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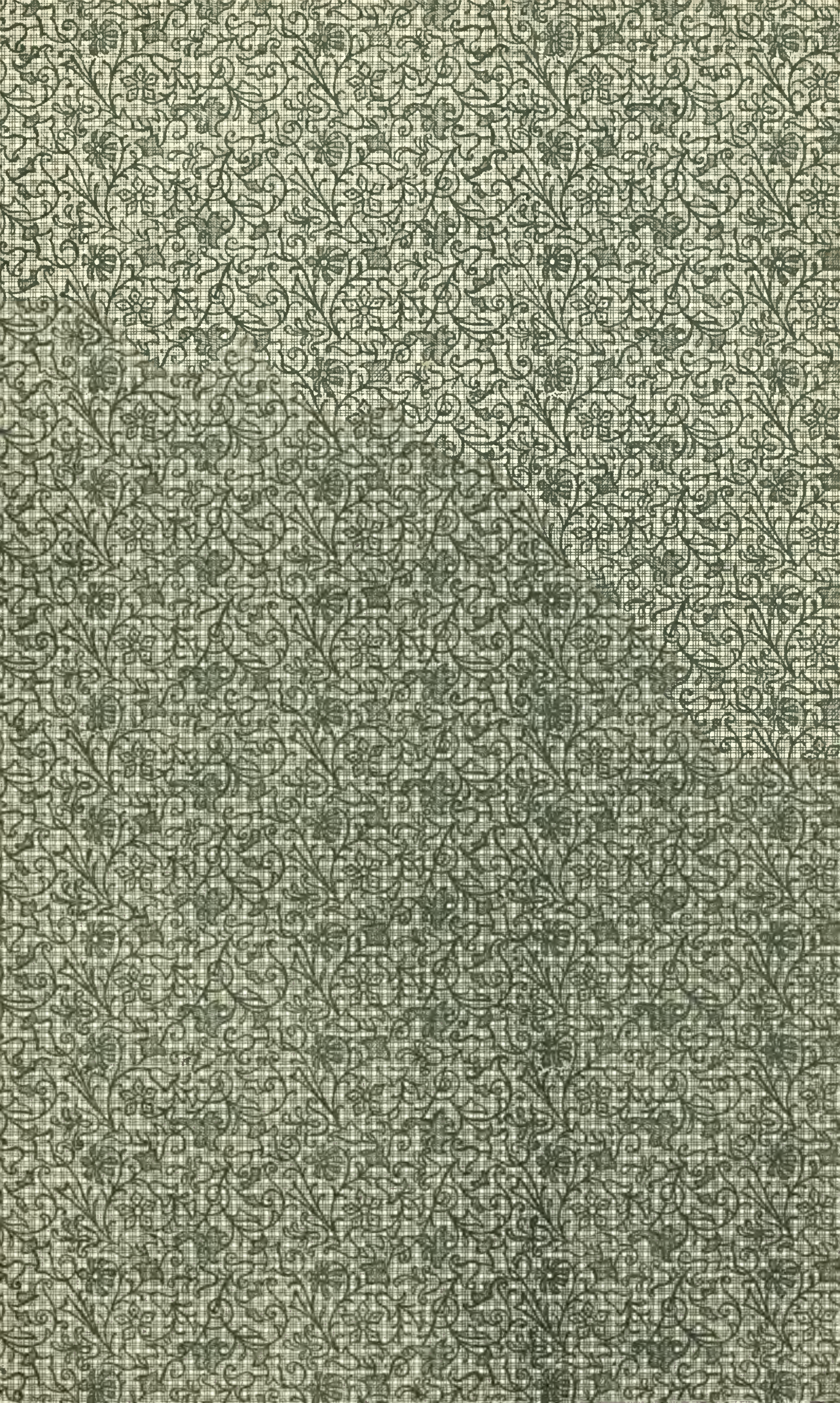

SINKING FUNDS.

A DISSERTATION PRESENTED TO THE BOARD OF UNIVERSITY STUDIES OF THE JOHNS HOPKINS UNIVERSITY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

BY

EDWARD ALSWORTH ROSS,

Associate Professor of Political Economy and Finance, Cornell University.

BALTIMORE, 1892.

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INTRODUCTION.

To understand the nature and workings of the device known as the sinking fund, we must study it as it appears in the financial history of England and of the United States. In the former we have exemplified all the financial mistakes to which a wrong theory of amortization can give rise; in the latter we discover the slow emergence of certain ultimate forms of amortization, on which both experience and scientific analysis set the seal of approval. Both taken together furnish ample basis for a theoretical treatment of the payment of public debts. The study then falls under the three heads: English Amortization, American Amortization, The Theory of Amortization.

SINKING FUNDS.

I.

English Amortization.

The Walpole–Stanhope Sinking Fund.

The permanent funded English debt began in 1694, when twelve million pounds were borrowed from the Bank of England in consideration of its charter. During the Dutch wars the debt rapidly grew until, in 1716, it amounted to forty millions. The various loans making up the debt were based on the pledging or mortgaging of specific taxes, or revenues. Loans thus guaranteed were said to be "funded." The interest of each loan was provided for by a particular tax pledged for a term of years, while the principal was to be discharged, either by the regular excess payment of an annuity, or by the varying surplus yielded by the tax. By this "funding" policy the public debt came to consist of many small loans, each bottomed on its own petty item of revenue. This complicated and rigid system, wherein the growth of one source of income could not be used to eke out the shrinkage of another, proved unfit for a growing public finance. In 1716, the many little items of revenue, mortgaged to some particular debt, were grouped together into four large funds, the Aggregate, South Sea, General, and Sinking funds.

The first three were composed of permanent taxes, and secured the interest on three great blocks of public debt. The fourth was made up of the surpluses of the first three left over after satisfying all charges upon them, and was called the "Sinking Fund," because it was appropriated to the sinking of the national debt, "and to no other purpose." As it was to be invariably applied to interest-bearing debt, the fund was sure to show a steady growth. For as its yearly income operated in extinguishing the debt, the interest thereby disengaged went, of course, to swell the surpluses that made up the sinking fund; so that this fund grew in geometrical ratio, just as if it had enjoyed the right, granted to later sinking funds, of receiving interest on all debt redeemed by it.

For a while this permanent appropriation, known as the Walpole Stanhope sinking fund, was a national pet, and ministers met deficits by new loans rather than check the growth of the infant. Even during borrowing periods the fund served the purpose of lulling the people into the belief that the national debt was being swiftly and surely extinguished. In 1727 the interest on the public debt was reduced from five per cent. to four, thus adding four hundred thousand pounds to the three surpluses that together constituted the sinking fund. But from this time on gradual encroachments were made by charging with the interest of new loans the fund that had been solemnly set aside for paying the principal of the public debt. In 1733, Walpole needing half a million for current expenses, broke into the fund this time, taking not merely the interest of the sum he wanted, but the sum itself. The next year the whole yield

of the fund was diverted from its purpose, and the two following years it was anticipated and mortgaged. In 1737 and 1738 the national debt was reduced three millions by the income of the fund. During the following twelve years it was seized for the use of the government. In 1749 another refunding of the debt at lower interest added six hundred thousand annually to the fund, but not more than three millions of debt were extinguished by it in six years of peace.

In 1752 the sinking fund underwent a change. The war of 1740-'48 had called for loans to the extent of thirty-two millions, and for the funding of these a great variety of new taxes had been imposed. These new taxes, now, together with the new debt, were carried into the sinking fund. That permanent appropriation, which formerly had been made up of specified surpluses and applied to the principal of the debt, was now enlarged by taxes and charged with the interest of new loans. In a word, its original character of *sinking* fund was utterly obscured. Thus inflated, the income of the fund averaged two and one-half millions a year till the outbreak of the Revolutionary war. The total decrease in the British debt for twelve years was, however, but a trifle over this sum. During the war England borrowed heavily, so that at the accession of Pitt in 1784, the debt reached the figure of two hundred and forty-five millions. One of Pitt's first reforms was to lump together the revenues distributed among the four permanent funds into a "consolidated fund," and to hypothecate this fund to the public creditors. This was the origin of British "consols." He next addressed himself to maturing a plan for extinguishing a debt which was then exciting general alarm.

The Theories of Dr. Price.

In 1772, Dr. Price, an eminent clergyman, and a closet financier, published an "Appeal to the Public on the Subject of the National Debt," which was widely read by an anxious public. In this book Dr. Price advanced much ingenious calculation and reasoning to show the magical effect of a *permanent sinking fund*. By this he meant that a certain sum should be annually set aside for the extinguishment of the national debt. This sum should be used in buying public stock in the market at the current prices, and the interest accruing on the stock thus bought should be invariably used in still further increasing the purchases. In this manner a fund would be formed, which would grow by compound interest and, if maintained inviolate, would, in time, absorb a debt of any size, at but little expense to the nation. However small the original annual appropriations might be, they would be in this plan invested at compound interest, and would need only time to cancel any debt.

The efficacy of the scheme, Price insisted, lay in keeping up the annual payments in war as well as in peace, in times of deficit as well as in times of surplus. According to him it is perfectly proper to borrow money to maintain the appropriations, inasmuch as the sums borrowed are obtained at simple interest and invested in government stocks at compound interest. With a high rate of interest the fund increases only the more swiftly, and hence it is sound policy to create new debt at a high rate of interest, in order to buy in old debt at a low rate. Indeed, a debt at a high rate of interest, with a sinking fund attachment will be discharged more

quickly than the same debt with the same sinking fund, at a lower rate. "A state may without difficuly redeem all its debts by borrowing money at an equal or even higher interest than the debts bear; and without providing any other funds than such small ones, as shall from year to year become necessary to pay the interest of the sums borrowed." The magical efficacy of the compound interest principle is illustrated by the fact that a penny, put at five per cent. compound interest in the year 1, would in 1775 amount to three hundred millions of earths, all solid gold. But at simple interest the penny would amount to seven shillings and six pence! Hence the importance of never interrupting the operations of the sinking fund. "All governments that alienate funds destined for reimbursement choose to improve money in the *last* rather than the first of these ways."

It is not necessary to open up the theory of amortization here, in order to expose fallacies that time has already exploded. Let it suffice to say that the chief and central misconception of Dr. Price was in regarding government stocks as productive property. It was this that led him to look upon the interest on stocks bought in for the sinking fund as "earnings," and not as the proceeds of taxation. It was this that prevented him from seeing that the magical reduction effected by a small annual appropriation is due to the fact, that for many years the nation enjoys no easement from its operations on its debt, but continues to pay fictitious interest upon portions of its debt bought up and thus already practically redeemed. After all, the national debt is extinguished by taxa-

tion. But in Price's scheme taxes are paid over not as reimbursement, but as interest on defunct stock.

Pitt's Sinking Fund.

The theories of Price, though clearly refuted by a few obscure writers, were widely accepted, and when Pitt resolved upon the reduction of the national debt, he adopted them as the basis of his system. In 1786, at a time when the recent doubling of the national debt caused general alarm, Pitt found himself with a clear surplus of nine hundred thousand pounds. This surplus raised by additional taxes to a million, he proposed to constitute a permanent sinking fund appropriation. Following the advice of Dr. Price, he determined to put his fund beyond the clutch of needy finance ministers by turning it over to a special branch of administration. The yearly appropriation was to be vested in a "Board of Commissioners of the Sinking Fund," and by them applied quarterly to the purchase of public stocks, at or below par. The treasury was to pay interest on this stock just as it would on any other outstanding stock, and this interest, together with all temporary annuities that should fall in, was to be applied quarterly, in the same manner as the original appropriations. These quarterly purchases prevented the accumulation, in the hands of the commissioners, of a sum large enough to tempt the cupidity of a finance minister, while their regularity made it impossible so to cook the accounts of the board, as to conceal any invasion of the fund.

The yearly payment was to be one million pounds. When this should be increased by lapsed annuities and by the annual interest on stock constituting the sinking fund to four millions, it was to be at the dis-

posal of Parliament. Until then the payment on behalf of the sinking fund took precedence of everything except the interest on the public debt, and could not be withheld except by an act of repeal, passed in full view of the public. When Fox objected to a plan that would tie up so much of the national income, even in time of war, he was told that the essence of the scheme was to keep the sinking fund sacred, and that any diversion of the fund would prove its ruin. He succeeded, however, in getting a clause inserted, authorizing the commissioners of the sinking fund to accept as much of any new loan as they should have the money to pay for. Strange to say, this clause, which permitted the government to borrow back its payments to the sinking fund, and which made useless all the safeguards thrown about the fund to secure its inviolability, was heartily commended by Pitt. Still stranger is it, that this wise clause was never acted upon in raising any of the great war loans, but was first followed in 1819, in a time of peace.[1]

After brief debate this plan passed Parliament with no dissenting voice, and received the royal approval amid general congratulation and enthusiasm. "Never was the admiration of any public measure more warm and general, and never was there fuller confidence in the soundness of the principles upon which it was founded."[2] Huskisson declared Pitt's sinking fund "perhaps the proudest monument raised by the virtues and the genius of Mr. Pitt, to his own fair name, and one that should be preserved unmutilated and entire, in all the strength and symmetry of

[1] Tomline's "Life of Pitt," pp. 164–167.

[2] Tomline, p. 164.

proportion assigned to it by the hands of its immortal author." Tomline thinks that Pitt's inviolable sinking fund "probably saved this country from becoming a province of France."

In 1792, Pitt's system was supplemented by an act establishing an accumulating sinking fund of one per cent. on the nominal capital of all loans. By this means every debt was at its creation to be "put in course of liquidation." This principle was abandoned for new loans in 1798 and the following years, and eighty-six millions of debt were created without a one per cent. sinking fund. In 1802, however, this principle was again revived and adhered to for a number of years.

At first Pitt's sinking fund was an honest one and rested on a clear surplus. But in 1793 the war with France began, and for a very long period England's balance sheet showed no surplus, but only huge deficits. In this new situation amortization would have been suspended, if sound doctrine had been abroad. But under the influence of Dr. Price's theories, Parliament continued for many years enlarging and strengthening the sinking fund, till in 1813 sixteen million pounds were used in reducing old debt. About this time most of the stock bought up and held by the commissioners of the sinking fund was cancelled, thus reducing the annual fund by about six millions of interest.

Decay of the Old System.

In 1813, Professor Hamilton, of Aberdeen, published a book on the British debt, which marked an epoch in the growth of financial theory. In this he reviewed, one by one, the reasonings of Dr. Price,

and laid the finger of criticism on the weak spot in each. He pronounced all schemes for wiping out the public debt by sinking funds operating by compound interest, illusory. The excess of revenue above expenditure, he maintained, is the only real sinking fund by which public debt can be discharged. Amortization during borrowing periods is a purely fictitious operation which in no wise reduces debt, but really adds to it.

With the publication of these ideas the old notions, which led a minister to declare that the sinking fund was "an advantage gained by nothing," began to disappear. Great inroads began to be made in the old system. The Parliament of 1819 thought it necessary that there should be a yearly *surplus* of income of five millions for the purpose of the sinking fund. In 1823 the sinking fund was cut down to five millions, though the practice of keeping the stock redeemed, in the hands of commissioners, was still retained. In 1828 the old system lost whatever shred of credit it still possessed by the appearance of Lord Grenville's "Essay on the Supposed Advantages of a Sinking Fund." In this essay one of the former ardent champions of Pitt's policy renounced his former belief in it, and recanted his error in a formidable exposure of the old fallacies.

