

50. *Ibid.*, 19 December 1863, 1422.

51. The Mercantile Credit Association was formed in 1863 but in the following year merged with the Imperial Finance Company to form the Imperial Mercantile Credit Association: *ibid.*, 14 May 1864, 613; 21 May 1864, 652; *Bankers' Magazine* (1864), 562, 568; P.R.O., BT31/969/1379c.

52. *Economist*, 26 March 1864, 391. During 1865 the Contract Corporation agreed to take over the contracting business of Watson & Overend. *Bankers' Magazine* (1865), 403.

53. Namely the Railway Contract Company (P.R.O., BT31/836/717c); the Railway Credit Company (BT31/1106/2148c); the Railway Finance Company (BT31/1147/2396c); and the Railway Construction Company (BT31/1231/2874c).

54. *Economist*, 30 April 1864, 551; P.R.O., BT31/942/1230c.

55. *Economist*, 28 May 1864, 681.

56. *The Times*, 17 July 1863.

57. I. B., 10 September 1863, 17 December 1863.

58. von Hayek's Index of share prices which "is heavily weighted with railway shares" falls from 172·7 (April 1864) to 163·4 (November 1864) (1841 average = 100); the index is published in A. D. Gayer, W. W. Rostow and A. J. Schwartz, *The Growth and Fluctuation of the British Economy 1790–1850*, I (1953), 456.

59. *Economist*, 20 May, 1865, 599.

60. *Ibid.*, 1 July 1865, 790; 19 August 1865, 1023.

61. I.B., 14 December 1863, 17 March 1864.

62. P.R.O., BT1/482/1889.

63. International Financial Society, Minutes of Committee Meetings, 20 February 1865; hereafter referred to as I.C.

64. Beyer, Peacock Order Book, 4 January 1865, quoted in J. R. Harris, an unpublished and unfinished history of Beyer, Peacock, MS, Ch. 2, 11–2. I am grateful to Professor Harris for allowing me to read the manuscript.

65. *Economist*, 30 April 1864, 315.

66. *Commercial History and Review of 1864*, 5; supplement to the *Economist*, 11 March 1865.

67. [R. L. Meason], *The Profits of Panics* (1866), 45–67.

68. I.B., 10 June 1864, 23 June 1864, 14 July 1864, 28 July 1864, 18 August 1864, 25 August 1864, 1 September 1864, 18 September 1864, 15 September 1864.

69. *Ibid.*, 26 January 1865.

70. *Ibid.*, 13 April 1865.

71. *Ibid.*, 2 February 1865.

72. *Bankers' Magazine* (1866), 161.

73. *Ibid.* (1872), 789; referred to as the Swansea & Carmarthen.

74. The involvement of the London Financial is mentioned in 'The Imperial Mercantile Credit Association (Limited) v. The Newry & Armagh Railway Company', *The Weekly Reporter*, XVI (1868), 335–6.

75. After the 1866 crisis the London Financial's policy was to place one of its directors on the boards

of railway companies which were indebted to it: a check of railway directors, using *Bradshaw*, resulted in the identification of only this company.

76. Jenks, *op. cit.*, 255ff.

77. Adler, *op. cit.*, 72, 102–9.

78. *Economist*, 23 November 1864, 1462.

79. British Parliamentary Papers, 1878, XIX; *Royal Commission on the London Stock Exchange*, Cmd. 2157, Minutes of Evidence, Appendix No. 7, 367.

80. Pollins, 'Railway Contractors', *loc. cit.*, 220.

81. R. W. Kidner, *The London, Chatham, and Dover Railway* (1952), 12–13.

82. 'The Imperial Mercantile Credit Association v. Coleman and Another', *Banker's Magazine* (1870), 366.

83. *Ibid.* (1868), 858.

84. *Ibid.* (1869), 66–7.

85. *Ibid.* (1866), 1216–17.

86. I. C., 8 May 1865.

87. *Bankers' Magazine* (1867), 177.

88. Supple, *op. cit.*, 326.

89. *Economist*, 30 November 1867, 1352; see also 13 October 1866, 1189–91.

90. Kidner, *op. cit.*, 10.

91. *Economist*, 29 February, 237–8.

