How Public Works Saved Private Enterprise: The Thomas & Betts Company in the Great Depression

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Thomas & Betts was in its thirty-first year in 1929, still relatively small, but rejuvenated by a new managerial team. It had undergone a transformation from a sales agency for electrical conduit and fittings to a manufacturer of conduit fittings. It was started in the aftermath of the 1893 depression and survived the 1907 panic and the 1920 depression. Its survival can be attributed to the conservative management principles of its founders and the rapid rate at which the nation electrified. As electricity became commonplace in industry and urban homes, the electrical industry would move more in step with the economy; it would no longer march to the beat of its own drummers. The demand for products like those of Thomas & Betts was derived from the demand for new construction, producers' durables, and, to a lesser extent, consumers' durables. These crucially depended on the real interest rate, which increased sharply in the early 1930s [2, p. 566]. The goal of profit maximization would become subordinate to the more fundamental goal of survival. It was to be a severe test for Thomas & Betts' young managers, and help came from an unexpected source. It was an episode in which the company takes justifiable pride, but the legacy was expansion into a market niche that proved to be a source of problems in the post-World War II era.

Nineteen twenty-nine was a banner year for Thomas & Betts. It would be seven years before net sales or gross profit in nominal terms exceeded the levels of that year, eight years before net profit exceeded the 1929 level. The source of the drop in net sales is not difficult to trace. Between 1929 and 1933, nominal GNP fell by 47 percent; real GNP, by 24 percent. Nominal national income emanating in the contract-construction industry, the source of

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the greatest demand for Thomas & Betts' products, decreased by 79 percent. An index of the value of new building permits issued collapsed by almost 90 percent; the average of several contractor indexes fell by 23 percent. Producers' durable equipment decreased by 73.2 percent in nominal terms, 65.9 percent in real terms. Consumers' durable goods went down by 62 percent in nominal terms, 49 percent in real terms [12, Series F-1, F-2, F-49, F-56, F-229, N-111, and N-137].

By mid-year, 1930, there was still no indication of the hard times that lay ahead. The sales volume for the first nine months of 1930 were equal to those of 1929. Sales revenue fell with declining prices, but prices customarily fell following the peak of a business cycle. The country was unquestionably in a cyclical downturn; the duration and severity of that downturn remained uncertain. Just before Labor Day 1931, G. C. Thomas, the general manager, presented to the board a series of suggestions with respect to personnel changes and salary reductions that might enable the company to operate at a small profit. He argued that price decreases over the previous four months required immediate, drastic reductions in the company's expenses.

> I am giving herewith an absolutely cold blooded outline of reductions in personnel and salaries without regard to sentiment of any kind. This reduction is the limit to which I believe the co. could go and still operate efficiently.[1]

The board then reduced salaries for all officers and all salaried employees by 20 percent [7, 1 September 1931]. This was consistent with G. C. Thomas' recommendations in general, but he voted against the resolution on the grounds that "the reduction should be a larger percentage of some of the salaries." Presumably he was referring to the founding generation (Robert M. Thomas, Hobart D. Betts, and Adnah McMurtrie) who were no longer active in the day-to-day operations of the company, but whose salaries remained the same as when they were active. G. C. Thomas had made no specific recommendation concerning these three, "The question of sentiment etc comes in so strongly that I hesitate to suggest how much of a cut they should absorb," but his vote revealed he thought a 20 percent reduction in their compensation was too little for the interests of the Thomas & Betts Company. By the 1 January 1932, the founders were each receiving $500 per month, less than half of their contracted salaries.

The board also reduced the compensation of all hourly employees by 20 percent, "provided such deduction does not bring the wages of anyone below Eighty Percent of his full time wages" [5, 1 September 1931]. This was no

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[1][5, 1 September 1931]. The price reductions had reduced monthly income by $10,500. Since average monthly income for all of 1931 was $65,000, these reductions were approximately 16 percent.

guarantee that the full work force would be retained and would receive 80 percent of their former wages; the company continued to reduce its labor force as required by business conditions.