In the same year a parliamentary committee estimated that as a net result of the sinking fund system kept up during war, the nation had, between 1785 and 1829, borrowed £330,000,000 at about 5 per cent. interest, in order to pay a debt of the same magnitude at 4½ per cent. interest. This policy, by which a debt at 4½ per cent. was converted into one at 5 per cent., meant an annual loss in interest of £1,627,765

extending over forty-three years. This was the conclusion arrived at without taking into account the cost of administering the sinking fund, or the depreciation of the public stock caused by the custom of borrowing sums much larger than were required for national expenses.

In consequence of these results the finance committee denounced a sinking fund fed by loans, and laid down the axiom that funds for the extinction of debt should not be raised by the creation of it in another shape. It held that the only fund that can advantageously be used for sinking is the *net surplus* of receipts over expenditures. Hence, instead of fixing in advance the sum to be applied to the principal of the public debt, it was better to appropriate only the net annual surplus, whatever it might be. In view of the size of the debt at that time, it was thought desirable that there should be provided a yearly surplus of three millions. But in case this excess should not be realized, it would not therefore be wise to resort to borrowing in behalf of amortization. Whatever stock was redeemed was to be promptly cancelled and interest was to be no longer reckoned on defunct paper.

"*The Old Sinking Fund.*"

The next year the recommendations of the committee were practically followed. It was enacted that the formal sinking fund be abolished; that in place of it any surplus, as it was realized, should be applied quarterly to the redemption of the debt; and that money should on no account be borrowed for the fund. The stocks then standing to the credit of the sinking fund were to be destroyed, and interest

on them was to cease. The new fund was to redeem annuities, exchequer bills, or other non-interest-bearing debt, as well as consols. For these purposes the Chancellor of the Exchequer was to secure, if possible, a surplus of three millions a year.

The extremely simple plan of amortization adopted at this time remained for many years the only provision for the payment of the British debt. It was not found, however, to favor any energetic and effective reduction. The intended surplus of three millions was never realized after 1829. A succession of languid and popularity-seeking ministers preferred the remission of taxes, or an expensive foreign policy, to the payment of the debt. In 1857 a regular sinking fund was established, but as it soon necessitated the old practice of borrowing in order to pay debt, it was abandoned.

"The New Sinking Fund."

In 1875, impressed with the duty of energetically reducing her debt, England sought to make more effective provision for amortization. As the old extra-budgetary provision had failed, it was thought necessary to bring the principal of the debt again within the field of regular appropriation. Instead of being put off with the "leavings," the sinking fund was to come within the accounts as an ordinary expenditure, the surplus or deficiency of the year being reckoned, only after it had been included.

Instead of reverting to the old method of paying interest to the sinking fund on all debt redeemed, the simple American plan of a *combined fund* was introduced. A fixed sum larger than the interest charge of the debt was permanently appropriated. The

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excess was for payment of the debt. As each year the interest charge shrunk, the surplus for amortization was correspondingly enlarged. This provision, known as "The New Sinking Fund," is still in force. The former appropriation of the annual surplus remains under the title of "The Old Sinking Fund." In In addition to these there are five small especial sinking funds[1] concerned with outlying portions of the British debt.

Terminable Annuities.

Besides these devices England has been reducing her debt by the use of terminable annuities. Formerly these were sold to raise money or given to lenders as a bounty. Later it was discovered, that by converting blocks of the public debt into this form of obligation, a system of regular debt reduction could be maintained, when otherwise impracticable. By this process a portion of stock is cancelled, and in place of it an annuity which includes both interest and reimbursement, is issued to run for a term of years. Once the conversion is accomplished, the amortization becomes perfectly automatic, and must be maintained in deficit years as well as in surplus years. Under this system later English chancellors have been able to make large reductions in the public debt.

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[1] Buxton's "Finance and Politics," Vol. II, p. 217, note.

II.

American Amortization.

Redemption of Paper Money.

The problems of debt payment first met our government early in the Revolution. At the outset of the war the Second Continental Congress, afraid to tax and unable to borrow, resorted to a favorite colonial expedient and paid the expenses of the war by issuing bills of credit resting on the faith of the confederate colonies. These promises to pay were to be redeemed by the several colonies, the whole being apportioned among them in proportion to population. Each colony was to secure its quota of bills as it saw fit, and pay them into the general treasury in four equal annual instalments, beginning in 1779. If any colony could not secure its quota of continental bills by taking them for taxes, or by exchanging its own notes for them, it might make up the amount in specie. Such specie as should thus be paid in was to be retained by the continental treasurer to redeem such outstanding bills as should be presented directly to him. With these provisions for redemption Congress, in July, 1775, ventured to issue three millions of paper money.

Before the end of the year four more millions were issued, and each colony was directed[1] to provide ways and means of sinking its proportion of bills in the

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[1] December 26, 1775.

most effective manner. The redeemed bills were to be cancelled and paid in, in four instalments, beginning in 1783, when the former instalments ceased. The large emissions of 1776 so depreciated the paper money, that in 1777[1] we find Congress again anxiously urging the colonies to do something to redeem their quotas.

Later on it was seen that a great war debt like the continental currency could not be paid by ordinary taxes, and there was talk of recurring to the nearly obsolete English practice of charging the debt on special taxes, or on specific sources of permanent income. In reference to the several issues of bills, a report of the board of treasury on January 2, 1779, declared it "necessary to ascertain the period of their redemption and seasonably to establish funds, which in due time shall make adequate provision for the same."

Thereupon Congress resolved that the states be called upon to pay in their respective quotas, of fifteen millions for 1779, and six millions annually for eighteen years thereafter, as a fund for sinking the emissions and loans. The quotas were to be paid not in state notes, but in continental bills, and these were to be applied to paying the interest and principal of the interest-bearing loans. The residue was to be burned. The circular letter embodying the above was followed in May by another raising the amount of bills called for to sixty millions.

On March 18, 1780, Congress, after having solemnly and repeatedly pledged the public faith to the full redemption of the continental paper, bowed to the inevitable and recognized the depreciation of its own

[1] January 14.

bills. It undertook itself to redeem the old issues by a new emission to be exchanged for the old at the rate of one for forty. These bills were to be issued on the credit of individual states, each state being assigned its due quota, and were to be redeemed by special state funds sufficient to retire a sixth part of the bills annually. The new bills bore five per cent. interest, were to be redeemed in specie, and the faith of the United States was pledged for their redemption in case any state failed to sink its share.

With the growth and collapse of the paper bubble there began slowly to emerge the conviction that the state must wield the taxing power with a strong hand, and must cut deep into the resources of the community, if public credit were not utterly to disappear. The resolutions of a convention held at Philadelphia in August, 1780, with a view to forming a closer union, show the growth of better financial ideas. Resolution six urged that the credit of the continental bills be sustained by all the states sinking their quotas by taxation, or by other means. Resolution seven recommended that each state immediately establish funds for sinking annually at least one-sixth of the bills they shall emit, the tax for raising such funds to be paid the first year in specie, the remaining five years in specie or in the bills to be redeemed. The object was "that the credit of the paper may rest upon the funds provided for their redemption, as every attempt to support their credit by forcing them into circulation tends to defeat the purpose and to depreciate them." Thus the dream of sustaining unfunded paper was dissolved. It was recognized that public faith rests not on vague and

general promises, but on the setting apart of actual and adequate revenues.

Despite all wise resolves, the new issues of paper money soon sank to the level of the old, and in 1781 the whole irredeemable mass vanished from circulation and collected in the hands of speculators. Here the unpaid bills were no longer a dangerous and disturbing element, and here Congress left them till a more convenient season for liquidating.

Loans.

But no sooner had the currency problem in a way solved itself than Congress began to be embarrassed by pressure from another quarter. During the contest loans had been filled and interest-bearing certificates issued, based on the promise of France to pay in specie the interest on whatever sums could be raised at home. At the close of hostilities, however, France was compelled, in justice to herself, to interrupt her subsidies and loans, while, owing to the disastrous career of paper money here, private capitalists were unwilling to lend without the guarantee of established funds. In 1781,[1] therefore, Congress, after having in the previous year summarily redeemed the continental currency, cast about for means to meet the burden of domestic debt soon to be rolled upon its shoulders by the drying up of foreign aid and the difficulty of negotiating European loans. On February 3, it resolved that it be recommended to the several states as indispensably necessary that they vest a power in Congress to levy for the use of the United States an *ad valorem* import duty of five per cent; that the moneys arising from the duty be

[1] February 3.

appropriated to the discharge of the principal and interest of the debts already contracted, or to be contracted, for the war; and that the duty be continued till these debts be fully and finally discharged.

Plan of Robert Morris.

While Congress was thus vainly urging upon jealous and suspicious states the necessity of national revenues, Robert Morris, in his letter[1] of July, 1782, to that body outlined a complete scheme of constructive finance. After reviewing the industrial advantages, to a new country, of borrowing over ruthless taxation, and of foreign loans over domestic loans, he dwelt upon the utter loss of the once stable public credit. The causes were: the repudiation of the old continental bills, the reluctance of the states to tax, the feeble financial powers of the government, and the absence of any provision for the public debt. The first step in the restoration of credit is, said Morris, the retirement of all outstanding continental bills. The second is the funding of the public debt, that is, the pledging of specific revenues to the service of particular loans. The scheme of paying domestic interest by the proceeds of foreign loans is ruinous and should be abandoned. The interest of the public debt must be provided for by distinct funds. These must be ample, because a deficit would be disastrous, while an excess would serve to pay immediately a part of the debt, and thus strengthen credit. Morris thereupon proposes a five per cent. tariff, a one dollar poll tax, a land tax of one dollar per hundred acres, and an excise of one-eighth of a dollar per gallon on distilled liquors. On each of

[1] "Diplomatic Correspondence", Vol XII, p. 211.

these, estimated at half a million, a loan could be opened payable in specie or in debt evidences of a particular description. It is further proposed that the casual surplus of each of these taxes should be carried to a sinking fund, on the credit of which new loans might be opened if necessary. The public land Morris regarded as a future source of revenue, but as yet not available for the existing debt.

Efforts to Provide for the Debt.

Six months later Congress, in order to induce the niggardly and distrustful states to grant the power to tax, passed an important resolution reported by a committee headed by Hamilton. It was resolved "that whenever the net produce of any funds recommended by Congress and granted by the states, for funding the debt already contracted or for procuring future loans for the support of the war shall exceed the sum requisite for paying the interest of the whole amount of the national debt, which these states may owe at the termination of the present war, the surplus of such grants shall form a sinking fund, to be inviolably appropriated to the payment of the principal of the said debt, and shall on no account be diverted to any other purpose." A little later, in response to the complaint and petitions of the public creditors to whom no interest had been paid since March 1, 1782, it was resolved that the establishment of permanent and adequate funds on taxes or duties was necessary for doing justice to the public creditors, for restoring public credit, and for providing for the war.

The same session Congress passed an act making the most ample provision in its power for the public debt. The government was to be invested with the

right to levy for twenty-five years certain import duties, estimated to yield about a million annually, the proceeds to be applied solely to the debt of the United States. As the proposed tariff still left $1,500,000 of yearly interest unprovided for, Congress recommended that this charge be quoted among the states and raised by special taxes or revenues established for twenty-five years. Accompanying the act was an address to the states, setting forth that on January 1, 1783, the foreign debt was $7,885,085, the domestic debt, $34,115,290, and the total, $42,000,375 ; the annual interest was $2,415,956, of which $915,956 was to be raised by national taxation, the rest by income from the states, and from the sales of public lands.

This promising plan, like its predecessor, was foiled by the stubborn particularism of Rhode Island. But there was yet another resource. Urged by Congress, the individual states, after the war, ceded their western lands, thus endowing the poverty-stricken national government with a vast territorial domain. As petty local jealousy and state narrowness thwarted every effort to establish national revenues, Congress turned to the sale of public lands as a final resource. The ordinance of 1784-5 proposed that all moneys, arising from the sale of land warrants, should be applied to the sinking of the public debt, and to no other purpose whatsoever. Although this paragraph was omitted at the final stage of the ordinance, the object of it was secured. In a report of February 2, 1786, it is admitted that the United States are in possession of "another fund," arising from the cession of vacant and unappropriated land by individual states. But this, as public securities are received in

payment, will bring but little specie into the treasury. Being depreciated considerably below and receivable at par with specie, it is to be presumed the purchasers will procure these securities for the purpose. These lands may be calculated on, therefore, as a fund only for the discharge of the domestic debt. Thus by land sales, and by taxes of which a large share was permitted to be paid in securities, the debt was slowly being absorbed.

On the other hand, it was rapidly growing owing to the conversion of unpaid interest into principal. From 1782 to 1786 the accummulation of back interest was over six millions![1] The only acknowledgment of this obligation was the issue of certificates of interest, or "indents." These circulated freely as a kind of depreciated currency, and operated the same as the continental bills. When the debt was funded, in 1791, the mass of these indents was over thirteen millions. Only by squeezing the certificates it had just given, from the pocket of the tax-payer again, could Congress check the growth of the debt. Of regular payment or redemption, there was none, for specie was not forth-coming in sufficient quantities, Congress' only resource was repeated requisition, which yielded very little specie. Thus, in 1781, a requisition of $8,000,000 yielded only $1,486,154. From November 1, 1781, till February 1, 1786, the states were assessed over fifteen millions. Of this they paid only $2,450,803. From November, 1784, till April, 1788, only $996,448 was received from the states.

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[1] Elliot.

Foreign Loans.

The history of foreign loans under the Confederation is interesting and characteristic. By a settlement of Franklin with the French court in July, 1782, it appeared that the loans to the United States amounted to eighteen million livres. On this sum the king relinquished not only all interest till date, but all interest till peace should be concluded. The principal, with 5 per cent. interest, was payable in twelve equal annual instalments, beginning three years after a peace with Great Britain should be signed. Besides this there was a loan of ten million livres made by Holland on the security of the French king. This debt at 4 per cent. was reimbursable in ten equal annual instalments, beginning November 5, 1787. The next year[1] a further loan of six million livres was granted, payable between 1797 and 1803. These sums, together with four millions due French citizens, reached the round figure of thirty-eight millions of livres, or about seven million dollars.

Between 1782 and 1788 the Government succeeded in negotiating four loans in Holland, one for five million florins, one for two millions, and two loans for a million each. The payment of the interest on the foreign loans was regular, but the interest came directly from the proceeds of the loans themselves. The two one-million loans were expressly obtained and pledged to the payment of interest on the preceding ones. Each of the four Holland loans was payable in four instalments, beginning eleven years after date. The first payment was due in 1793. Although frequent recourse to the loan market

[1] 1783.

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enabled the Confederation to maintain its credit in Holland, it repeatedly broke its engagements with France. Not only was the interest defaulted for several years, but the instalments of $462,000 falling due in 1787, 1788 and 1789 remained unpaid despite the urgent need of the French treasury. At the close of 1789 the arrearages of interest and the unpaid instalments of the foreign debt amounted to over three millions.

Summary.

