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The U.S. Canal Boom and Bust, 1820-1842

Notes by Mason Gaffney, May, 1993, updated 2009

These notes are based in part on data presented in Chapters 3 and 4 of Carter Goodrich, *Government Promotion of Canals and Railroads*. They are most useful in conjunction with my notes on the Chicago boom, 1830-40. These notes presume an overall familiarity with major events of the times, and seek to extract major principles at work.

1. The Canal Boom,¹ which crested in 1836-37, was one of several in U.S. history, forming roughly an 18-year cycle. Booms crested in 1798, 1819, 1836, 1857, 1873, 1893, (1911 is interestingly missing), 1929, 1989 and 2008. World War II, and then The Cold War, are probably what stopped the rhythm and muted later cycles, until the peak of 1989. 1993 seemed to be another serious slump.

2. Rivalry among cities and states, and with Canada, drove the boom. Control over hinterlands was fluid: they were viewed as being up for grabs, with rich and permanent rewards in store for the cities that grabbed them.

3. The result was “racing” to grab territory. Racing differs from “competition,” as normally conceived:

a. Competition is ongoing; races end, winning is permanent.

b. Racers accept early losses in order to win hinterlands which can be exploited forever. It is like a franchise, a monopoly of trade. Today theorists have rediscovered this phenomenon and named it “rent-seeking.”

The motive for racing is clear enough, but valuing the prize calls for extraordinary forecasting ability. Immediate profits are no guide, they are negative, but expected to turn positive later. Serious mistakes can be made, therefore, and normally are. Racing also calls for deep financial reserves, and progressively exhausts those reserves as many racers give it their best shot, get emotionally committed, and throw good money after bad as euphoria warps their judgments.

c. Racing is an aspect of imperialism. Imperialists have a weakness for overvaluing distant targets and far-flung colonies, undervaluing their own back yards.²

d. In each cycle, including our own times, the details have changed. Many fundamentals have been the same, however. Though The Civil War did not break the rhythm of the 19th Century cycle, World Wars I and II, and The Cold War, seem to have had more powerful effects in the 20th Century. Just the same, in 1993 we were again in the grip of the old forces.

4. The slump, when it came, was synchronized nationwide; the ensuing slump and crash even more so. Indeed, the cycle was worldwide, although the data included herein is only for the U.S.

1 This boom is named for its most characteristic form of construction. However, it also witnessed the beginnings of the railroad era, part of the steamboat era, etc., so not all the references are to canals alone.

2 Modern Freeway signs are symbolic of this mindset. They name distant places, like Barstow, Indio, or San Francisco, even though 99% of the traffic is stopping well before those destinations.

After the manic peak of 1836, depression was communicated everywhere through some universal medium. The synchronization was remarkable, considering this was before even the telegraph.

This synchronizing medium was the capital market, which turns booms on and off by advancing or denying funds. After 1836, momentum carried some works forward, regardless of crashing demand and tight funds; by 1842 most building had ground to a halt.

5. Public and mixed enterprise prevailed. It is only a myth that the 19th Century was dominated by laissez-faire politics and private enterprise. The *Federal* Government was not active in this particular boom, it is true.³ President Andrew Jackson (1829-37) was firmly for the limited construction of The Constitution, which translates into limited construction of “internal improvements” (the old name for public works). Jackson’s “Maysville Veto,” ending Federal contributions to The Federal Road midway through Kentucky, was the incident most symbolic of his policy. However, state and local governments more than filled the gap.

State and local resources were enriched by the low extraction of Federal taxes. In addition, Jackson retired all the Federal debt, putting in the hands of investors funds they used to buy state and local bonds. More than that, there was a Federal surplus. At first Jackson deposited it in private banks (the “pet” banks, his enemies called them), expanding their power to lend. Then he promised to distribute Federal surpluses to the states, a promise the states spent before they got it, some of them several times.⁴

(Even the Pa. R.R., when it came, was half public. Cities, counties, and The State all pitched in. In the case of the B&O R.R., it was the City of Baltimore that pushed it. The State of Maryland had burned out on the earlier C&O Canal, which it adopted after Pres. A. Jackson had dropped it.)

6. The boom created “an artificial abundance” of land: an overreaction to artificial scarcity. Land was not produced, of course. Rather, it was “accessed,” as population spread out and new lines tied the pieces together. Sometimes this is described as “bringing land into the market,” but actually it is the market that moves to the land.