By late 1931, the full effect of the depression had hit the Thomas & Betts Company. The company would lose $61,000 in 1931, the first loss in its history. G. C. Thomas prepared several tables for the November 1931 board meeting comparing the financial position of the company at the end of October 1926, and the end of October 1931. These tables clearly spotlight the company's problems. On the one hand, total current assets were almost 10 percent greater in 1931 than in 1926, while total current liabilities had decreased by more than 30 percent. Total quick assets, on the other hand, had gone down by only $9,500, but their composition had changed drastically. Thomas provided additional information to the board in April 1932, comparing data from the end of December 1921, and the end of February 1932 [7, 24 November 1931 and 4 April 1932]. A juxtaposition of these comparisons illustrates how the situation deteriorated. Table 1 shows the total and the composition of total quick assets on an annual basis for these four dates. Net sales through October in 1931 were less than 5/6ths those of the corresponding period in 1926. Net sales for the month of October 1931, were 12 1/2 percent less than the average for the first ten months, and Thomas forecast the following six months would show even lower sales, a monthly average of 22 percent less than the first ten months' average. Costs had been reduced, but expenses were less malleable.[2] Table 2, reporting monthly averages, summarizes the information Thomas presented to the board.

Table 1
TOTAL QUICK ASSETS OF THOMAS & BETTS

	Dec. 31 1921	Oct. 31 1926	Oct. 31 1931	Feb. 28 1932
Cash	$23,300	$35,100	$55,600	$67,600
Accounts receivable	41,900	92,400	56,300	31,700
Notes receivable	3,600	2,900	9,000	8,200
TOTAL	68,800	130,400	120,900	107,500

[2]Total expenses include sales, warehousing, development, office, miscellaneous, and officers expense.

Table 2
AVERAGE MONTHLY EXPENSES OF THOMAS & BETTS

	10 mos. 1926	10 mos. 1931	Oct. 1931	6 mos. 1931-1932
Net Sales	$85,210	$70,520	$61,730	$55,000
Total Cost	58,780	48,710	44,340 41,200	
Total Expense	21,390	23,850	21,020	18,880
Profit	5,040	(2,040)	(3,630)	(5,080)

In support of his argument that decreasing prices were responsible for many of Thomas & Betts' woes, Thomas estimated that net profits calculated using 1926 prices and 1931 quantities would have been $21,050 per month, a rate of 25.6 percent.

Nineteen thirty-two was to be another bad year. Thomas & Betts lost $39,200, the second consecutive year with a loss, the only two years of losses in the company's history. Because of the extreme cost-cutting measures that had been implemented, it was not as big a loss as the previous year. Net sales in 1932 were 68.5 percent of those in 1931; the cost of goods, 69.8 percent; but administrative and sales expenses were reduced to 63.9 percent. Table 3 documents the changes in the company's profitability over the years 1928-1932 and includes estimates G. C. Thomas made in April 1933, of the values for that year. Total assets declined from $870,000 in 1929 to $731,000 for the year 1932; the company's net worth declined from $847,000 in 1930 to $718,000 in 1932.

Table 3
THOMAS & BETTS' PROFITS, 1928-33

	Net Sales	Cost of Goods	Adm. & Sales Expense	Net Profit
1928	$1,192,200	$701,000	$302,300	$188,900
1929	1,452,700	869,500	343,300	239,900
1930	1,139,100	711,700	347,900	79,500
1931	785,800	553,400	298,400	-66,000
1932	537,600	386,200	190,600	-39,200
1933(est.)	428,100	281,700	150,300	-3,900

Throughout 1932 the company continued to study ways in which costs could be reduced still further. No dividends were paid. In September, when Adnah McMurtrie offered to sell 36 shares of preferred stock back to the company at a price of $45 per share, a discount of 55 percent off the 1929 value, the company reluctantly consented, if he first tried to find an individual within the company to purchase his stock [7, 20 September 1932].

In many respects, the experience of Thomas & Betts mirrored that of the electrical industry. Table 4 contrasts the company's experience to that of all electrical manufacturing and the construction material component of that industry. The industry data was collected by the National Electrical Manufacturers Association and is aggregated over all of its member firms [4]. The number of members is a variable; members range from large firms such as G.E. and Westinghouse to small ones such as Thomas & Betts, whose sales were included with others in the construction material division.

Table 4
THOMAS AND BETTS' PERFORMANCE COMPARED WITH INDUSTRY AVERAGES

	Thomas & Betts Net Sales	Electrical Manufacturing	Construction Material
1929	100.0	100.0	100.0
1930	78.4	--	--
1931	54.1	54.5	52.5
1932	37.0	--	-
1933	43.6	32.6	43.7

When the full impact of the depression hit, Thomas & Betts was prepared. G. C. Thomas' memorandum of 1 September 1931 [5], suggests he had devoted a great deal of thought to the alternatives. The depth of the downturn may have been a surprise, but this would not have required a change in Thomas' strategy for survival, only a change in the order of magnitude. Given the production cutbacks required by the drop in demand from their traditional market, Thomas & Betts' officers discussed how much more they could cut back before it would be more efficient to shutdown. While the official record gives no indication of the possibility, those who lived through it, such as Nestor MacDonald, sales manager and Thomas' managerial partner, suggest that they were very close to shutting down on more than one occasion.[3]

[3]MacDonald made this point on several occasions in conversation with the author.