The effect of the bad financiering of the Confederation on the debt is thus summarized by Gallatin:

"From the 1st of January, 1784, to the 1st of January, 1790, the principal of the domestic debt was reduced by the sales of land, which amounted to about $1,100,000; but in the meanwhile, the interest accrued was near ten millions of dollars, of which about six millions remained unpaid.

"During the same period the greatest part of the interest on the foreign debt accumulated to an amount of about $1,700,000; and a new debt was contracted in Holland of $3,600,000. The whole debt, foreign and domestic, increased therefore, during those six years by a sum exceeding ten millions of dollars."[1]

The New Government.

At the final stage of the old regime the country wore the appearance of bankruptcy. Credit was kept alive only by the hope that the new government would unseal sources of revenue inaccessible under the defective Confederation. "The Dutch," writes

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[1] Writings, Vol. III, p. 124.

Jefferson, in May, 1788, "consider us the most certain nation on earth for the principal. The whole body of money dealers . . . . look forward to the new government with a great deal of partiality and interest." At home the public securities that had commanded only fifteen cents on the dollar, rose from January to November, 1789, thirty-three and-a-third per cent., and from November to the end of the year fifty per cent. more. The publication of Hamilton's report carried the price to fifty cents on the dollar.

Of the attributes of the new government the one, perhaps, most coveted by patriots and statesmen was the power "to lay and collect taxes, duties, imposts, and excises." Accordingly upon the establishment of the Treasury Department in 1789, Congress directed Hamilton, the first Secretary of the Treasury, to report a plan for the support of the public credit. The plan presented by him in his "Report on the Public Credit," of January 14, 1790, was as follows:—

The Report on the Public Credit.

The state is scrupulously to perform the contracts with its creditors. As these involved the right of full transfer, the state should make no discrimination prejudicial to the present holders of the public debt. Since the state can justly make no discrimination between different classes of creditors, it should assume the debts contracted by the individual states for the common defence. Arrears of interest are entitled to equal provision with debt principal. The foreign debt, with interest arrears, amounted to $11,221,564; the domestic debt to $42,414,085. The total annual interest at existing rates on the whole

debt, including twenty-five millions of state debts to be assumed, would be $4,587,444. As provision for this sum would strain the resources of the state, Hamilton hopes the creditors may be induced by offer of fair terms to modify their claims. This is but just owing to the prospect of a fall in the rate of interest to five per cent. in five years, and to four per cent. in twenty. It is proposed, therefore, to raise a loan payable in debt and ample to absorb all outstanding domestic obligations. For every one hundred dollars of evidences of debt subscribed to this loan the subscriber should be entitled either to have two-thirds in funded six per cent. stock, and the remainder in land at twenty cents per acre; to receive the whole in four per cent. stock and $13.80 in land; to receive two-thirds in six per cent., stock redeemable at the rate of not more than one per cent. yearly, and $26.88 of similar stock in ten years; or to receive a life annuity. In addition to this loan of conversion there should be a loan of ten millions payable half in debt and half in specie.

To meet the annual charges, tonnage fees and import duties are proposed. The proceeds should be devoted in the following order; to the foreign debt, the civil list, the interest of the new loan, and the payment of the unsubscribed old debt. The income from the postoffice, estimated at $100,000, is to be reserved as a sinking fund. The secretary, though regarding the funding of the national debt as a national blessing, is yet so far from believing that public debts are public benefits, that he wishes to see it incorporated in our system as a fundamental maxim, that the creation of debt shall always be accompanied by the means of extinguishment. This

is the true secret of rendering public credit immortal. It is, therefore, advised that the net product of the postoffice to a sum not exceeding one million dollars be vested in a Board of Commissioners, to consist of the Vice-President, Speaker, Chief Justice, Secretary of the Treasury, and Attorney General, for the time being. The sum shall be held in trust and applied by them to the discharge of the existing public debt, either by purchases of stock in the market, or by payments on account of the principal, as shall appear to them most advisable in conformity to public engagements. It is furthermore suggested that the commissioners be authorized to borrow on their credit a sum not exceeding twelve million dollars to be applied:

First—To pay the sums due on the foreign debt.

Secondly—To supply any deficiency of funds for the interest on the domestic debt.

Thirdly—To refunding the foreign debt at five per cent.

Fourthly—To purchasing the domestic stock on the market when below par.

The financial system of Hamilton was in its main features incorporated into the funding act of August 4, 1790, carried through in the face of much opposition and objection. The central idea of this act is the funding of the debt. Previously the debt was provided for by annual grants. Under this system the claims of the creditor were set every year at the hazard of the passion, partisanship, or intrigue of any one of the three branches of the legislative department. Public faith could be broken by the non-concurrence of one branch. But under our funding sys-

tem the public creditor acquired a proprietary right over the constituted funds. The revenues of the state were, in part, mortgaged for his benefit. His debt was supposed to be secured not by a mere promise, but by a material pledge. However that may be, it is certain that, once provided for, the creditor was safeguarded against breach of the public faith, not only by the self-preserving inertia of any measure of settled policy, such as a permanent appropriation, but also by the requirement that three branches,—House, Senate, President,—should concur in its repeal.

The Funding Act.

The funding act reserves from the current revenues six hundred thousand dollars, or such sum as may from time to time be appropriated for current expenses. As much of the residue as may be needed is appropriated to the payment of interest on foreign loans existing, or on further loans that may be made for paying off the existing foreign loans,—to continue until these loans shall be satisfied. With this is coupled authority for the President to raise a loan not exceeding twelve millions to be applied, in the first instance, to paying the arrears, instalments, or principal of the foreign debt. Like most of the Holland loans, this must be reimbursable within fifteen years.

For the interest on the domestic loans proposed, Congress made inviolable and permanent appropriation of all moneys arising under the existing revenue laws, excepting the part above reserved. That these might never be diverted to any other purpose, the account of their receipt and disbursement was to be kept distinct from the product of any other taxes,

except such as should be levied for a like purpose. The faith of the state was furthermore pledged to provide sufficient and permanent additional funds for the full payment of interest on all new stock.

In return for this new and special security, the creditor, it was hoped, would voluntarily consent to a reduction of his income. To meet the interest at the existing rate of 6 per cent. the government would require a revenue of $5,000,000. This was deemed too severe a strain to put upon untried fiscal machinery. Accordingly, the funding act contemplated providing for the domestic debt on a four per cent. basis. This reduction was to be effected by a new loan, the subscriptions thereto being made payable in evidences of public debt. The old six per cent. certificates were to be exchanged for new funded stocks, or bonds. For every sum subscribed in principal of debt, two bonds were to be issued, one for an amount equal to two-thirds of the subscription, to bear six per cent.; the other for one-third of the subscription, to bear six per cent. after 1800. These two kinds of debt were known as "six per cent. stock" and "deferred stock." As they were liable to redemption at the rate of not more than two per cent. per annum, they could be converted at will into an eight per cent. annuity terminable in about twenty-two years.

After the principal of the domestic debt was provided for, there remained about thirteen millions of "indents," covering interest accruing up to 1791. These were made receivable only for a special kind of stock, redeemable at will, and bearing three per cent. interest. The federal debt once disposed of, the funding act provided for the assumption of $21,500,000 of state debts incurred in the common cause.

This was to be done by exchanging that quantity of the new stocks, in certain proportions, for an equal amount of the certificates, or indents, issued by individual states. The final provision is that the proceeds of all sales of public lands be appropriated to the sinking of the public debt.

In effect, then, the funding act authorized a foreign loan, created three kinds of domestic stock — the six per cents., deferred 6s, and three per cents., provided for the conversion into this new stock of the old Revolutionary debt, the accrued interest, and the state debts, and finally made permanent appropriations both for the interest and for the principal of the new stock.

To the public creditors the conversion of the debt into a funded loan was not a decree but a proposal. He who refused to subscribe did not forfeit his claim. His rights were unimpaired, but during 1791 he must content himself with the reduced rate of interest of the subscriber to the new loan, and yet remain exposed to the insecurity of a precarious annual grant and optional redemption. Under such circumstances it is not strange that the body of public creditors subscribed to the new loan, and the funding was a success.

The Sinking Fund of 1790.

On August 12, 1790, was approved the act establishing the first federal sinking fund. This provided that the surplus revenues of 1790 from imports and tonnage should be applied to purchases of the public debt at its market price, if not above par. The purchases were to be made under the direction of the Vice-President, Chief Justice, Secretary of State,

Secretary of the Treasury, and Attorney General, any three of whom were authorized, with the approbation of the President, to make such purchases as they should deem best, provided these be made openly and with due regard to the benefit of the several states.

The accounts of the application of the fund, accompanied by returns of the amount of debt purchased, were to be rendered at the end of each quarter; and a full and exact report of the proceedings of the commissioners was to be laid before Congress within the first fourteen days of each session. The report should include a statement of the disbursements and purchases, specifying the time when, prices at which, and persons of whom purchases were made.

To strengthen the fund the President was authorized to borrow up to $2,000,000, at a rate not exceeding five per cent., to be applied to purchases of the debt under the same regulations as the surplus of 1790. But, if this was done, there must be reserved annually out of the interest on the debt bought by the commissioners a sum, not exceeding eight per cent. of the sum borrowed, to go toward paying the interest and sinking the principal of the same.

Early Operations on the Debt.

We have now reviewed legislative provision for the debt. It remains to examine operations under the law.

The refusal of the government to assume the burden of the domestic debt till January 1, 1791, twenty months after the inauguration of Washington and fifteen months after the first real revenue began to come in, enabled it to apply the taxing power grad-

ually, and to test each part of the revenue machinery, before putting it to the strain of providing for a debt of nearly eighty millions. The interest for 1790 on the home debt was converted into principal. The demands of the foreign debt were met by a new Holland loan.[1] This left a large part of the revenues of 1790 free to fall as surplus into the sinking fund, and be applied to the purchase of certificates. This surplus was found to be $1,374,656. Under a proviso of the redemption act, a part of this was reserved to meet the heavy interest charges for 1791. The remainder, $957,770 was expended in 1790 and the following two years, in buying up public obligations.

The first report of the commissioners of the sinking fund[2] shows that they had promptly obeyed the law by buying $278,687 of debt, at the average rate of 54 cents on the dollar. Their second report[3] shows that $1,131,364 of stock had been bought for $699,163, an average of 62. This proves that the sinking fund of 1790 accomplished its purpose of raising the value of government stock.

The desirability of this had been urged by Hamilton in his "Report on the Public Credit."[4] The purchase of the public debt at market prices, which would be dishonorable before making provision for the debt, would be unexceptional afterward. Its effect would be in favor of the public creditors, as it would tend to raise the value of stock. The government would also gain by the heavy discount at which it would secure its earlier purchases. If it should

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[1] November 12, 1790.

[2] December 21, 1790.

[3] November 7, 1791.

[4] State Papers, Finance, Vol. I, 25.

decline to raise the value of its stock, enormous profits would be made by speculating foreigners. But if the government competes with speculators, it will not only reap a part of the profit itself, but its purchases will contract their field of operation and thus lessen their profit. It will also hasten the rise of stock, and thereby narrow the margin for speculation. Hamilton further urged the raising of money by foreign loans for purchases of the domestic debt. The growth of the country demanded an injection of foreign capital and, as the credit of the government was higher than that of any citizen, this could best be done by borrowing abroad to pay off debt at home.

As we have shown, the purchases of the commissioners raised the price of stock. At the same time they vindicated Hamilton's judgment on other points. The interest and arrears abroad were paid, we have said, by the proceeds of a new Holland loan for $1,200,000. This means that the government borrowed abroad that it might pay its revenues for 1790 to its own citizens. Enjoying a very high credit at this time in Amsterdam, it created five per cent. stock at four and a-half premium, that it might set free funds to purchase six per cent. stock at a discount of thirty or thirty-five per cent. It procured at five per cent. capital that enabled it to save eight per cent.

The sinking fund of 1790 was not called a sinking fund at the time, and strictly speaking, does not deserve the title. It was not a permanent appropriation, but a special appropriation of the revenues of a single year. It granted an indefinite surplus from a specific source, not a fixed sum from the general income. As surplus it was not inviolable, seeing it could be wiped out by extravagant legislation. On

the other hand, it appeared in a separate account, was under the control of special commissioners, and the income of the fund could be fed by loans. As these loans required eight per cent. to be set aside annually for extinguishing interest and principal, we have the complication of a sinking fund within a sinking fund.

In his report[1] of January 23, 1782, Hamilton, after announcing the success of the funding scheme, discusses the problem of amortization. The measures already taken indicate, he thinks, the intention of Congress to extinguish the debt as soon as possible. In pursuance of this intention Hamilton urges the establishment of a real sinking fund. The basis of such a fund would be the interest of such part of the debt, as should by purchase, payment, or otherwise, be acquired by the United States. This basis would be widened by a saving about to be effected in the foreign debt, and by the sales of public lands. Congress is therefore urged to adopt the principle, that all interest that shall lapse be set apart and appropriated, in the most firm and inviolable manner, as a fund for sinking the public debt. This fund should be placed under the control of the officials named for the direction of the former fund, and be by them applied to the purchase of the debt, until the annual income of the fund shall equal two per cent. of all the six per cent. stock; thenceforth to be applied to the redemption of the six per cent. stock. It is recommended to the consideration of Congress whether the sinking fund "ought not to be so vested, as to acquire the nature and quality of a *proprietary* trust, incapable of being diverted without a violation of the principles and sanctions of *property*."

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[1] Finance, Vol. I, p. 146.

Changes Made by the Law of 1792.

The report of Hamilton led to the act of May 8, 1792, making further provision for the public debt. This act increased the funds in the hands of the commissioners by adding to the unexpended portion of the surplus of 1790 two items:

1. All interest accruing on stock purchased, paid off, or in any way acquired, by the treasury.
2. The unapplied part of all moneys appropriated to pay the interest on the public debt.

The charges upon the yearly income of this enlarged and progressive sinking fund were as follows:

1. An appropriation of eight per cent. in favor of any loans made in behalf of the sinking fund.
2. Purchases of the various stocks in due proportions, unless the income of the fund should equal two per cent. of the whole body of outstanding six per cent. stock.
3. In that case there should be paid yearly two per cent. on the outstanding six per cent. stock.
4. If there was any residue it should be used in buying any remaining stock.

All future purchases were to be made at the lowest price in the open market, or by opening sealed proposals. The commissioners were required to render quarterly accounts for settlement, and to make a full and detailed report of their proceedings to Congress early in each session.

The act of 1792 introduced two features that made the redemption fund of 1790 a real sinking fund after the English model. It permitted the stock held by one branch of the administration to draw interest from the treasury. It pledged the interest inviolably, and thus bound the government to a policy of amor-

tizing, even if compelled at the same time to create new debt at higher interest. With all this the sinking fund of 1792 was far inferior in efficiency to that of Pitt, inasmuch as, beyond the annual interest on stock held, it had no permanent appropriation. The British sinking fund of that time, on the other hand, received besides interest an annual grant from the treasury of one million pounds.

As the act of 1792 made no distinct appropriation from current revenues to the discharge of the debt, the action of the sinking fund was too slight to exhibit results. The practical effect of the new law was to add to the redemption nest-egg—the surplus of 1790—the regular interest accruing on stock therewith purchased. After this, the reports of the commissioners showed two purchases of stock—one with money arising from foreign loans made under the act of 1790, and one with money received as interest under the law of 1792.