The forces of artificial scarcity (“Hamiltonian”) are always with us, but they generate massive expansionist counterforces (“Jeffersonian,” with large admixtures of Jackson, Clay, Polk, Lincoln, Grant, et al.). The counterforces take so long to take effect that the market forgets the lower level of land prices from which it came. There is a long period of investing when the form of capital is distorted by its being adapted to overpriced land. The capital thus distorted substitutes for, and links together, this market of overpriced land. For more on the mechanism, see notes on the Chicago boom.

Such a boom also creates an artificial shortage of capital, because it wastes so much. What it does not waste outright, it freezes up. Public works are an enormous sink of capital. It is not just the obvious interurban lines, but city streets. In the early 1830s, at the height of the speculative boom, New York City spent nearly as much on street improvements as on all other functions of

3 It was very active in the later railroad booms of the 19th Century.

4 The surplus came from booming sales of Federal lands, and booming imports. It was not actually distributed until 1836.

government combined. A small inland town like Auburn, NY, shared the boom, borrowing from NYC. The result is a long cycle of boom followed by capital-famine and slump.

7. The banking system is totally involved. Private banks loaned so much on speculative land that it became the major backing behind their assets, i.e. debts owed them by borrowers.

Adding spice to the basic banking problem, governments used banks to raise capital. In this era, states could not only charter banks, but own and operate their own state banks. E.g., Virginia pressured the Bank of Virginia into buying stock of the James R. and Kanawha Co. (an unwise canal venture through the endless hills of western Virginia). SC had its “South Western R.R. Bank.” The Bank of IL financed the Illinois & Michigan Canal. New Jersey gave away a bank charter to get the Morris Canal built in northern New Jersey. Even non-banks, e.g. the B&O R.R., could issue their own notes.

8. A key determinant of activity was the ability to raise long-term capital.

a. To begin, canal promoters used the credit of the states. This was an innovation, initially successful in NY State, then widely followed (but without the same wisdom, prudence, and natural advantages). New York used a statewide property surtax to put the credit of the State behind the canal bonds. In 1827 they ended the surtax, thus entering the “moonbeam” phase of the land boom, as described in Cornick, *Premature Subdivision and its Consequences*. In 1842, hard-hit by depression, they revived the surtax to bail out the canal and save their credit.

Ohio followed New York successfully. It used its State credit to back loans, and levied an annual tax on property to service the loans. After 1836 it came to grief by having begun an overambitious statewide program of “regional equity.” Still, it completed its program, the only state to do so. Its canals carried mostly Ohio traffic. Ohio was closely settled before the canals came, thanks to the N.W. Ordinance, its New England settlers and their traditions, and its having been settled during the Jeffersonian period of land sales on credit, 1801-20, when small farmers had a chance. As a result, Ohio was a Union powerhouse in the Civil War for industry and troops.

b. Canal promoters also used the power of banks to print money (issue bank notes).

i) In several cases, they joined a bank with a canal company. Land grants were also involved: the banks’ “capital” (net worth)⁵ was the land granted to the canal company.

Then the banks made loans to people to buy land, so the bank notes were secured by land collateral. Thus, both the “capital” and the other assets of the bank were land.

ii) The B.U.S. was a special case much overworked by historians. After Jackson dumped it, Philadelphia captured it and forced it to finance the Pennsylvania system. Pennsylvania extracted an outright grant of \$2m, plus \$7m in loans.

c. The boom ended when capital-flow dried up.

5 The word “capital” means dozens of things, varying with the context. In classical economic theory, land cannot be capital, they are mutually exclusive classes. In banking, however, capital means net worth, and may consist of any asset.

d. Those projects that were begun early and/or were small enough to be completed, and were profitable to boot, survived; they were able to recover capital and keep going. Capital recovery provides a continual source of new capital. Those who lost out were:

i) late starters (Indiana, Illinois);

ii) those with moonstruck payout plans (Indiana, Pennsylvania, C&O). Mostly, these were too long (Indiana), too difficult to build (Pennsylvania), too gold-plated (C&O), or too pioneering (Indiana, Illinois);

iii) those with too many parasites (Illinois).

e. Much of the capital was imported from Europe. Capital import begins with paper transactions, but takes the real form of an import balance. This was facilitated by lower tariffs, after 1833, as a response to the “Nullification Crisis” of 1832.

f. Few could know or forecast when capital markets would dry up for a number of reasons.

i) Complex worldwide markets were involved

ii) Few understand capital markets. Most think capital is just paper. Life should be so easy! In fact, there is a physical limit to capital that can be over drafted. Capital is formed and conserved only by the difficult, rare, and fragile self-discipline of thrift.

iii) Few seem to understand how overpricing land misdirects investing in such problematic ways as to immobilize capital, “benching” it, so to speak, out of the game.

iv) A by-product of widespread racing, with its burst of investing, is general euphoria, which warps judgment. President Andrew Jackson’s Thanksgiving Day Proclamation in 1835, while not without cause, nicely displays the euphoria of boom times.