Survival not only involved an efficient scaling back of the company's operations but also a careful investigation of whether the introduction of new products or entry into new markets would enhance the probability of survival. By and large, the company had eschewed the opportunity to expand beyond its traditional market, but the survival of the firm had not been at stake before. Eventually Thomas & Betts decided to expand into connectors for the ends of wires, a decision that proved crucial.

Survival was ensured by two events that occurred in the early 1930s. The first involved the development of new products for Thomas & Betts' traditional market, conduit fittings. The customer, however, was not the construction industry. The second involved a major product change; the first Thomas & Betts product that carried current. In time this led to the development of many new items and entry into new markets. Both events involved public works: 1) the expansion of the New York City subway system and 2) the construction of Boulder (Hoover) Dam and the electrical transmission line between it and Los Angeles. Both involved circumstances external to Thomas & Betts and largely unrelated to the Depression. That they occured when they did was fortuitous. Their impact was considerably greater than it appears in the financial record of those years. The orders received from these projects kept the factory going. They saved Thomas & Betts.

With the formation of the Associated Manufacturers of Electrical Supplies in 1915 (which became N.E.M.A. in 1925), competitors came into closer contact with one another. Although the exact time and place have been lost, G. C. Thomas got into what MacDonald characterized as "an ethical argument" with a competitor.[4] As a consequence of this argument, Thomas became determined to out-compete that firm. He decided to enter the tubelets business, which put Thomas & Betts in direct competition with the Appleton Electric Company and Crouse Iron, the two biggest firms in the conduit business, among others. The choice of the tubelets business was the result of urging by the sales department which saw a potential market in electrically controlled home heating furnaces. As had become the firm's custom, the goal was to take an existing product, correct its flaws, and supply a superior, quality product to the market. Both Appleton and Crouse produced tubelets that were cylindrical with a circular core. G. C. Thomas recognized that if the dimensions were square, the capacity of the fitting would increase by almost 30 percent, or, alternatively, a smaller fitting would have the same capacity as his competitor's round ones. Thomas & Betts tubelets were square, thick-walled malleable iron. As such, they provided greater access to wires in the interior and

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[4]The time must have been the late 1920s to early 1930. This story is told on Nestor J. MacDonald, audio tape #11, contained in the Thomas & Betts archives.

withstood shock much better than the cast iron tubelets of the competition [9]. Thomas & Betts, however, did not produce a complete line of tubelets. When the company put them on the market, distributors were reluctant to add T & B tubelets to the lines of Appleton, Crouse, and other competitors.

Thomas & Betts consequently began to search for a specialty manufacturer who could sell its tubelets. As part of this search, the company discovered that their tubelets were ideal for wiring railroad cars. The Thomas & Betts design would easily fit under the floor of a subway car; their design offset the fantastic vibration and the physical abuse experienced by wiring boxes located below the floor. In 1932 New York City was adding a large number of cars to its subway system. Simultaneously, a thin-walled conduit was introduced to the market, and Appleton made the first fittings for this conduit. Appleton also was anxious to get the subway car job and to use its new products on it.

As MacDonald tells the story, he went to call on the chief engineer of the subway system, a man by the name of Madison. When Madison refused to make time to see MacDonald, he called on one of Madison's assistants. The assistant told MacDonald that Madison understood Thomas & Betts was not financially responsible and that it was copying Appleton's designs. MacDonald then made an appointment to see Madison, and returned at a later date with Hobart Betts. Together they explained Thomas & Betts' financial picture to Madison, providing documentation when it was relevant. They then addressed the issue Thomas & Betts was not an ethical operation.

Madison was asked if he was familiar with Chase nipples and Erickson couplings. He responded that he had used thousands in his career. Madison was asked if he was aware that they were Thomas & Betts fittings. He responded that he was not. MacDonald then produced the Appleton Electric Company's discount sheet. The illustrations of Chase nipples and Erickson couplings were identical to those in the Thomas & Betts Company's discount sheet. MacDonald then informed Madison that the illustrations had been drawn by his wife and produced the originals.

In the end, MacDonald and Betts got the order from Madison. Their ability to prove to Madison's satisfaction that the company was financially sound and ethical caused their products to be included among those he considered seriously. Thomas & Betts got the order because square tubelets were superior for the specific job at hand. Not only did the New York Subway order the tubelets from Thomas & Betts, it also ordered all the connectors. For years thereafter Thomas & Betts received orders for their tubelets from companies producing subway cars. The New York City order, plus what could be sold for residential furnaces, helped rescue the company at the time.