When the new law passed into effect there stood to the credit of the commissioners government securities to the amount of $1,456,743. On these there would yearly accrue in interest $37,465. The annual interest account, therefore, the sole certain resource of the sinking fund, amounted then to less than $38,000, while aside from purchases, actual redemption of the debt could not begin till the income of the fund reached two per cent. of the outstanding six per cent. stock, that is, nearly $600,000. At this rate, unless greatly aided by the stubs of interest appropriations, the fund would not really redeem any part of the debt within a life time. So inadequate was the sinking fund to do aught but make occasional slight purchases of securities, that Congress at the next

session attacked in earnest the problem of debt reduction, and directed Hamilton to report a plan.

In December, 1792, Hamilton reported his plan The surplus of present revenues should, he thought, be devoted to contingencies, to buying stock, or to paying interest on the deferred 6 per cents. when, in 1802,they,too,should begin drawing interest. There remain but three methods of raising the $600,000 that constituted the two per cent. legally payable on the six per cent.stock : by loans alone,by taxes alone, or by a combination of these two. The first would be nothing but conversion and would effect nothing, unless the new loan could be placed at a lower rate than six per cent. The second method would put too severe a strain upon the revenue machinery. The third method, then, seemed the wisest. The combination of loans and taxes might assume different forms. Just sufficient taxes might be laid to meet the interest on the annual loan for redeeming the six per cent. stock, or such taxes might be laid as would suffice not only to pay the interest, but also to discharge the principal of the loan within a short and definite term. The latter plan commended itself to the secretary. Accordingly he elaborated an exceedingly complicated and intricate fiscal apparatus, by which the yearly imposition of $100,000 or more of new taxes should enable the government to redeem, by 1802, $5,500,000, and have on hand at that time an annual fund of $1,200,000 for further redemption, and for the $800,000 of interest on the deferred stock that should begin in 1802. The plan was very ingenious, but was never favored by Congress.

Complications.

An interesting chapter of politics arose out of the loans in behalf of the sinking fund. We have already seen how, by the two great financial measures of August, 1790, foreign loans to the amount of $14,000,000 were authorized, $12,000,000 to be devoted to the service of the existing foreign debt, and $2,000,000 to the purchases of the sinking fund. Hamilton strove to keep these loans separate, but found it impracticable. He therefore abandoned the attempt to keep the loans distinct, and issued stock upon the general authority of the two acts of Congress. Under these acts there were floated in Holland, between 1790 and 1794, no less than seven loans yielding $9,400,000 and payable in eleven to fifteen years. Of these funds about three millions[1] crossed the Atlantic and was swallowed up in the expenditures of a government, which had not yet succeeded in living within its income. The Indian war, the Whiskey rebellion, the hostile attitude of England, and the tribute to Algiers caused alarming deficiencies in the receipts. Under these circumstances the large sums drawn from abroad, though legally applicable only to the purchases of the sinking fund, were withheld and used for current expenses.

We find, therefore, that the results of the sinking fund were far inferior to what was expected and provided for. Up to April, 1795, at which time a new sinking fund had been formed, there had been expended by the commissioners besides the $226,263 of interest, that had accrued on stock held by them, only $1 392,672, being but $18,036 more than the surplus revenue of 1790, that had constituted the nucleus

[1] Hamilton's "Works," Vol. II, p. 438.

of the former sinking fund. After every allowance is made there remains $1,604,252 of the fund brought from abroad still unaccounted for, so far as the sinking fund is concerned, although the money was always brought in ostensibly for its use. It is not necessary to recount how the complications that Hamilton permitted to creep into the accounts resulted in attacks, charges, and an investigation. The fate of the loans on behalf of the sinking fund, however, emphasizes the fact that, despite the sinking fund, the government was creating debt considerably faster than it was cancelling debt.

By a statement of April, 1795, it appears that the commissioners had bought $2,307,661 of the three kinds of government stock with $1,618,936 of cash — an average price of 70. Besides this the commissioners had $209,426 of interest-bearing certificates representing a debt to French officers that the treasury had paid off, $151,640 of stock paid in by the state of Pennsylvania for a tract of land on Lake Erie, and $34,753 of stock paid in by individuals. Altogether there was $2,703,481 of stock on which the commissioners of the sinking fund drew interest from the treasury.

Before taking the next step let us pause and review briefly the whole financial legislation from the beginning of the government, as presented in Hamilton's final "Report on the Public Credit." He considers it under three heads :

1. The revenues established.

2. The provisions for funding the debt and paying the interest.

3. The provisions for extinguishing the domestic debt.

According to Hamilton's *resumè* the current revenues were derived from imports, tonnage, spirits, postage, patent fees, dividends of bank stock, snuff, sugar, auction sales, licenses and carriages. Of these, the first three were permanently pledged to the payment of interest on the public debt as long as it should last. The fourth and fifth were indefinite, the sixth source would remain as long as the government owned bank stock, and the rest were all temporary, expiring with the Congress that established them.

The three permanent taxes were charged in regular order with :

1. The current expenses up to $600,000.
2. The interest on the foreign debt.
3. The interest on the original domestic debt as funded.
4. The state debts assumed.
5. The balances to creditor states.

After satisfying these charges any surplus of the duty on spirits was permanently appropriated to the reduction of the debt. The surplus of the other two duties had no such ultimate appropriation.

From the eight laws reviewed by Hamilton it appears that legislation had devoted to the extinction of the debt:

1. The surplus of 1790 ($1,374,636).
2. The proceeds of all sales of Western lands.
3. A loan not to exceed two millions.
4. The unappropriated surplus of the duties on spirits.
5. The interest on any government stock acquired by the Treasury—except 8 per cent. on all sums borrowed under (3).

6. The surplus of any interest appropriation.

7. Certain special appropriations—those, namely, for that part of the debt owed to the United States Bank, ($1,400,000). Of these, all but the last item were under the control of the commissioners of the sinking fund.

As we have shown, despite all these elaborate and ambitious provisions, very little had been done. Hence, when Congress met in the session of 1794–5, the conviction was general that something really effective must be done to reduce the debt. The President, in his address to Congress observed, that the time had come "for a definitive plan for the redemption of the Public Debt." He urged Congress to "consummate this work without delay. Nothing can more promote the permanent welfare of the nation, and nothing would be more grateful to our constituents," and "we ought to prevent that progressive accumulation of debt which must ultimately endanger all governments."

The problems now confronting Congress required:

(1). That the twenty-seven millions of six per cent. stock be redeemed at the yearly rate permitted by the terms of contract, viz., two dollars on every hundred;

(2). That the $1,400,000 still owed to the United States Bank, due in seven annual instalments, be paid as it fell due;

(3). That the interest that should begin to accrue in 1801 on nearly fifteen millions of deferred six per cents be provided for;

(4). That in 1802, after the last instalment of the bank debt had been paid, there should begin the redemption of this deferred stock at the rate of two per cent. annually.

Such was the task to which Congress addressed itself. It was unanimously resolved to "put an end to that clamor which the durability of the debt has excited" by "making provision for the reduction of the debt," and attempting "honestly to provide an efficient sinking fund." It was while engaged in this task that Hamilton, on the eve of retirement, submitted, in perhaps the most brilliant of his state papers—his final "Report on the Public Credit"—a skillful and elaborate plan of debt reduction. So able was his review of the situation and so lucid and telling his reasoning, that his plan was adopted almost without change, and embodied in the act of March 3, 1795.

The Sinking Fund of 1795.

This act was a wide-reaching measure, disposing of the surplus revenues of the country for over a quarter of a century, and making final and definitive provision for $46,000,000 of the debt,—something over three-fifths of the whole. It greatly enlarged the province of the sinking fund commissioners, and made great additions to their appropriation, which now for the first time received the name of "Sinking Fund."

The salient provisions of this act were as follows:

It had been from the first the rule of the custom house to accept for duties over fifty dollars a revenue bond running from four to twenty-four months. But this easing of importers by the granting of credits, resulted in supplying the treasury with bonds instead of cash. It therefore become necessary to anticipate the maturing of these bonds by making short loans from year to year. This had previously been within

the province of the Secretary of the Treasury. By the new law the commissioners of the sinking fund were empowered to borrow a sum not exceeding $100,000 annually, in anticipation of the revenue. These loans were always supposed to be made in behalf of the interest of the public debt, and to anticipate revenue devoted to that purpose.

The sinking fund was now enlarged by the following additional appropriations:

1. So much of the permanent duties as, with existing income, should enable the commissioners to pay, in 1796 and thereafter, a yearly two per cent. of the six per cent. stock.[1]

2. The surplus dividends on the government $2,000,000 of United States Bank stock after deducting the interest accruing on the remnant of the bank loan.

3. So much of the permanent duties as, with the surplus dividends, should suffice to pay a yearly $200,000 on the bank loan, till 1802, and then begin the redemption of the deferred stock.

4. The proceeds of the sale of public lands.

5. The proceeds of debts inherited from the old government.

6. All revenue surpluses of any year remaining unappropriated during the next session of Congress.

These appropriations were to continue until the entire existing domestic debt of the nation, as well as loans in aid of it, should be totally extinguished. The sinking fund thus constituted was, on the faith of the United States pledged and inviolably vested, in trust, in the commissioners, for the redemption of

[1] Except balances to creditor states. This restriction was removed April, 1796.

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the public debt. Its resources could not be diverted to any other object till the only outstanding debt was the three per cent. stock. Then Congress might use the money as it saw fit.

The commissioners held the resources of the sinking fund as a proprietary trust clothed with the sanctions of private property. They superintended all payments on behalf of the principal of the debt. In order that the apparatus for amortization might be complete and independent of external aid, the commissioners were clothed with authority to make loans needful for carrying out its tasks.

The act contained another provision worthy of notice. Although heavy instalments were soon to fall due on the Dutch debt, no authority was given to the commissioners to pay them. This was owing to the hope that the treasury might be relieved of the payments abroad. This act of 1795 ordered that new stock be offered to foreign creditors in exchange for the old. This new stock bore interest one-half per cent. higher than the old, and payable in the United States. The principal was redeemable at the option of the government. It was confidently expected that the plan of conversion would succeed, and the treasury would thus be relieved sufficiently to carry out the project of redeeming the home debt.

The sinking fund of 1795 was the most rigid that could be devised. The law sought to fix the policy in regard to the debt for many years to come. In his next report Secretary Walcott observed that "As the injunctions of the law upon the commissioners of the sinking fund are unconditional, and as permanent funds have been invested and appropriated, it is conceived that a successive reimbursement annu-

ally of the debt . . . . has become an irrevocable stipulation with the creditors."

With the close of this review of Hamilton's financial system it may be well to inquire how far Hamilton and his party were influenced by the erroneous ideas that at this time ruled in English finance. It is just here that a political controversy has raged. The Federalist writers have eagerly sought to show that our early fiscal history was uninfluenced by a theory, afterwards so ignominiously abandoned.

Mr. Henry C. Lodge says of the sinking fund :

> This was nothing more than the ordinary sinking fund as it is used and understood at the present day, not only in all civilized governments, but in innumerable corporations. It was merely a plan for actual savings to be applied to the extinction of debt. But coming at a time when Pitt used sinking fund as a term to conjure with, and by ingenious calculations of the rate of interest was perfecting a juggle, which served to blind a whole generation of Englishmen and which actually led them to believe that debts could be extinguished, not by payment, but by further borrowing, this arrangement is interesting from its business-like simplicity and sense. There was nothing of Pitt's ingenuity about Hamilton's plan. For him the sinking fund was a convenient business device, nothing more. He had too keen a mind to be deceived himself, and he had no wish to confuse and befool others. . . . . He put forth his scheme of funding and sinking not as the incantations of an enchanter by which debts could be paid without saving but as business-like arrangements . . . .[1]

This comparison of Pitt and Hamilton seems hardly just to the former. Pitt's sinking fund was by no means the piece of pure folly that people imagined. It started with a clear surplus and, though over-intricate, would have done well enough if war had not broken out in 1793. It was in refusing to suspend it then that the great mistake was made. But this mistake would not have been made, had not his sinking

[1] Lodge's "Life of Hamilton," p. 93.

fund been founded with wrong notions as to its nature, and vain hopes as to its efficacy,

But there are other errors besides those relating to the effectiveness of a sinking fund at compound interest which may lead to the mistake of keeping up amortization in borrowing times. Such a mistake may quite as well flow from over-hasty solicitude for the public credit, or from too tender a care for the lender, as from the compound-interest illusion. Certain it is, that Hamilton induced Congress to lock up the revenues as securely as possible against legislative discretion, or the demands of an emergency.

In his "Reports," Hamilton recommends the maxim, that "the creation of debt should always be accompanied with the means of extinguishment." In a note he refers to Pitt's one per cent. sinking fund of 1792-98, and adds, "Let the United States never have to regret hereafter that they postponed too long so provident a precaution." Further he recommends an inviolable application of the fund, suggesting that it be "clothed with the character of private property" and its application be made "a part of the contract with the creditors." "Experience has shown . . . that a simple appropriation to the sinking fund is not a complete barrier against its being diverted when immediate exigencies press. This indicates the utility of endeavoring by additional sanctions to give inviolability to the fund."

The sinking fund as "the essential basis of credit" must be maintained even in deficit periods, for "the emergencies which induce a diversion of the fund are those in which loans, and consequently credit, are most needed." On this Professor H. C. Adams pithily remarks: "It is an error to say that public

credit is dependent upon maintaining inviolable payments; it depends rather on simplicity in public accounts and upon energy, on the part of the administration, in the prosecution of whatever purpose it undertakes."[1]

Mr. Henry Adams, in his "Life of Gallatin," summarizes Hamilton's work:

"Adhering more or less closely to the English financial theories then in vogue, he had intentionally constructed a somewhat elaborate fabric, of which a considerable national debt was the foundation.[2] . . . . One of the several English ideas adopted by Mr. Hamilton from Mr. Pitt was a sinking fund apparatus. Even at that time of Mr. Pitt's supreme authority it can hardly be conceived that any one really believed a sinking fund to be effective so long as a government's expenditure exceeded its income; it was, however, certainly the fashion to affect a belief in its efficacy at all times and although, if Mr. Pitt and Mr. Hamilton had been pressed on the subject, they might perhaps have agreed that a sinking fund was always expensive and never efficient except when there was a surplus, they would in the end have fallen back on the theory that it inspired confidence in ultimate payment of the debt. Their opponents would not unnaturally consider it to be a mere fraud designed to cover and conceal the true situation.[3] . . . . In theory Mr. Hamilton also was in favor of discharging the debt, and originated the machinery for doing so; that is to say, he originated the sinking fund machinery, or rather borrowed it from Mr. Pitt, although this financial juggle has now become, both in England and America, a monument of folly rather than of wisdom."[4]

Gallatin criticized "the mystifying and useless machinery, with which Mr. Hamilton, had in imitation of Mr. Pitt, encumbered the very simple subject of paying the debt," and declared that the appropriations subsequent to 1795 "do not seem to have produced any other effect than that of rendering still more complex a system in its nature sufficiently

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[1] "Public Debts", p. 265.
[2] "Life of Gallatin", p. 167.
[3] "Life of Gallatin", p. 173.
[4] "Life of Gallatin", p. 174.

intricate." Upon the strength of Gallatin's criticism Randolph, in a report of the ways and means committee, alleged that "no effectual provision for the final redemption of the whole present debt of the United States does at this time exist," and added the sneer, "To the measures which have already been adopted in relation to this subject, their complexity forms an objection inferior only to their insufficiency."