“We thank Thee for the burning rock recently discovered in the wilds of Pennsylvania which, added to the water power of New England, will materially reduce the burden of manual labor ... We thank Thee for the absence of unemployment ... no willing worker shall ever be begging for bread ... there will be none to freeze, starve, or be beset by the fear of want this winter or the winters yet to come.”

9. The following outlines the kinds of projects that were winners in these markets along with their characteristics.

Basically, investment winners are “revolving funds,” that actually do revolve by getting early payoff. Some examples are;

a. Trunklines with best routes. The Erie Canal, the Delaware and Raritan (linking Philadelphia and N.Y. Harbors) and the Jersey Turnpike today are all good examples.

b. Trunklines that also serve as their own feeder lines.

The best example of this is the Erie Canal, tapping its own route, the Mohawk Valley. As the Erie progressed incrementally, each stage generated its own traffic. Payout didn’t wait until completion. The pot of gold was not just at the end of the rainbow, but along each segment. Promoters and historians have obscured this by writing of the “tapping the far-flung

western trade,” but that analysis is too temptingly dramatic, too easy and misleading. It was mainly local Mohawk Valley trade that paid off the Erie. It is also true, and greatly important, that it tied the mid-Atlantic with the growing northwest, but it was its local success and strength that made that possible.

Ohio’s several N-S canals enjoyed the same advantage, because parts of Ohio were closely settled before the canals came.

(Cf. Trudy Wischemann’s study of how the SP R.R. in California’s San Joaquin Valley chose routes to serve areas already closely settled, in order to generate traffic gives a good example of this principle consciously at work.)

c. Short coal lines. Reliable supply and demand and low costs made these sure winners. Heating demand is seasonal, but coal was cheaply stored outdoors at either end of the line. The Delaware and Hudson (D&H) is a prime example – these two parallel navigable rivers lie close together. In 1829 it hit the Hudson R. at Kingston.

d. Key short passages. Some examples include; the Soo, which links Lakes Huron and Superior, finished in 1855, Louisville’s by-pass of rapids on the Ohio R., the Illinois & Michigan Canal (though it was not so effective in this regard until the next cycle; its construction was premature in 1836), and Welland Canal (to cite a Canadian example), which opened in 1829.

e. Short lines focusing on a hub. I.e. Boston R.R.’s., the Network of roads around Nashville, Pennsylvania’s system of turnpikes and bridges preceding its canal fiasco (it had 56 turnpike corps by 1825) and Pittsburgh’s short radials all work as networks for a central hub.

Atlanta, “resisting seduction by the siren magic of distant trade” (I love that purple rhetoric of the Old South!), was the hub of a coherent state road and rail system that made good returns.⁶

The brains, judgment, and leadership that created the compact radial systems around Atlanta, Nashville, Richmond, Mobile, and other places, would have made the south invincible in peace and war, had it not been for slavery and the plantation system of agriculture. These aborted the natural economic interchange between city and country that nursed along northern industry so well. They also forced southern leaders into their posture of continental imperialism, spreading the whole population thin over more territory than the south could defend. Many of their people moved to growing towns and cities north of the Ohio, where they bred future Union soldiers and leaders like Abe Lincoln.

f. Technical innovation, timely and appropriate. In 1817, for example, the Pittsburgh Pike was a road that replaced the mere system of trails that had existed until then in that area. This replacement came at an opportune time to take advantage of trade and traffic movements in the area.

Riverboats similarly replaced or obviated roads in some areas. Robert Fulton’s innovation, the steam-powered side-wheeling vessel *The Clermont*, 1807, put steam power on

⁶ Atlanta’s sound planning later turned to her destruction. General Sherman burned Atlanta precisely because it was so important. No one said life is always fair.

rivers. In 1824 the leading case of *Gibbons v. Ogden* broke riverboat monopolies, thus opening rivers and the Great Lakes to competition.