During the early 1930s, Thomas & Betts made many special fittings to keep the business going, to keep the factory operating [11]. Two other, important special fittings Thomas & Betts developed were the cooling and grounding fittings used in the construction of Boulder (Hoover) Dam.[5] The federal government passed the Boulder Canyon Project Act in late 1928 authorizing construction of a multi-purpose dam on the Colorado River [1, pp. 323-326, 349, 369-371]. Through Graybar Electric's Denver branch office, Thomas & Betts learned that the Bureau of Reclamation was working on a method of internal cooling to prevent the huge sections of concrete from cracking because of the high temperatures encountered during the curing process.[6] A network of thin-wall, electrical metallic tubing was placed inside the concrete forms through which chilled water was circulated to absorb heat. As the concrete blocks hardened, there was some shrinkage, and the blocks had to be connected by a flexible, watertight joint. Thomas & Betts specially designed these fittings so that the connection would separate as the concrete shrank.[7] A fine cement mixture was then forced through the tubing to fill the spaces between the blocks.

The most significant special fitting Thomas & Betts developed during the Depression was the one for the Boulder Dam to Los Angeles electrical transmission cable. Boulder Dam's electrical facilities involved the design, construction, and operation of works with a larger capacity and a higher voltage than their predecessors. When ultimately completed in 1936, the Department of Water and Power of the city of Los Angeles in conjunction with the Southern California Edison Company operated a 345 kilovolt transmission line. The Department of Water and Power contracted with the General Cable company to supply a brand new, recently approved cable from Germany, "Heterodyne" (commonly called HH) cable, an articulated hollow bronze cable, approximately 1-5/8 inches in diameter. In order to make the cable flexible, it was constructed in segments composed of helically wound, lapped copper

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[5]Tetaz [11] who did not join the firm until 1935, recollects this was in competition with Appleton Electric and notes, "I guess Appleton was suffering from the same thing we were, a lack of business, and was grabbing hold of anything they could get to keep their shop going." MacDonald, who was intimately involved, says Appleton did not compete on the Boulder Dam project but agrees with Tetaz' assessment of motivation.

[6]Edward Hewitt [9], who ultimately replaced MacDonald as sales manager, recalled having conversations with G. C. Thomas as to what the firm might manufacture outside its normal lines to keep the factory going. He worked with Graybar, the Bureau of Reclamation, and T & B's engineers to land the contract.

[7]These fittings were also used on many other dams in the West.

strips.[8] The Germans, however, had been unable to design a workable connector. General Cable evidently conducted a world-wide search for a firm that could produce one. After the search had been underway for some time, a chief engineer for General Cable, a Princeton roommate of G. C. Thomas, called him (probably sometime in mid-1933) and inquired if Thomas & Betts could design such a fitting.[9] Thomas responded enthusiastically. He, Lewis Church, and Martin Bergen sat down and designed what they felt would be a workable connector. The telephone communications between Los Angeles and Elizabeth became so numerous that the company decided to send Church to Los Angeles during what appeared to be a critical period. MacDonald accompanied Church and recalls that Church phoned Elizabeth every day with work for the engineering department.

After approximately a month's residence in Los Angeles, the city's purchasing agent asked MacDonald how long it would take Thomas & Betts' competitors to bid on the project. He answered it would take them well over a month, if they did the complete engineering job. The purchasing agent then announced his intention to ask for bids in ten days because the Los Angeles engineers concluded the Thomas & Betts connector was what they wanted; they were anxious to get started on the project. Ten days later, Thomas & Betts got the contract without any competition. There were no complaints because no one else was in a position to produce such connectors.[10] The finished product was of such a quality that Thomas & Betts was asked to produce the suspension clamps, jumper taps, dead ends, and other accessories. The connector order amounted to approximately $300,000, the largest order ever placed with Thomas & Betts to that date.

The orders for the miscellaneous parts were not included initially, and the positive effect of the connector order on the company's finances was viewed with a strong dose of realistic hindsight. In May, 1935, G. C. Thomas noted the first four month's profit had been a "very remarkable" $55,600.

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[8]Martin Bergen [8] commented that in later years he learned there had been minor problems with these transmission lines. Where the lines crossed the California desert, a fine, powdery sand became lodged in the joints between the segments, filling up the inside of the connectors, adding sufficient weight to cause the line to break. In 1985, a fifty-year anniversary celebration of the transmission line was held and many of the original connectors were still in use.