With the weight of authority backing up conclusion from the facts it would seem no longer possible to deny that our early finance was too much influenced by English precedent.

Let us see what grounds there were, in 1802, for Gallatin's severe criticism upon the structure reared by the hands of Hamilton. The main object of the law of 1795 was to secure the regular payment of the six per cent. and deferred stocks. By this law they were virtually converted into a terminable eight per cent. annuity, expiring in twenty-three years from the first payment. Agreeably to this idea no distinction was made between the interest account and that of the principal. The regular dividend of 1½ per cent. on the nominal capital was paid on the last day of March, June and September, and 3½ per cent. on the last day of each year.

To liberate the revenue for this purpose it was the intent of the law, as we have seen, to convert the Dutch debt into home debt by offering an increase of ½ per cent. in the rate of interest. By this operation would be made optional the redemption of over $14,000,000 then approaching maturity, and the amortization of the 6 per cents. could proceed according to plan.

The efforts of Wolcott to convert the balance of the debt to France were successful, and $1,848,900 of 5 per cent. stock, and $176,000 of 4 per cent. stock were converted into equal amounts of domestic stock, known as the "5½'s" and "4½'s" of 1795. The rest of the foreign debt was due to the Dutch capitalists in Amsterdam and Antwerp. These declined to exchange their nearly matured stock for new domestic debt, so the project failed. Thus the first defect in the plan of 1795 was, that the government found itself compelled to provide, according to contract, for the payment during the next fifteen years of $12,200,000 not contemplated in the plan.

Another unforeseen difficulty arose in 1796. We have seen that the sinking fund was charged for seven years with an annual $200,000 on account of the subscription loan from the United States Bank. But there were other bank loans unprovided for, viz., temporary loans in anticipation of the revenue tied up in revenue bonds. These were of three kinds: loans for current expenses, loans by the commissioners for the interest on the public debt, and loans, funded on the revenues, for specific purposes, such as the Indian war, the ransom and tribute to Algiers, and the Whiskey insurrection. For most of these loans were pledged the actual revenues of the current year, when they should fall due the next year. But as next year's taxes were likewise tied up from next year's needs, the pledged taxes, when they finally *did* reach the treasury, were all absorbed in current expenses. So the temporary bank loans once made were constantly renewed, until, on January 1, 1796, they amounted to $6,200,000. As by its heavy accommodations ($6,000,000) the United States Bank

had parted with two-thirds of its capital, and seriously crippled its operations, it pressed for payment of its loans as they fell due. Thus one year after "permanent and effective provision" had been made for the debts of the United States, the commissioners were embarassed by a call for $400,000 from Holland, and one for $4,600,000 from the United States Bank. These constituted an unlooked-for demand of $5,000,000.

To meet the emergency the commissioners were authorized to borrow to the extent of $5,000,000. For this they were to issue funded 6 per cent. stock, not redeemable before 1819. For its redemption were pledged the funds to be released by the extinction of the old 6 per cent. stock in 1818. In case they saw fit the commissioners were allowed as a final resource to sell the shares of the United States Bank, held by the government.

The delay of an opposition Congress, both in laying new taxes and in funding the floating debt, had greatly injured the credit of the country. When the commissioners essayed to place the $5,000,000 loan the stock found few purchasers and the attempt proved abortive. The market was already loaded with stock, and after several months only $80,000 had been taken, for which $70,000 was received.

Finally part of the United States Bank stock held by the government was sold. This was a serious invasion of the sinking fund, seeing that one of its resources was dividend on bank stock. Hamilton denounced it as an infatuated step, and a fatal invasion of the system for paying the debt. Wolcott, too, opposed it, but necessity compelled. Accordingly 2,780 $400-shares of bank stock were sold at 25

per cent. premium, yielding $1,384,260. This sum afforded such relief as permitted a postponement of the balance, which was subsequently paid out of current revenues. As to the $400,000 due Holland, the government was enabled to pay it by an unexpected increase of the revenue.

By these means the commissioners were tided over the difficulties of 1796. But the experience had served to show the defects in the system, and in his report of December, 1796, Secretary Wolcott called for an additional yearly million and a quarter to carry out the plan of redeeming the debt. He suggested a direct tax on the states, but the proposal was rejected, and Congress laid additional duties for the payment of the Dutch debt and the bank loans. At the same time, an act was passed authorizing the receipt of evidences of public debt in payment of land in the Northwest.

Though these measures were inadequate, the year 1797 was a prosperous year, and $1,627,414 of the regular revenues was expended in reducing the debt. Had it not been for the defensive measures occasioned by the hostile attitude of France, the great era of debt payment might have dated from this year instead of from 1801.

Likewise in 1798 the revenues were prolific, and with ordinary expenditures there would have been a large surplus for the debt. But the war appropriations obliterated this margin and went far beyond. It was decided to lay a direct tax of $2,000,000 on the states, and the President was authorized to raise a tax-loan of two millions in anticipation of this amount. Another loan for $5,000,000 was authorized reimbursable after fifteen years. For its service was

pledged the surplus of import and tonnage duties beyond the permanent appropriation charged thereon, and the faith of the United States was pledged to make up any deficiency. The President was furthermore authorized to add vessels to the navy and issue as payment six per cent. stock redeemable at pleasure. By this authority there was issued in 1799, $711,700 of this stock, known in our financial history as the "navy six per cents."

When the $5,000,000 loan came to be filled, it was found that the traditional rate of six per cent. was too low for placement at par. Accordingly eight per cent. was offered and the loan was filled at this rate. But this brought to light the danger lurking in Hamilton's policy of rigid amortization. The very year the eight per cent. stock was issued, the commissioners expended $638,000 on behalf of the principal of the six per cents. The interest loss occasioned by this one amortization was therefore $12,760 a year during the whole period of the eight per cents. A similar loss would be shown on each of the subsequent payments that redeemed 6 per cents, when 8 per cents might have been amortized.

On February 28, 1800, the committee on ways and means announced a probable deficit for that year of $3,500,000. A new loan for this amount was accordingly recommended. In a later report the committee brought forward a plan for sinking this loan and the $5,000,000 loan of the preceding year. At eight per cent. the annual interest charge would be $680,000. Besides this there should be provided a sinking fund sufficient for a yearly payment of two per cent. on the principal. This would call for $170,000. As the term of the $5,000,000 loan, how-

ever, forbade any reimbursement for ten years, it was proposed to apply the annuity for ten years to the general purchase of the public debt. The plan, therefore, contemplated a sinking fund payment of $170,000 for ten years, and then a ten per cent. annuity terminable in fourteen years. This extreme anxiety to begin amortizing a loan at its very creation shows the influence of Pitt's sinking fund of 1792.

In accordance with these recommendations Congress authorized a loan for $3,500,000, reimbursable after fifteen years. Under this authority $1,481,700 of eight per cent. stock was issued, for which was received $1,565,229, being a premium of $83,529, or nearly five and three-quarters per cent. Thus, as will be explained in Chapter III,[1] the annual interest included a small sinking fund payment. To raise the annual $850,000 planned by the committee, additional revenues to that amount were provided by the revenue act of May 13, 1800, and were exclusively appropriated to the discharging of the interest and principal of the public debt "heretofore contracted, or to be contracted, during the present year."

This closes the chapter of Federalist financiering. Our next task is to show how the Federalist system was criticised and mended by financiers of another school.

The year 1801 saw the consummation of a political revolution that established in power a party pledged to the payment of the debt. Jefferson later declared that his administration made all other objects subordinate to this, and his finance minister, Gallatin, replied that "the reduction of the debt was certainly the principal object in bringing me into office."[2]

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[1] Page 101.

[2] Adams' "Life of Gallatin", p. 270.

The new secretary brought to his task views different from those heretofore ruling in our financial policy. The divergence appears clearly in the debate of January, 1800. In a passage alluding to England, Mr. Harper said:

"Her present minister, at the commencement of his administration in 1783, established a permanent sinking fund, which now produces very great effects; he also introduced a maxim of infinite importance in finance which he has steadily adhered to, that whenever a new loan is made the means shall be provided not only of paying the interest, but of effecting a gradual extinction of the principal." . . . . "These ideas, profiting by the example of England, we have adopted and are now practicing on. We have provided a fund which is now in constant operation, for the extinguishment of our debt. This fund will extinguish the foreign debt in nine years from now, and the six per cent., a large part of our domestic debt, in eighteen years. I trust we shall adhere to this plan, and whenever we are compelled by the exigency of our affairs to make a loan, by providing also for its timely extinguishment, we may always avoid an inconvenient or burdensome accumulation of debt."

Mr. Gallatin, in reply, laid down a principle not acknowledged by English statesmen till Hamilton's *exposé* in 1813.

. . . . "I know but one way that a nation has of paying her debts, and that is precisely the same which individuals practice, 'spend *less* than you receive,' and you may then apply the surplus of your receipts to the discharge of your debts. But if you spend *more* than you receive, you may have recourse to sinking funds, you may modify them as you please, you may render your accounts extremely complex, you may give a scientific appearance to additions and substractions, you must still necessarily increase your debt. If you spend more than you receive, the difference must be supplied by loans; and if out of these receipts you have set a sum apart to pay your debts, if you have so mortgaged or disposed of that sum that you cannot apply it to your useful expenditure, you must borrow so much more in order to meet your expenditure. If your revenue is nine millions of dollars and your expenditure fourteen, you must borrow, you must create a new debt of five millions. But if two millions of that revenue are, under the name of sinking fund, applicable to the payment of the principal of an old

debt, and pledged for it, then the portion of your current revenues applicable to discharging your current expenditures of fourteen millions is reduced to seven millions; and instead of borrowing five millions you must borrow seven; you create a new debt of seven millions, and you pay an old debt of two. It is still the same increase of five millions of debt. The only difference that is produced arises from the relative price you pay for the old debt and the rate of interest you pay for the new. At present we pay yearly a part of a domestic debt bearing six per cent. interest, and of a foreign debt bearing four or five per cent. interest; and we may pay both of them at par. At the same time we are obliged to borrow at the rate of eight per cent. At present, therefore, that nominal sinking fund increases our debt, or at least the annual interest payable on our debt."[1] . . . .

It may be asked why, if Gallatin saw through the sinking fund illusion, did he adopt the sinking fund machinery into his system? The answer is given in his own words. He says of debt payment:

"As to the forms adopted for attaining that object, they are of quite subordinate importance. Mr. Hamilton adopted those which had been introduced in England by Mr. Pitt, the apparatus of commissioners of the sinking fund, in whom were vested the redeemed portion of the debt, which I considered as entirely useless, but could not as Secretary of the Treasury attack in front, as they were viewed as a check on that officer, and because, owing to the prejudices of the time, the attempt would have been represented as impairing the plan already adopted for the payment of the debt. I only tried to simplify the forms, and this was the object of my letter[2] to the committee on the ways and means. The injury which Mr. Pitt's plan did was to divert public attention from the only possible mode of paying a debt, viz., a surplus of receipts over expenditures, and to inspire the absurd belief that there was some mysterious property attached to a sinking fund which would enable a nation to pay a debt without the *sine qua non* condition of a surplus. . . . . But the only injury done here by the provisions respecting the commissioners of the sinking fund, and by certain specific appropriations connected with the subject, was to render it more complex, and to make the accounts of the public debt less perspicuous and intelligible. Substantially they did neither good nor harm. The payments for the public debt and its redemption were

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[1] Adams' Gallatin, p. 229.

[2] Finance, Vol. I, p. 746.

not in the slightest degree affected, either one way or the other, by the existence of the commissioners of the sinking fund, or by the repeal of the laws in reference to them. The laws making permanent appropriations were much more important. Even with respect to these it is obvious that they must also have become nugatory whenever the expenditure exceeded the income. Still they were undoubtedly useful by their tendency to check the public expenses."[1]

So much for criticism of general policy. In his above mentioned letter Gallatin presented the case against the existing situation.

There existed at this time as a vested and inviolable fund only the appropriations of March 3, 1795. This fund provided regularly for an eight per cent. annuity on the six per cent. stock. After this payment had been taken out there remained for the Dutch debt, four and a half per cent. stock, five and a half per cent. stock, $80,000 of six per cent. stock, and bank loans, only the surplus of revenues and the receipts from public lands. The former had so far yielded nothing and could not be looked upon as a sure and inviolable source, as long as Congress had power utterly to defeat this provision by heavy appropriations for other objects. The latter item, estimated at $400,000 a year, though applicable to any part of the public debt (except the eight per cent. stock and navy sixes) not already provided for, was totally inadequate even for the Dutch debt. It is true additional duties had been imposed in 1797 for these purposes, but they would not yield over $500,000 yearly, while for six years yet, the Dutch debt alone would require an average of $1,600,000. Without better provision the Dutch instalments would continue, in the future, as in the past, to be paid hap-hazard and without authority.

[1] Adams' Gallatin, p. 296.

There were in fact several enactments, since 1795, providing for the Dutch debt, the bank loans, and the $7,271,900 of new stock, but this supplementary legislation was not engrafted upon the original plan. The auxiliary resources were not a part of the sinking fund, were not vested in the commissioners, nor pledged on the faith of the United States, and were, therefore, repealable at will of Congress without breach of contract with the public creditors. Such legislation, thought Gallatin, could not be held to be part of a permanent provision for redeeming the public debt. Moreover, these appropriations, not being accompanied by an imperative clause directing payment, enjoyed no priority over appropriations for current expenses. All alike rested on moneys in the treasury, and, if any must go unsatisfied, the choice lay with the Secretary of the Treasury. A hostile secretary might favor other appropriations and thus defeat the provision made by Congress for the redemption of the debt. In view of these facts Secretary Gallatin pronounced the existing provisions for the public debt not only intricate, difficult of execution, uncertain in amount, and dependent on the will of the legislature, but even inadequate and precarious.

The Sinking Fund of 1802.

To remedy these defects Gallatin made recommendations which were embodied in the law of April 29, 1802. The object of this law was to make as secure a provision for the whole public debt, as the law of 1795 had made for the six per cent. and deferred stocks. It reorganized the sinking fund by adding to it: (1) The funds appropriated for inter-

est on the debt; (2) enough of the revenues to bring the whole up to $7,300,000.

An annual payment of $7,300,000 was vested in the commissioners of the sinking fund for the entire debt service. All payments on account of the debt in the way of interest, contingent charges, or reimbursement, were under the superintendence of the commissioners. These were to be made in the following order:

First, Those payable from the old sinking fund.

Second, The interest and charges on the present debt, or on future loans on behalf of the debt.

Third, Instalments due on existing debt.

Fourth, Purchases of existing debt.

The commissioners were empowered to distribute the burden of the Dutch debt more evenly over the eight years following by short reloans, and were directed to apply the sum thereby disengaged to redeeming the domestic debt.