Erie Canal proved also to be a technological innovation that bested rivers that had previously competed for its traffic such as the Mississippi and the St. Lawrence. It also complemented Great Lakes shipping which had been unleashed by the *Gibbons v. Ogden* decision.

Rails beat out canal competition in much the way canals had beaten rivers. When the B&O was completed in 1853 it quickly made the C&O Canal obsolete.⁷ Pennsylvania R.R., in the 1850s, used the same route as the failed State Canal and bested the Erie Canal causing N.Y. to again fall behind technologically, because the state was too wedded to its wonderful creation.

Clipper ships. These were not a new technology so much as a perfection of the old, but they were remarkable. In this era, Boston and Providence and other New England ports, rather than turn west, sunk their capital into ocean vessels. This is another whole story, not elaborated here. Baltimore did clipper shipping, canals and rails, all three.

In 1830 Britain reopened the West Indies to U.S. shipping. (It was 1833 when Britain passed the Emancipation of Slavery Act, and began a process of freeing slaves.) Steamships already existed, but for 30 years clipper ships, both English and American-built, were still faster. They linked Boston with San Francisco and China. Whaling and fishing, too, kept these sailing cities busy. New England also developed industries using water power. Its interior lines were short, unspectacular, thrifty ... and solvent.

g. Simple short lines between cities. South Carolina had several, one notable example being Charleston to Columbia. Connecticut had New Haven-Hartford R.R., which succeeded even though completed in 1838, a bad time. The key word is “completed.” The losers were lines left unfinished when the lights went out on new capital issues after 1837.

h. Low rates and marginal-cost pricing. This occurred in states that decided to promote canals using tax power; New York and Ohio were two such states. The Erie Canal was a famous bargain for shippers, tapping an elastic demand. In Maryland it was not the State, but the City of Baltimore, that underwrote city’s external circulation, the B&O R.R. Baltimore also underwrote the Susquehanna Canal, raiding Pennsylvania’s rich Susquehanna Valley. For the other extreme, see under “Losers,” (g).

i. Lines serving territory already settled. These were also called “exploitive” projects. In Massachusetts they were called “dowager” lines because, like a rich widow, they required no handouts.

10. The following are the kinds of projects that were losers, with their characteristics;

a. Parallel imitators playing catch-up, “A day late and a dollar short” as the saying goes. Good principles are so easily twisted and misapplied! Such was the case with the Pennsylvania

⁷ Another factor here is that the C&O Canal leads only to Washington, which never developed as anything but a political city. The B&O used the Potomac route upstream, but then headed NE to Baltimore. There was also the C&O R.R.

State Canal, the Indiana Canal, using Wabash and Maumee Rivers, the Hoosac Route in northwest Massachusetts, and the Stump House Mountain Tunnel route in South Carolina.

b. Gold-plated monuments, overdesigned, long in construction while technology raced ahead elsewhere. The worst such case was the C&O Canal. It was “built not just for the present generation, but for all ages yet to come,” proclaimed its rhetoricians, but it was obsolete before it was ready to use. “Prompter completion, less elaborate, would have given a longer period of usefulness,” tersely quoth its epitaph. (Modern nuclear generating stations, e.g. in WPPSS, the Washington Public Power Supply System, derisively called “WHOOOPS”, could be another example.)

c. Post mature completions, after others had won the race. For example, the Chesapeake and Delaware, which cuts through the narrow neck of Delmarva Peninsula, would have been Philadelphia’s best route to Pennsylvania’s own Susquehanna Valley, but they were too slow: Baltimore got there first, while Pennsylvania money was being squandered on the moonstruck Juniata line to Pittsburgh.

d. Hosts with too many parasites. Cross-subsidy is the political price paid for state financing. All canals suffered from this, even the best, the Erie. The strongest ones earn enough surplus to tolerate this; others were bankrupted and destroyed.

“Simple justice to the regions” was the motto of legislators from remote hilly counties wanting a piece of the pie. It is the American version of “French equity.” The surpluses generated by the sound lines are often dissipated, in whole or part, as they are used to build sub-economic lines in losing territory.

Pennsylvania was a prime example of “Garbage-can Socialism,” which is a way of describing a system where private firms get to run the turnstiles while governments build the losing feeder lines (and then get blamed for being “inefficient,” whether they are or not). By 1842, Pennsylvania had run up debt of \$42m, huge for its time, on such projects. For perspective, the cost of the parallel and competing Erie Canal was only \$7m.