92. S. Nishimura, *The Decline of Inland Bills of Exchange in the London Money Market, 1855–1913* (1971), 71–2.

93. J. H. Clapham, *The Bank of England A History*, II, *1797–1914* (1944), Appendix, Income from discounting.

94. On the role of the bankers' balances see L. S. Pressnell, 'Gold Reserves, Banking Reserves, and the Baring Crisis of 1890', in C. R. Whittlesey and J. S. G. Wilson, *Essays in Money and Banking in honour of R. S. Sayers* (1968), 179, 187.

95. See British Parliamentary Papers, 1873, XXXIX; Accounts and Papers, *Accounts of the Bank of England... 1856 to the present time*, 161–82. I am grateful to Professor L. S. Pressnell for bringing this source to my attention.

96. I.C., 19 September 1865; I.B., 14 December 1865.

97. *Economist*, 19 August 1865, 1000. A similar case had occurred in 1863 when the West Hartlepool Harbour & Railway Company was forced to obtain private legislation in order to regularize its borrowing position. See *ibid.*, 12 May 1863, 477–8.

98. *Ibid.*, 21 October 1865, 1275.

99. *Ibid.*, 20 October, 1866, 151.

100. King, *op. cit.*, 241.

101. Christiansen and Miller, *op. cit.*, 73.

102. *Economist*, 27 January, 1866, 162.

103. I.B., 10 October 1872.

104. *Bankers' Magazine* (1866), 192.

105. *Economist*, 31 March 1866, 387.

106. King, *op. cit.*, 241.

107. *Economist*, 3 February 1866, 167.

108. *Ibid.*, 10 February, 1866, 176.

109. *Ibid.*, 17 March 1866, 325.

110. *Ibid.*, 14 April 1866, 450; 28 April 1866, 508; 5 May 1866, 536.

111. *Ibid.*, 21 April 1866, 483.

112. Meetings of the London, Chatham & Dover reported in *ibid.*, 8 September 1866, 1056; 13

October 1866, 1181–3; for the difficulties of the Great Eastern see *ibid.*, 19 October 1867, 25 November 1868, 15 April 1868, 15 August 1868.

113. *Ibid.*, 16 November 1867, 18 April 1868.

114. The *Economist* wrote at considerable length on this problem during the late 1860s and there was also a debate in the journal's correspondence column.

115. *Ibid.*, 28 September 1867, 1100; 7 December 1867, 1381.

116. *Ibid.*, 22 July 1871, 883; 10 August 1872, 1000; 8 March 1873, 290; *Bankers' Magazine* (1872), 79.

117. *Economist*, 9 April 1870, 453.

118. See R. L. Rudolph, 'Austria, 1800–1914', in R. Cameron (ed.), *Banking and Economic Development* (1972), 26–57.

119. See Cameron, *op. cit.*

120. J. Riesser, *The Great German Banks*, Publications of National Monetary Commission, XIV (Washington, D.C., 1911), 64–6, 75, 83.

121. See the comments of Cameron, *op. cit.*, 182–5; Landes, *op. cit.*, 52–61 and *idem.*, *The Unbound Prometheus* (1969), 206–10.

122. T. Hankey, *The Principles of Banking*. . . (4th edn, 1887), 25–38.

123. Nishimura is ambiguous on this point: "As far as we know, their peak was in 1864–5, when the amount was £742m. and this amount was never reached again (actually their peak must have been in 1873, when their amount most probably greatly surpassed £800m.)". Nishimura, *op. cit.*, 24, 79, 93.

124. Hughes, *op. cit.*, 254–6.

125. Hankey, *op. cit.*, 26.

126. Cottrell, thesis, II, 745–6, 782–3; E. M. Sigsworth and J. Blackman, 'The Home Boom of the 1890s', *Yorkshire Bulletin of Economic and Social Research*, XVII (1965); and R. J. Irvine, 'British Railway Investment and Innovation, 1900–1914', *Business History*, XII (1971).

127. Adler, *op. cit.*, 90–3.

128. As for example the Cornwall Mineral Railway, see Cottrell, thesis, II, 668–9, 747–8.