This, then, is the gist of the enactment. After repealing the obnoxious internal duties, the annual revenue was estimated at $9,950,000. The annual expenses, with close economy, were put at $2,650,000. This left $7,300,000. This was but little above the $7,000,000 actually required for the years 1802–3–4, when the heaviest instalments of the Dutch debt were to fall due. A like sum, though not required, could still be profitably applied until the year 1810, by paying off minor stocks such as the four and a-half's, five and a-half's, navy sixes, bank loans, and eight's. After 1810 so large a sinking fund could be used only by buying three's on the market. The law of 1802, then, signified the resolve to continue the burden required for the next three

years, until the national debt should be fully paid. But it signified more. In 1802, under the existing law there would eventually have been carried to the sinking fund a clear surplus of $1,200,000. And so, perhaps, for succeeding years. But this annual surplus was, as we have seen, a precarious thing affording no security to the public creditor, because contingent upon government expenses. This uncertainty the law of 1802 remedied by anticipating the surplus, and setting it apart to the sinking fund in advance of all budgetary appropriations.[1] Hereafter all payments for the debt up to $7,300,000 were to enjoy a priority over current expenditures. The government must support itself on the leavings of the sinking fund.

The act of 1802 was strictly supplementary to the plan of amortization adopted in 1795. It simplified the existing system by rolling into one the batch of special assets; it enlarged it by adding about $1,200,-000 to its certain income; it modified it by turning the interest appropriations into the sinking fund, at the same time charging that fund with the entire debt service. But not a single resource of the old fund was deranged or altered.[2]

Owing to the productiveness of the revenues, the redemption of the debt was not checked by the necessity of providing for the $11,250,000 of six per cent. stock created for the Louisiana purchase. The sinking fund was, in 1804, enlarged to $8,000,000 and charged with $700,000 of new interest.

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[1]The civil list, however, had always a first lien on the revenue for $600,000.

[2]This same year one of the items constituting the old sinking fund lapsed, owing to sale of the bank stock.

In 1806, owing to certain abuses in the land offices, Congress repealed the old device of raising the value of government stocks by accepting them in payment for public land. At the same time the sinking fund commissioners were freed from certain hampering restrictions regarding time and manner of purchasing the public debt, while the limiting par value of three per cents was fixed at sixty.

From 1802 the revenues constantly exceeded estimates, and, with an overflowing treasury, the payment of the debt proceeded with unprecedented rapidity. The eight million sinking fund was further enlarged by surpluses, so that the payments on the principal of the debt rose from about $3,207,000 in 1804, to $3,905,000 in 1805; to $4,828,000 in 1806; to $3,729,000 in 1807; and to $6,986,000 in 1808. It was accordingly recommended by Gallatin, and authorized by the act of February 11, 1807, that the unredeemed portion of the sixes, existing in the form of eight per cent. annuities, be exchanged for a common six per cent. stock, redeemable at will. The three per cents also were to be converted at sixty-five into similar stock. The object of this scheme was to enable the sinking fund to continue its amortization without too free a resort to the stock market. The operation was only partially successful. $6,294,051.12 of "exchanged sixes" were issued, but only $11,859,850.70 of the "converted sixes." Later, as we shall see, a similar attempt was made, but with a different purpose.

The Embargo, the Non-Importation Act, and the disturbance of commerce by foreign restrictions, shrunk the receipts frightfully in 1808, 1809, and 1810. It was even found necessary, in order to

maintain the sinking fund intact, to authorize, in 1810, a temporary loan from the United States Bank of $2,750,000. The debt made and the debt paid were both at six per cent., so the transaction was merely nominal. The new debt was charged upon the sinking fund, and was paid off the next year. The operation was in effect a partial suspension of amortization for one year.

In his report at the close of 1811, Gallatin reviews the amortization since 1801. As the treasury was now closing a debt-paying period and entering upon a debt-creating period, it may be well to look back over the fiscal operations, and note what impression had been made on the debt. The inherited debt and accrued interest to 1791 amounted, when funded, to $76,781,953.14. The Federalists in ten years reduced this to $72,733,599, but added $7,193,400 of new stock, mostly at eight per cent., thus bequeathing a burden of $79,926,999 to their successors. Of this, Gallatin's sinking fund extinguished $46,022,810 between 1801 and 1811. The purchase of Louisiana, however, added $11,250,000 to the principal, so that on January 1, 1812, the public debt was $45,154,189, over thirty-one millions less than the original Revolutionary debt.

In 1801 there were twelve species of stock outstanding. Eleven years later there were only five kinds at two rates of interest, viz.: three per cent. and six per cent. From 1801 to 1812, the regular application of $8,000,000 to the debt had been threatened, first with dearth of redeemable stock, and later with dearth of revenue, but each crisis had been met, so that the operations of the sinking fund had continued uninterrupted. The debt yet outstanding consisted

chiefly of the eight per cent. annuities, the practically irredeemable three's, and the Louisiana stock not payable till 1818. If no more debt were created, there could be applied yearly till 1818 only $3,792,382 all told. The remaining $4,200,000 of the sinking fund was not applicable to the debt, unless public stock fell below a certain par fixed by the act of 1806. As long as this untoward event did not occur, the surplus of the sinking fund was, by the law of 1802, available for current expenses. Should it occur, the government would be obliged to revert to the costly practice of buying stock and placing stock in the same market at the same time.

The Sinking Fund during the War.

The war measures of 1812 included a loan of eleven millions charged upon the sinking fund, an issue of treasury notes at five and two-fifths per cent. interest constituting a secondary charge on the sinking fund, and a project to release the sinking fund from the $1,570,000 annually due on the principal of the eight per cent. annuities. As formerly, so now, the idea was to convert the unpaid principal of these annuities into six per cent. stock. Had the project succeeded the emancipation of the sinking fund from the old debt would have been complete. As it was only about three millions were exchanged, that is, less than one-fifth of the whole.

There was paid out of the sinking fund during 1812 $4,710,954.39, of which $2,259,681 was applied to principal of debt. The balance of the eight million appropriation was applicable to the demands of the next year. In 1813 there was paid out on account of the sinking fund over eleven millions, used mainly

for redemption of treasury notes, repayment of temporary loans, and interest on the new war loans. Purchases of stock amounting to $412,497 were also made. In 1814 the sum expended for old debt, interest of new debt, temporary loans, and treasury notes, was $8,386,880. Of this, not over $1,475,000 was in payment of old debt. The sinking fund, then, may be reckoned to have cost the government very little during the war, thanks to the happy device of charging upon the sinking fund each year the payment of some millions of treasury notes and temporary loans. On this matter Professor H. C. Adams remarks:

"During the continuance of the war there was no redemption of permanent indebtedness, except such as had been entailed by the law of 1795. We find, in the financial administration of this war, no application of the pernicious theory that every loan should be accompanied by the means of its own extinction."[1]

Meanwhile, war debt was being rapidly piled up on the sinking fund. On December 31, 1815, the debt was estimated as follows:

Old debt remaining	$ 39,905,183.66
Funded war debt	49,780,322.13
Treasury notes	18,452,800.00
Temporary loans	550,000.00
Total burden on the sinking fund	$108,688,305.79

The sinking fund was at that time composed of

Interest on stock held by commissioners,	$1,969,577.64
Receipts from the public lands	800,000.00
From duties	5,230,422.36
Sinking fund	$8,000,000,00[2]

[1]"Public Debts," p. 268.

[2]Finance, Vol. II., p. 916.

On September 30, 1815, the total burden on the sinking fund had increased to $119,635,558.46.

All the loan acts of the war had contained a paragraph directing the commissioners to pay the interest and reimburse the principal when due, and to purchase the stock at or below par whenever they should see fit. The faith of the United States was invariably pledged to make up any deficiency in the appropriation for the debt. Owing to great financial stress and general failure of loans, the loan act of November 15, 1814, in addition to the above, gave the further assurance that special funds would be added to the sinking fund appropriation, during that session of Congress, for the loan then authorized, and that the sinking fund would be permanently increased, so as to extinguish the public debt.

Reorganization.

At the close of the war, it was evident to all that a sinking fund of $8,000,000 could never support the funded debt and, at the same time, discharge punctually the whole principal and interest of annual issues of treasury notes, amounting to eight or nine million dollars. The vigorous head of the treasury, therefore, proposed:

First—That the sinking fund be relieved of the treasury note debt by funding the notes;

Second—That the sinking fund be applied first to paying the old eight per cent. annuity;

Third—That it be applied next to discharge of the temporary loans of the war;

Fourth—That it be applied then to the interest on the war loans;

Fifth—That the surplus be applied in purchasing the war debt.

In the matter of funding the treasury note debt, Congress followed Dallas' advice. The act of March 3, 1815, authorized a loan of $18,452,800, that being the sum required to cover the outstanding notes. Under this authority, a loan for twelve millions was opened. Six per cent. stock to the amount of $12,288,147.56 was issued, which sufficed to absorb about $11,700,000 of treasury notes.

In his report of December, 1815, Dallas estimated that, with treasury notes and temporary loans out of the way, the regular charge on the sinking fund for interest and obligatory reimbursement of the old debt would be $7,660,000. This left only $340,000 annually applicable to the principal of the new war debt. This scale of reduction was evidently incommensurate with the national ability. So greatly had the debt risen that, in order to provide for it as generously as Gallatin's sinking fund of eight millions had provided for the eighty-five million debt of 1804, the annual appropriation must be increased to $10,500,000. Dallas, however, proposed to add but two millions to the existing appropriation. The sinking fund thus reorganized would extinguish the public debt in about eighteen years.

A year later, Secretary Crawford urged similar measures upon Congress. On these recommendations, the committee of ways and means submitted a report on January 14, 1817. They observed that the reorganization of the sinking fund had been deferred till the revenue system should receive a permanent form, and the peace footing should be determined. Meanwhile, no time had been lost, for the surplus revenues had been used in reducing the floating debt (arrearages of military expense), and re-

tiring the unfunded treasury notes. Including these classes of debt, the sum applied to amortization during 1816 was no less than $24,000,000, while a balance of ten millions remained in the treasury. The overflowing revenue, which made possible so large a reduction in one year demonstrated, to the satisfaction of the committee, that the resources of the nation were ample to effect within a reasonable length of time the extinguishment of the whole debt.

"As the numerous and often incongruous provisions of the present laws in relation to the sinking fund require a general revision," the committee reported certain propositions. They recommended a permanent sinking fund appropriation of $10,000,000, and proposed also an additional special appropriation for 1817 of $9,000,000, together with $4,000,000 more, to be considered as an advance on account of the regular payment of the succeeding year. This was in view of the ample revenues of 1817, and of the fact that there is a disadvantage in keeping idle in the treasury money destined to pay the principal of a debt. The committee urged the further appropriation to the sinking fund of all surpluses above $2,000,000.

In adding to the amount of the sinking fund, it appeared wise to simplify its operations. There was then standing on the books of the treasury and credited to commissioners of the sinking fund nearly $34,000,000 of stock of fourteen different descriptions, and bearing seven different rates of interest. On this stock interest was supposed regularly to accrue and to be paid, with no other effect than that of adding to the labors of those who wished to understand the accounts of the government. The

committee proposed, therefore, that all certificates of public debt, when redeemed, should be destroyed. It is true the proposed change would not effect the diminution of the debt, but "if the saving of trouble in making up the accounts be nothing, it is yet important that their state be such as to admit of being easily and generally understood, and that what is in itself plain should not be obscured by the introduction of a useless fiction."

The Sinking Fund of 1817.

The bill reported by the committee was passed. By the act of March 3, 1817, the government—after having withdrawn its circulating notes, liquidated its floating indebtedness, revised the revenue system and fixed the peace establishment—redeemed the promise given in the loan acts of the war. This time the reorganization of the sinking fund was far more radical than any former change. The first clause of the act repealed all previous acts of Congress making provision for the service of the debt. All the other enlargements had kept the existing fund as a nucleus and built up around it a new fund by additional appropriations. This act was the first act that swept away all previous make-up of the fund, and started with clear ground. It simply vested in the commissioners, for the service of the debt, an annual sum of ten millions from the permanent revenues of the government—import duties, internal taxes and public land sales. In addition to this fixed payment, there was appropriated for 1817 a sum of nine millions and, if deemed expedient by the Secretary of the Treasury, a further sum of four millions on the payment of 1818. Furthermore,

any yearly surplus above two millions was to be paid over to the commissioners.

The application of the sinking fund thus rehabilitated was to conform to the previous engagements with the public creditors. When in any year the sinking fund should exceed the sum directly applicable to the service of the debt, the surplus should be applied to the purchase of stock at the market price, providing it did not exceed the following: for threes 65, for sixes par, for sevens no higher in proportion than for the sixes. In time of war any surplus, beyond the payments on account of the debt called for by the public engagements, might be applied to the public service.

The act, furthermore, directed that all the accumulated certificates of stock, as well as those thereafter to be acquired, were to be cancelled or destroyed, and "no interest was to be considered as accruing on them."

In the redemption plan of 1817 the sinking fund reaches almost the extreme of simplicity. It is true the payment on behalf of the public debt still went to a separate account, and was payable in theory to a special board. But the cunning and complicated apparatus of Hamilton and the English financiers had been done away with. There was no fixed payment on account of the principal of the debt, no inviolable appropriation, no sinking fund composed of specific items of revenue, no contract with the creditors, no automatic purchasing machinery, no borrowing on behalf of the fund, no hoarding of paid off debt, and no payment of interest thereon. Simplicity and common sense had triumphed.

Unlike the earlier enactments of that of 1817 contained no limitation to existing debt, such as had so often spoiled the plans of redemption. The new sinking fund was not, however, applicable to the service of all the public indebtedness. Besides the temporary loans and treasury notes charged upon other appropriations, there were $7,000,000 of five per cent. stock exchanged for shares of the new United States Bank, of which the interest and principal would be more than defrayed, it was estimated, by the dividends, or by the sale of the shares ; and over four millions of non-interest bearing Mississippi stock, issued to meet the Yazoo claims, and charged upon the receipts from Mississippi lands. This left the burden on the sinking fund about one hundred and ten millions.

The history of the sinking fund of 1817 is not eventful. During 1817 there was applied to the debt $25,423,036.12, and in 1818 $21,296,306.04. But during the years following the sum applied to the debt, owing to the reaction from the prosperity of 1816, fell short by nearly twelve millions of the amount appropriated by law. The total deficiency of $3,000,000 for the first seven years was made up in following years. This deficiency was, however, partly due to the fact that most of the debt was not yet reimbursable, the twelve-year term of the war loans being yet unexpired. The application of money to the debt was, however, furthered by a clause in the bank act of 1816. This provided that $21,000,000 of the capital stock of the United States Bank might be subscribed in public stock, which the government should have the privilege of buying of the bank at the rate permitted by law.

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In the years 1825-1828 the war debt fell due. In 1822 and the years following three attempts had been made to refund a part of this debt at a lower rate, in order to save interest and to distribute the burden of payment of the four years over the three following years, when no part of the debt fell due. The attempts failed almost entirely, because the rate of interest (four and a-half per cent.) offered by the government was too low. As the debt was not thus distributed, the government adopted the plan of partial payments. From 1825 the redemption of the debt proceeded with great rapidity, so that by the close of 1834 the whole mass was practically extinguished. Small amounts of stock were still outstanding, but their payment was provided for. The duties of the commissioners of the sinking fund ceased, and the Secretary of the Treasury was charged with further payments on account of the debt.