Virginia, too, dissipated much of its surpluses on sub-economic local lines. So did Maryland, but Maryland had the advantage of being smaller. It also got federal aid for its C&O Canal. Meantime, Baltimore wisely went it alone.

e. “Opening up new lands,” with “promotional” (as contrasted with “exploitive”) lines. Promotional lines, built ahead of demand, often could not meet debt service while waiting for demand to materialize. The very presence, or just the promise, of the line normally caused speculators to overprice lands, waiting for the kill.⁸ Actual settlers and producers, who would generate paying traffic, would then leapfrog over them, seeking cheaper lands. New York and Ohio offset this by taxing the land, which also served to hold down canal tolls. Western New York and Ohio were settled by New Englanders, who traditionally settled compactly. Their

8 Henry George went to the gist of this anomaly, writing of a later railroad boom. “The first effect of the land grant is to hasten settlement by getting a railroad built; the second effect is to retard it by raising the price of lands.” Henry George, 1871, *Our Land and Land Policy*, p.28.

culture, compared with others, was hostile to land speculation.⁹ Elsewhere, high tolls stifled demand and drained canal finances.

f. Vested interests in old technology. People with riverboat interests, who once monopolized our rivers, opposed canals. The old south, with its many navigable rivers, was wedded to its romantic “steamboat-round-the-bend” culture. Even progressive New York, after its Erie Canal triumph, opposed the next wave of innovation, the railroad, and fell behind its rivals Pennsylvania and Massachusetts, which it had just previously overwhelmed.

g. Overpricing services. It is hard to believe now, but Pennsylvanians believed in 1830 that their State canal would bring in enough revenues not just to pay for itself, but to let all other taxes be eliminated. It was to support the whole State - they dreamed of a taxless state! Accordingly, they set the toll rates too high, and discouraged traffic.

The people of Pennsylvania had not invented that notion out of nothing. President John Quincy Adams in 1828 had forecast such a future for the Federal government, based on developing the west and selling public lands. It was in the air. They could look across the Delaware and see the State of New Jersey actually making good money from its canals, which were short and rich, because New Jersey is small, and strategically located. Its D&R Canal, chartered by the State, paid tonnage taxes. Thus, states could collect revenue by leasing out their eminent domain. D&R Canal provided much of New Jersey State’s revenue for the next 40 years. It was a money-tree, like finding oil. Pennsylvania could also see New York making money on the Erie. Their mistake was to think they had equally good routes.

h. The fallacy of comprehensive planning. Then, as now, there is something gripping and compelling about a “comprehensive” plan for the whole state. All the interdependent pieces are fitted into a whole, beautifully coordinated. The trouble with such plans is that they do not allow for staging, and natural growth. The demand is not there all at once, it dribbles in slowly, one settler at a time. Likewise, capital is not available to build all at once. Given that, priorities are needed, one reach or region should develop first while others wait. Comprehensive planning seldom allows for that, especially when logrolling legislatures get hold of it.

Many states, like Illinois, drew up comprehensive statewide plans. In practice that meant, each year, a little money spent here, a little spent there, and not enough spent anywhere to complete a project and get it going to recover the capital sunk into it.¹⁰

i. Excessive east-west emphasis, when more economically feasible routes were north-south. Each state wanted to establish its own route to the unorganized western lands, and was leery of becoming colonized by more urban states to its north or south. New York, of course, was hyper-sensitive to British competition from the north. (Southern Ontario was then simply a British Province, called Upper Canada.) The War of 1812 was a recent memory, during which

9 This was far from automatic. In New York State the settlers struggled for decades with the Hudson Valley aristocracy and big city financiers, a long and fascinating story. Gov. DeWitt Clinton was the political genius who found their common interest in the Erie Canal.

10 In the 1920s California developed a comprehensive water plan, the “Marshall Plan,” for irrigation and city water supply. Only a small part of the original Plan was ever built, and that with Federal money.

the State Treasury, rather than Washington, covered most of the bills, and after which American emigrants were less welcome in Ontario, and sought access to Ohio.