[9]The first mention of the Boulder Dam-Los Angeles Power Line work in [7] is on 4 January 1934, when the directors passed a resolution giving MacDonald the legal power to execute contracts for the company.

[10]In order to protect the Purchasing Department of the city of Los Angeles, Thomas & Betts agreed to give them the cost sheets, plus ten percent [10].

> A great deal of this profit has come from the Los Angeles jobs, the sales of other special material and stocking up jobbers... We do not expect any of this special business to last longer than the current month, and we do not now know of any orders which will take the place of this business. On the other hand, we have a few possibilities. The City of New York is planning to buy another 500 subway cars... There is a very slight possibility of another ... Suspension Clamp order... [5, 21 May 1935]

Those possibilities, and many others, were realized. Thomas & Betts had learned many valuable lessons. There would be other downturns to test the firm's managerial mettle, but there would be no reason to approach them with undue apprehension.

In April 1933, G. C. Thomas had estimated net sales for the year 1933 would be $428,100; in fact, they were $633,000. He estimated the company would show a loss of -$3,900; in fact, it showed a net profit of $29,000. The difference between his estimates and reality was due primarily to the demand for special fittings.[11] The company was headed in the direction of financial health; the goal of survival could be set aside [7, 24 January 1933].

With the orders from the various special fittings, Thomas & Betts rebounded quickly from the losses of 1931 and 1932. Net sales increased at an average annual rate of 35.7 percent between 1933 and 1937; net profits, 75.2 percent. It should not be forgotten, however, that net sales in 1929 had been $1,453,000 and net profits, $222,000. This represents an average annual increase of only 5 percent for net sales between 1929 and 1937 and only 2.6 percent for net profits.

Wages and salaries were still at most 80 percent of what they had been for those who were employed, and in April 1933, there was consideration of a further reduction. G. C. Thomas argued against the proposed reduction as being "too small to make sufficient difference to the company to offset the effect on the morale." Nevertheless, he and several other employees paid on a weekly or monthly basis absorbed a further 20 percent pay cut. Thomas went on to note:

> For the first time during the depression there is a spirit of optimism in regard to business prospects. We cannot, of course, tell whether conditions are going to improve. However, since Tuesday we have received a $6000 order for the new subway in Newark. This morning we have been asked to accept a large stock order from a jobber running into several thousand dollars, to be delivered one half now and one half in sixty days. There are indications that people expect a price advance [6].

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[11]MacDonald's recollection is that production of the fittings for the Boulder Dam-Los Angeles Power Line began about March 1934.

By May 1933, the board was giving consideration to advancing salaries and resuming dividend payments. No decisions were made, but the fact that some thought was being given to each of these indicates that the company expected to earn a positive profit in the near future. That no action was taken on the salary question in May could be attributable to the acceptance of "The President's [F. D. Roosevelt] Re-employment Agreement" and the development of an industry code between National Electrical Manufacturers Association and the National Recovery Administration [7, 1 August 1933]. The dividend question began to be resolved when the board decided to pay a regular quarterly dividend of $1.75 per share of preferred stock on the 31 October 1933. This was the payment due on the 31 March 1931. Some salaries, including those of the founders, were increased in late 1933. In fact, conditions seemed to be improving so rapidly that Messers MacDonald, Buchanan, and Grundy were authorized to spend no more than $250 on an employees' dance in the office part of the factory building. The event was reported as a great success and underbudget [7, 19 December 1933 and 23 January 1934].

The special fittings Thomas & Betts produced for the New York Subway, Boulder Dam, the Boulder Dam-Los Angeles Transmission Line, and other public works such as the Pulaski Skyway (across the Newark Meadows) kept the factory going at a time when the flow of regular orders might have warranted shutting it down. While this special-order business was welcomed in the 1930s, it presented more and more problems as time passed. The electric utility industry resisted standardized products from Thomas & Betts; each utility company felt it had slightly different requirements and that justified a slightly different connector. Valuable engineering time was spent designing new items that would be produced only in small batches. The basic problem was one cited by the Knoeppel report of 1920 that argued Thomas & Betts should reduce its special order business, that it should emphasize continuous production in large quantities [3]. As the company grew, it became more and more difficult to divert time and talent to the special-order needs of the utility industry. Subsequently, after many years of deliberation, Thomas & Betts moved the electric utility business to a subsidiary, the Somerset Products Company, in the late 1960s. Had it not been for public works in the 1930s, however, Thomas & Betts may not have survived to the 1960s.

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