This closes our chapter of experience with a permanent commission. Invented in an era of personal government, cabinet intrigue, and limited publicity, as a visible and imposing sign that the public faith was beyond the whim of a minister or the cavil of a creditor, it had no place or use in the system we developed. It was but a needless administrative appendix that, once imported, continued with us only by sufferance, and that a later debt epoch has not revived. With the modern budget and monthly debt statement, it needs no special board with separate accounts to enable the public to follow the course of amortization.

Debt Payment Between 1837 *and* 1862.

Between 1837 and 1862 lies a period of little fiscal interest, separating by a quarter of a century the

two great debt-paying epochs of our history. This period exhibits a series of fluctuations of expense, revenue and debt, too rapid to permit striking into any settled policy, such as prevailed during the eleven years after 1801 or the seventeen years following 1817.

After the crash of 1837 constant deficits led the government to issue treasury notes. Nothing was done for their redemption, so they were annually paid by new issues. At last these piled up till, in 1841, Congress was forced to fund them, and thus found a new public debt. As usual, the faith of the United States was pledged to the redemption of the new bonds. The next year the loan was extended and enlarged, and based in the old-fashioned way. So much of the import duties as should be necessary were pledged to pay the interest and redeem the stock. Under these acts $21,000,000 of funded debt were created.

When, in 1844, prosperity returned and a surplus appeared in the treasury, Secretary Bibb came forward with a plan for a sinking fund. From the midst of an extraordinary mass of platitudes, Bibb declares that excess of revenue above expenditure is the only real sinking fund, and that "the lessening of expense and the increase of revenue are the only means by which the sinking fund can be enlarged." After reviewing the history of our former debt payment, he suggests on annual appropriation of two millions for the debt service. At the same time, owing to the uncertain yield of the revenues, he favors the setting aside of casual surpluses rather than a fixed sum, and recommends the establishment of a sinking fund commission. The chief loans were to fall due in 1853 and 1863. The secretary, therefore, wants a sinking

fund adquate to pay the interest, "to purchase so much in each year of the principal, as shall be offered for sale at reasonable rates for certificates of stock, and to amount, in the succession of years which must elapse before they will be redeemable by the terms of contracts, to a sufficiency to pay the principal when the time for redemption shall arrive." The fault may lie in the syntax, but at first blush this sentence would seem to show that the secretary did not understand how uniform is the action of a combined sinking fund.

With the advent of the Mexican war came a new growth of debt. The loan act of 1847 authorized the issue of twenty-three millions of twenty-year stock. To the service of this loan were pledged the proceeds of all sales of public lands after January 1, 1848. The balance left after paying interest was to be used in buying bonds at their market value, if not above par. For purchase of the sixteen million loan of the next year the Secretary of the Treasury was authorized to use any surplus funds.

The excess from the sale of public lands set apart for reducing the stock of 1847, could not be used in buying stock above par. As the market price was above par, the funds had to lie idle in the treasury. Secretary Walker, therefore, sought and obtained authority to purchase at a premium. This was found, however, a dear way of sinking the debt. During 1851 and 1852 the average price paid for government bonds was 113, and the total sum expended in premiums was over $300,000. The Secretary of the Treasury accordingly suggested that, besides letting the surplus accumulate in the treasury, or buying stock with it at 113, there was still the third alternative of investing it in sound state securities, and

holding them as a sinking fund until the government could redeem its stock at par. Congress mindful of the fate of the Smithsonian fund declined to risk the public money in state bonds.

The Sinking Fund of 1862.

With the outbreak of the Civil war begins the final period of sinking fund history. In the earlier part of this period we find a return to Hamiltonian principles. Secretary Chase in his report of July 4, 1861, advocated the immediate establishment of a sinking fund for the expungement of the war loans. The fruit of his policy was the clause in the act of February 25, 1862.

This act, after authorizing a serious appeal to credit, undertook to establish the debt on a secure basis. The coin paid for duties on imports was to be applied, first, to the payment of interest on the bonds and notes of the United Stats. It was then to be applied "to the purchase or payment of one per centum of the entire debt . . . . to be made within each fiscal year, which is to be set apart as a sinking fund, and the interest of which shall in like manner be applied" . . . . The residue of customs receipts was to be paid into the treasury. The language of this act is plain. The provision was made part of a loan act and was to apply to future as well as to existing debt. In view of this, the words of a writer in the *Bankers' Magazine* seem warranted.

"It was a formal notice to all persons, who should loan to the government, of its future intention, and constitutes a contract as binding as any can be made between it and the persons who have loaned to the government since that date."[1]

[1]Vol. 40, p. 725.

Notwithstanding the law of 1862, there was no compliance with its sinking fund provision during the war. At the close Secretary McCulloh, who resembled Gallatin as Chase resembled Hamilton, ignored[1] the law of 1862 and proposed a sinking fund similar to that of 1817. He estimated that a yearly appropriation to the debt of $200,000,000 would discharge the whole in about thirty years. The proposal was not accepted, and during his adminstration the treasury applied to the debt whatever funds were available, without reference to the sinking fund. As the actual reduction was far greater than that required by law, nobody complained.

The sinking fund provision of 1862 seems to have been discovered by Secretary Boutwell. In his first report he announced that he had purchased twenty millions of bonds for the sinking fund. He had made further purchases, which he held as a special fund subject to the action of Congress. He recommended that such extra purchases be added to the sinking fund until it equalled what it would have been, if the law had been complied with from the first.

In the great funding act of July 14, 1870, reorganizing the public debt, it was provided that all bonds applied to the sinking fund be recorded, cancelled, and destroyed, and that a sum equal to the interest on all bonds belonging to the sinking fund, be included in the yearly amortization. Heretofore the heads of the treasury had bought bonds, even beyond the requirement of the sinking fund. This action was legalized by a clause authorizing the secretary to redeem the five-twenties with any coin which he might lawfully apply to that purpose.

[1] Report of 1865.

In 1873 the great crisis dried up the sources of revenue seriously and made it impossible to meet all claims upon the receipts. It is possible that, if Secretary Boutwell had been in office, there would have been a rigid adherence to the strict letter of the law of 1862. Under Secretary Bristow the law was practically construed to suit the emergency. It was announced that for 1874-5 there would be a surplus revenue of nine millions to be applied to the sinking fund. As under law over thirty-one millions was required for the fund, there would be a deficiency for the year of over twenty-two millions. This was making the sinking fund the residuary legatee of the revenues.

In his report for 1875 Secretary Bristow acknowledged that the sinking fund payment was secondary only to the interest on the public debt, and took precedence of all other appropriations. As some had asserted that the excess payments of former years excused the lapse of the sinking fund payment when need arose, the secretary took occasion to declare that the statute imposed a duty to be performed annually, and that purchases must be made within each fiscal year. The secretary explained the cessation of bond purchases by the fact that bonds could not be bought at par, while he was forbidden by law to pay more. This dead-lock, however, had been broken by the law of March 3, 1875, which authorized the secretary to obtain bonds for the sinking fund by calling in and redeeming the five-twenties.

As the deficiency in the revenues continued, the next secretary, Morrill, thought fit to present a view of the operations of the debt *in toto*. From his cal-

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culations he concluded that the public creditor had no ground of complaint.

"The terms of the law of February 25, 1862, required that by the operations of the sinking fund account, the public debt should be reduced in the sum of $433,848,215,37 between July 1, 1862, and the close of the last fiscal year. A reduction has been effected during that period of $656.992,226.44, or $223,144,011.07 more than was absolutely required.

"It can therefore be said, as a matter of fact, that all of the pledges and obligations of the government to make provision for the sinking fund and the cancellation of the public debt have been fully met and carried out."[1]

Liberal Interpretation.

The sinking fund first rose into prominence during the preparations for specie resumption. The act of 1875 permitted the sale of bonds, to procure the stock of gold necessary for resumption. A compliance with the letter of the statutes would lead to the practice of redeeming and borrowing at the same time. Sound finance required that, in such a case, the government should cease buying bonds for the sinking fund, and let the cash destined for that purpose accumulate in the treasury, awaiting the day of resumption. It was accordingly urged, and with reason, that the claims of the sinking fund should be suspended.

This was not done, but something similar was done. The debt to which a yearly one per cent. payment was pledged included notes as well as bonds. It might, therefore, be held lawful to redeem green-

[1] Report of 1876.

backs, or even "shinplasters," for the sinking fund, in place of bonds, and thereby lesson the mass of paper to be confronted on January 1, 1879. Accordingly under the law or April 17, 1876, $7,000,000 of fractional currency were credited to the sinking fund at five per cent. interest. Similarly $8,000,000 of greenbacks were added under a clause in the resumption act.

Since the accession of Senator Sherman to the treasury portfolio a construction of the laws of 1862 has prevailed which, however consonant with common sense and sound finance, is irreconcilable with the theory that the sinking fund then established is part of the contract with the public creditors. In his report for 1879 the secretary said: "These acts (of 1862 and 1870) are regarded as imposing upon the secretary the duty of providing for the sinking fund out of the surplus revenues of the government." The new construction was very apparent in a Senate debate, in 1884, over a proposition to reduce the sinking fund. Senator Plumb regarded the sinking fund as merely a matter of bookkeeping. . . . "The sinking fund has simply been something represented by certain entries on the books of the treasury, but nothing in the vaults of the treasury."

Senator Sherman stated that, in 1873 and thereafter, the government did not pay one-fourth or one-fifth of the sinking fund. In 1877 and the following years, surpluses appeared and much more was paid than the sinking fund required. The question, then, is, Has the United States, which has pledged its faith to pay a certain sum annually, a right to apply the excess payment of one year to make up the

deficiency of another year? The senator regarded it as a compliance with the law when the government does substantially what it agreed to do. No man could question the faith of the United States because it was for three or four years unable from its current revenues to pay the sinking fund, provided it has, on the whole, more than made good its promise. But while the senator regarded the sinking fund payment as justly amenable to the financial demands of the country, he deemed it inconsistent with honor and public faith to alter or invade the sinking fund by law. Temporary exigency might suspend amortization without dishonor, but conscious policy never.

Conclusions.

Our conclusion, then, is that the debt has been reduced, but not with the steadiness and automatic regularity contemplated by the terms of the law of 1862. Though the total reduction has exceeded the requirements of the law, yet so sensitive have the yearly appropriations been to the condition of the treasury, that it is doubtful if they could have conformed more closely to the varying financial situation, had there been no law at all.

What the secretaries have done—and they could do no more—was simply to amortize with the annual surplus, be it large or small. It is hard to see, therefore, wherein our sinking fund law, thus administered, differs in effect from a law directing the secretary to use surplus funds to pay the debt. If Congress had ordered the law to be administered so that the sinking fund appropriation should enjoy a priority over other appropriations, not permanent, or

regular, the law would have meant something. In that case a shrinkage in the revenues would have meant a deficiency in the funds for public works, and not in the funds for the public debt. We should not then be placed in the anomalous position of granting to gratuitous appropriations like those of the river and harbor bill, the preference at the counters of the treasury over a matter of contract like the sinking fund appropriation.

It seems, then, from our last experience, that, however solemnly a sovereign state may confer upon the principal of the public debt the first lien upon the revenues, considerations of practical policy will lead that state to relegate the principal of the debt to the frontier of public obligation, there to be abandoned, should the national income for a time retreat within narrower bounds.

III.

The Theory of Amortization.

We are in a position, now that our historical survey has supplied us with a sufficient stock of precedents, to enter upon the theory of amortization, and to discover the relation of the various species of sinking fund to each other, and to their common function. Simple as the thing may seem after our comparative study, no financial task has so befooled statesmen and led to costly mistakes, as the sinking of public debt. In England, the pioneer in modern finance, the search for the best way of amortization has strained the powers, and taxed the ingenuity, of the best heads for over a century. And yet it has been demonstrated that England, during the Napoleonic wars, lost by her theory of amortization a sum greater than the debt left us by the Revolution. In fact, it is only within the last two decades that the practice of the great financial powers has approached such an unanimity, as encourages the student fearlessly to frame a theory of amortization.

Our Theory Concerned with Settled Policy.

The first thing to note is, that whatever theory there may be relates to the sinking of funded, consolidated, or permanent debt. The theoretical side of amortization is principally concerned with fixed policy; and floating debt, such as treasury notes, exchequer bills, *bons du tresor*, is not, and should not become the object of a permanent provision. Good financiering requires that a floating debt be either paid off or funded. We have, it is true, occasional redemption funds and the rather nondescript *caisse*

d'amortissement of Napoleon I, but their theoretical import is too slight to require treatment.

Similarly we are not concerned with any temporary. hand-to-mouth handling of a time debt. When legislation busies itself solely with the present, leaving policy free to be continually adjusted to circumstances, hindsight replaces foresight. It is in the remote consequences of a settled fiscal policy that the perplexing problems of the financier lie.

The Meaning of the term "Sinking Fund."

Our theory has to do with sinking funds. But it is proper to note that this word is ambiguous. The word "fund" was formerly used to designate a number of items of revenue grouped together and regularly devoted to a specific object. The "sinking fund" was that group of revenues regularly applied to the principal of the debt. The yearly yield of this group was the "annual sinking fund."

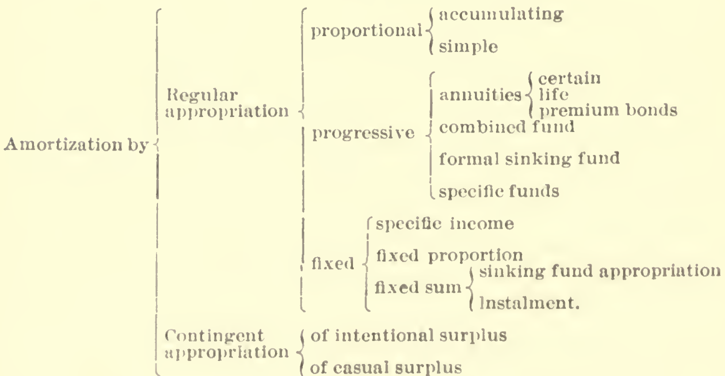
Now let this appropriation be conceived, not as applied directly to the debt, but as invested in active securities destined ultimately to redeem the debt. In that case this accumulation of securities might be regarded as, properly speaking, the sinking fund. And this, even if the securities invested in be the very bonds that the sinking fund is destined to pay off. By the hocus-pocus of legal fiction, the still active public securities acquired, may be, and actually were, regarded as the sinking fund for their own redemption.

It is plain that, with the abandonment of this system—in this country in 1817, and in England in 1829—the term "sinking fund" would tend to revert to its original sense. But meanwhile, the old

habit of devoting certain revenues to particular uses had been broken off. Hence, as there was no well-defined fund to which the word might attach, "sinking fund" would come to mean the system, policy, or enactment, under which money is regularly applied to the principal of a debt. And finally the word would frequently be used to describe the payment itself, i. e., the payment made in behalf of the principal of a debt under a general law. This is why the appropriation of the surplus of 1790 to the purchase of stock did not, strictly speaking, found a sinking fund at all. It was only in the clause permitting loans that any hint of continuous amortization appeared.

It is to be kept in mind that the discussion turns on the mode of applying money to the extinguishment of a debt. In our analysis we cannot ask whether the moneys applied come from taxation, or from new loans. The source of the appropriation, though of the highest practical importance, cannot furnish the ground of classification.

Bearing this in mind, it is proposed in the discussion to justify the following analysis:



Contingent Amortization.