Rivers and valleys on the east and Gulf coasts mostly run north-south. Beginning in Maine, there are the Penobscot, Kennebec, Merrimack, Narragansett, Thames, Connecticut, Housatonic, Hudson, Delaware, Susquehanna, Patapsco, Patuxent, Potomac, Shenandoah (it runs south-north), Rappahannock, York, James, Roanoke, Cape Fear, Yadkin (Pee Dee), Catawba (Wateree), Congaree, Santee, Broad, Savannah, Altamaha, etc. Running south to the Gulf are the Suwanee, Chattahoochee, Apalachicola, Escambia, Alabama, Tombigbee, Pascagoula, Pearl, Sabine, etc. Angling into the Mississippi are the Big Black, Yazoo, Red, White, St. Francis, Ouachita, etc. Some of these routes should have been more developed and used.

j. Exclusive or over-reliance on distant targets and far-flung colonies. For example, Connecticut's Farmington Canal was projected to link New Haven with the St. Lawrence, going north up the Connecticut River. It got as far as Westfield, Massachusetts in 1829; never paid a dividend, and soon gave way to the Hartford-New Haven R.R., completed in 1838. Other, more notorious examples have been given: Maumee-Wabash, Philadelphia -Pittsburgh via Juniata V., Richmond - Ohio River, etc.

In summary, the problem that makes losers losers is that they are "non-revolving funds," but, rather, sinks of capital. Capital goes in, but never comes back out. Virginia was an example. Interest on the James River debt ate up the fund. It was called, in the language of the times, "a moth on the fund, in violation of the principle on which it was created." The principle was that the fund should revolve. Thus, the fund was moth-eaten and lost before it ever financed a canal or a rail to the Ohio, its original objective.¹¹

11. A "winner" is not always more socially useful than a "loser." A *post*-mature line is a winner because demand is there panting for it, but the early settlers may have lost a lot in the meantime. Such a picture describes the Delaware and Raritan Canal, opened in 1829. The route was so profitable in prospect that a private firm paid the State of New Jersey a big sum up front for the R.O.W., and also shared tolls with the State, and made profit anyway. Those are good clues that it should have been opened sooner; an earlier construction was in the general interest. Ideally, then, a canal (or other transportation line) should be opened in sync with private land development, so neither loses time waiting for the other.

That is the exception, however. Most of the reasons given above for why winners are winners, and losers are losers, remain just as valid regardless how or when we look at the ventures.

12. Interest rates were high, generally. The James R. Co. was paying 12-15%. Part of that was due to inflation, but not all. At such rates, interest eats up capital in public works; it is a "moth on the fund," indeed.

¹¹ How does a revolving fund work? I once belonged to a Committee of economists that published a book a year. We began with a stake of \$10,000. As each book sold out it returned \$10,000 for the next. Thus, over several years, we published nine books: \$10,000 financed \$90,000 of work. That is how capital is supposed to work. It stops, however, when a product fails to sell.

13. After a time, public stopped accepting bank notes. That meant banks could no longer be used to raise capital.

The notes went bad because:

a. Canals and other public works yielded no cash flow, either from tolls, taxes, or land sales. Canals as borrowers defaulted.

b. So much land was brought into market that land prices dropped and land buyers subsequently defaulted.

A dramatic, well-publicized footnote here was Pres. A. Jackson's "Specie Circular" in 1836. Jackson didn't want the U.S. to get stuck with bad notes, so he ordered land offices to stop accepting them in payment for public lands. He saw banks lending mainly to land speculators, whom he saw as a plague, rather than to settlers. He was probably right. By 1834-36, land sales had shot up so high that more land was sold than in the prior 16 years.

14. As defaults became apparent, lenders panicked and new loans dried up. This change of sentiment occurred swiftly, in a cumulative kind of mob effect. It was not, however, just psychological; the world was really running short of disposable capital.

The U.S. had been running an import balance during the boom years, indicating a net import of capital. After the crash that turned to an export balance, as debt service payments exceeded new borrowings.

15. Following the crash, several states and many cities declared themselves bankrupt, alienating London for 25 years. Indiana voters changed their constitution to forbid state borrowing to this day. Southern states' bad credit weakened them drastically in the Civil War.

16. Following the trough of 1842, production and employment slowly picked up new steam. Railroads were the new magic, aided along by Federal land grants after 1850. Before long it all built up to a new peak and crash, in 1857. People stumbled into it blindly, greedily, just as though 1836 had never happened. They did the same again in 1873, 1893, and 1929; *we* did the same again in 1989 and 2008. "When will we ever learn?"