As the simplest reduction of a debt takes place by casual appropriations, so the simplest sinking fund is the permanent appropriation of casual, budgetary surpluses. If these surpluses are really casual, there is no guarantee that they will more than cover, in the long run, the casual deficits. But if these latter were to be covered, not by casual surpluses of succeeding years, but by being given a place within the next budget, it is possible that such a sinking fund might really yield something. In these days of close estimates, however, it can not be depended upon for anything effective.

The second type of sinking fund is the permanent appropriation of intentional surpluses. This species is well illustrated in the English "Old Sinking Fund." In 1828, after a parliamentary commission had announced the bad results of Pitt's sinking fund, the reaction against inviolable appropriations was so strong that Parliament went to the extreme of laxity with the payment of the debt. Bitter experience had taught that a sinking fund should be suspended when the necessary revenue is not forthcoming. Pressing the argument further, it was concluded that, as it was impossible to escape an occasional deficit year, the whole system of regular amortization ought to be discarded. Parliament could escape all the dangers and secure all the benefits of a sinking fund simply by devoting any net surplus that might arise to the extinguishment of the debt. This was done, and Parliament contented itself with recommending that, in making up the budget, the Chancellor of the Exchequer plan for a surplus of at least three millions. As a result

of thus vacating responsibility, the surplus soon dwindled to as many hundred thousand, and the policy of debt extinction languished. Ministers of finance preached to willing ears the doctrine that it is better to "let money fructify in the pockets of the people," than to tax it out and thereby stop the interest on consols.

At the same time, the monied classes—who with clearer vision saw that taxation is, in fact, largely compulsory capitalization—strenuously opposed any rapid debt payment that would lessen their dividends by diluting the fund of national capital with a stream of state-collected earnings. As a result, one minister after another preferred to remit taxes, rather than incur the displeasure of the people and the hostility of the creditor interests. Between 1829 and 1869, the clear surplus applied to the British debt averaged—not £3,000,000, but £760,000.

Experience, hence, seems to show that any scheme of amortization, not backed by the utmost sanction of legislative enactment and the firmest pledging of national honor, is liable to quick collapse. To appriate to the national debt all the annual surpluses, and then to charge the ministry to see to it that there be a surplus, is to shift great responsibility to weak shoulders. To leave the matter of a surplus to the decision of a ministry is to put the policy of paying a debt at the most exposed point in goverment, subject to the continual and combined assaults of special interests and party clamor for the remission of taxes. Rarely, indeed, will the policy of high taxes, to pay a debt, be steadily supported by public opinion, at every moment and on every occasion. At the close of the Civil war, we declared we would pay off our

debt within a generation. It is true fulfillment has not lagged far behind promise, but it is doubtful whether our policy of rapid amortization would have been persevered in so well, if our debt had been paid with taxes as such. It is perhaps, the pleasing consciousness that our magical protective tariff has enabled us to saddle our debt on the foreign manufacturer, that has held us to the payment of nearly two billions.

Uniform Amortization.

The next type is the fixed sinking fund, by which the payment of debt is made the object of intra-budgetary provision. The difference between this type and the former is that, while the former is indirectly suspensible, the latter can be suspended only by positive enactment. The former sinking fund is practically suspended by any remission of taxes, or by extra heavy appropriations for other purposes. On the other hand, when the appropriation is regular and not contingent, it can be suspended only by overt act of the legislature, requiring with us the concurrence of the three legislative branches. This genus of sinking funds, then, has certain self-conserving properties that fit it for the nation that is in earnest in its amortization.

At the same time, it should be borne in mind that the regular appropriation introduced into the budget is of a peculiar nature. It is not to be ranked with other items of expense, so as to claim an equal right with them to be satisfied out of a temporary loan, in case of a deficit. For the sinking fund is peculiar in that it has a function that is annulled, in so far as money is borrowed for it. The function, for instance,

of a government gun foundry is the making of guns. If money is borrowed for it, it still functionates—the guns are made. The function of a sinking fund is to lessen debt. If money is borrowed for it, it does not really discharge its function—the debt is not lessened. When the debt made and the debt paid are equal the net performance of the sinking fund is zero. This explains why a sinking fund is not always to be placed on the same footing with other appropriations.

Effect of Amortization in a Borrowing Period.

One of the most striking things in the history of sinking funds is the willingness of financiers to borrow with one hand, while paying unmatured debt with the other. No matter how great the volume of government paper that chokes the stock market, the finance minister is always eager to maintain circulation in the stagnant mass by feeding in new stock at one price, and buying out old stock at a higher price. He justifies this seemingly reckless policy on the ground that it inspires confidence, in both the money-lender and the public. This results, he insists, in a higher price of stock, and so the government reaps a kind of psychological premium on the excess of stock sold over stock bought.

To the logician this is a hard saying. If the government buys bonds for its sinking fund during a loan period, just so much the more has it to borrow. The supply of and the demand for capital are equally increased. How, then, can the price be affected? Or, shall we admit that the extra and just-balancing supply and demand, occasioned by keeping the sinking fund active, react upon and modify the former

supply of and demand for capital? It may be that stocks have not that automatic, unerring sagacity ascribed to them. Both money-lender and taxpayer are men, and can be deceived by painted canvas. May it not be that the financier has yet something to teach us about the *theatrical element* in practical finance?

England has touched the opposite extreme of opinion on this point. Formerly her statesmen argued that a sinking fund, kept up even during a borrowing period, appreciated stocks by creating a steady artificial demand for them. The parliamentary committee of 1828, on the other hand, thought that such a policy depreciates stocks by necessitating just so much larger a loan than would otherwise be called for. This criticism errs as much in one direction, as the old theory did in the other. Perhaps it errs even more. It is hard to see how the selling and buying of equal amounts of similar stock, in the same market, at about the same time, can alter the price one way or the other. But if psychological causes *do* alter it, the change will assuredly not be in the direction of depreciation.

When Suspension Is Not Necessary.

Adopting the general rule, that a government should not continue paying debt at a time when deficits compel a resort to loans, it remains to inquire what exceptions, if any, should be made. There seem to be two cases in which a sinking fund need not be suspended:

1. When amortization presents itself as a kind of partial refunding.

2. When the moral loss from any deviation from a settled financial policy would exceed the pecuniary cost of adhering to that policy.

This is simply saying that finance is politics, as well as science. But it is well to note here that the concessions science needs make to politics, depend much, in any concrete case, upon the kind of financial doctrine that statesmen have been preaching to the public and to its creditors. It was the unsound doctrine, instilled by Pitt into the minds of Englishmen in 1786, that made it bad politics to suspend the sinking fund in 1793 and thereafter.

Forms of Uniform Amortization.

The fixed appropriation sinking fund may be realized in three distinct forms. There may be periodically applied to the principal of the debt a fixed sum, a fixed proportion of the nominal capital of the debt, or the income from a specified scource.

The fixed sum, moreover, may be applied under the original terms of contract with creditors, or under subsequent enactment. In the first case, we have a debt made payable in instalments. This is one of the most objectionable methods of extinguishing a debt, seeing that, in case of an emergency, it forces upon the government the costly alternative of paying old debts with the proceeds of dear loans on the one hand, or of violating the public faith on the other. In the second case, we have the ordinary, old-fashioned redemption appropriation. As it is established subsequent to the contracting of the debt it redeems, the government is free, if it has not needlessly tied its own hands, to suspend the payment, whenever the public interest requires it.

The second form of fixed regular appropriation—the setting aside of a definite proportion, instead of a definite sum—is adopted when the total debt comprehended in the scheme of amortization is, as yet, uncertain. Once this is ascertained, the payment becomes definite, and operates uniformly on the debt till its extinction. This was the form of sinking fund maintained in Russia until 1860. Certain loans were to be amortized by annual payments of one, two, or two and one-half per cent, that is, in one hundred, fifty, or forty years.

The third form—the setting apart for the principal of the debt of all income from certain specified sources—is characteristic of new countries in the earlier stages of financiering, or of nations threatened with disaster to public credit. Formerly it was maintained in France and England, and we have seen how, step by step, the United States was forced into the same policy. It is still maintained in such countries as Austria, Hungary, Roumania, and Servia. It is a survival of the time when general national credit was unknown, and loans were raised by pledging specific funds to pay interest and principal. As the specific revenue sinking fund is characteristic of an inferior national credit and an undeveloped fiscal system, it is often incorporated into the act authorizing a loan, with a view to inspiring confidence in lenders. When thus established the sinking fund is inviolable, seeing that the specified revenues are not only appropriated, but even mortgaged beforehand, to the redemption of the debt. Moreover, as the interest of a loan should rest upon as sound a guarantee as does the principal, it is usual to pledge specific revenues to the general debt service,

both for interest and for principal. In this case, as we shall see, amortization becomes progressive.

The merits of the general type of sinking fund we have just been considering, over the contingent appropriation are, that it is really efficient, and that it may not be suspended without special action. But, nevertheless, the fixed sinking fund has a grave defect. The appropriation, as we have seen, is definite and constant. But as its action periodically extinguishes some part of the debt, and thus stops the interest thereon, it follows that the general interest charges must decline. The debt service, hence, becomes a troublesome variable in the budget, that calls for a perpetual tinkering of the revenue system and a continual re-adjustment of receipts to expenditures.

Besides this practical inconvenience, the fixed sinking fund puts the heaviest burden just at the beginning of amortization. So against this policy it might be urged :—

1. That the simplest justice demands that a public debt bear uniformly over a term of years.

2. That, as growth in population and wealth increases the financial power, a progressive debt charge would come nearer to securing a just equality of burden than a diminishing debt charge.

Progressive Amortization.

Now both these defects are, in a measure, remedied by converting the fixed sinking fund into a progressive sinking fund. The characteristic of this type is, that the total debt charge is kept constant, by causing each annual payment to take up the slack that

previous amortization has left in the interest charge. Each payment is made up of:

1. The original fixed payment.
2. The total annual interest released.

The progress, then, is not arbitrary, but perfectly systematic. It is not as if the government had decided to amortize $20,000,000 the first year, $21,000,000 the second year, $22,000,000 the third year, and so on. The growth is automatic depending upon:

a The amount of the fixed payment.

b The rate of interest of the debt amortized.

If we let these two factors be represented by x and y respectively, the progress of the amortization is indicated by the mathematical formulae for an annuity at compound interest.

End of 1st year........ x
" " 2nd year....... $x + x\,(1 + y)$
" " 3rd year $x + \big(x + x\,(1 + y)\big)\,(1 + y)$....etc.

The type of progressive sinking fund assumes four forms, accordingly as it is the surplus of specific interest funds, is formal, is combined, or is distributed among annuities. As it is to this type that amortization tends to conform, and as its four forms are of great historical importance, it will repay a careful and detailed study.

The first form is the simplest and the earliest. We are to conceive of a debt bottomed on certain specified revenues yielding something more than the interest. Suppose, now, that any annual surplus these revenues may yield be applied to the payment of part of the debt. Part of the interest will thereby be stopped, and the surplus of the next year will be so much the larger. In principle, then, this surplus sinking fund

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is truly progressive, although its regularity of growth is likely to be obscured by fluctuations in the annual revenue from the specified sources. This is the form of the first English sinking fund—that of 1716.

The formally progressive sinking fund, invented by Pitt and imitated by Hamilton, requires the creation of a special branch of administration, say a board of commissioners. To this board the treasury pays the annual sinking fund appropriation, which is straightway used to buy up, or redeem, government stock. Practically the stock thus acquired represents extinguished debt, and might properly be cancelled and destroyed. But it is not so regarded. The legal fiction is set up that the board is a creditor of the government, and that the stocks it holds are active obligations on which interest should still be paid. Accordingly the treasury pays over the accruing interest to the board, as it would to any large holder of government securities. No matter, therefore, how much debt has been amortized by the government, the nominal debt and the nominal interest charge remain the same. Until the last dollar is paid, and the board formally surrenders the stock to the treasury as defunct paper, the public debt is regarded as undiminished. The treasury pays every year, or every quarter, interest on stock wherever held, and also a fixed sum to the board. The board receives this sum together with the interest that comes to it as a holder of stock. These two items, then, make up the force of the sinking fund for that year, or that quarter. This total is invested in more stock. The next sinking fund payment is made up, not only of the two former items, but also of interest on the additional stock representing the previous investment.

Precisely the same results are reached in a much simpler way, by the second form of progressive sinking fund. I call it "combined," because the appropriation for the principal of the debt is not distinguished from that for the interest, but is combined with it under the head of "debt service," or under the misleading title of "sinking fund." By this method a fixed sum, larger than the interest charge alone, is applied annually to the debt, being divided between interest and principal. If we think of this sum as a line of a given length, the point of division between the two uses will each year be nearer the interest end than the year before. Though such a sinking fund may be managed by a special board, there exists no logical necessity for it as there does in the preceding case. This form of amortization seems to have been introduced by Gallatin in 1802.

From the combined sinking fund we easily reach that form hidden-away in terminable annuities. Instead of applying in lump to the debt till its extinction an annual fixed payment somewhat larger than the interest charge, suppose this payment subdivided, and applied equally to every minute portion of the debt operated on. Instead of barely paying the interest on one part of the debt and buying the rest outright, suppose we spread the combined fund evenly over the whole mass. We have then changed our terminable annual debt fund into a great many terminable annuities. In operation these are identical. A given annual appropriation will discharge a debt as soon one way, as the other. Is there, then, any practical difference? In fact, the practical difference is great, and it is just the oft-recurring difference between a policy under the control of gov-

ernment, and one not under its control. The ordinary combined sinking fund, if established subsequent to the debt it operates upon, is really a contract with no one, and can be suspended at need. Even if such a sinking fund is so incorporated into the loan bill, as to be part of the contract with the creditors, it is still under the control of government. The government has promised to amortize some part of the debt every year, but has not engaged to take up any particular bond or bonds. The contract is general in its nature and may be made to include future creditors.

But by throwing its annual payment into the form of terminable annuities, the government enters into a positive and specific engagement with the individual creditor. In the annuity the instalment on the principal is so bound up with the payment of the regular interest that a failure to pay the one is as serious as a failure to pay the other, and equally with it involves a confession of bankruptcy. A sinking fund in terminable annuities, then, is the most automatic and cast-iron of all modes of amortization. The loss it may entail was shown in the war of 1812, when the government borrowed money on stock at 65 or 70, in order to pay off the eight per cent. annuities into which Hamilton had converted the six per cent. stock. Distinct as it is, the automatic nature of the annuity sinking fund has not been generally recognized. Parliament in 1822, while utterly rejecting the principle of borrowing in order to pay debt, took occasion to reaffirm its confidence in the wisdom of terminable annuities.

Of like nature with terminable annuities, though so covert that it has apparently never been recognized,

is the sinking fund concealed in the interest paid on premium bonds. For, in truth, the difference is but this. The terminable annuity includes, besides the pure interest, a surplus sufficient in a term of years to pay back *all* that the government has borrowed. The yearly payment on the premium bond includes, besides the pure interest, a surplus sufficient in a term of years to pay back *some part* of what the government has borrowed. If a $100 bond be sold for $102, as it was in the loan of 1848, there are two dollars that the government does not pay back when the bond is due. Is this premium, then, never paid back at all? Assuredly. To sell the bond at a premium the government had to offer a rate of interest higher than normal, and this narrow yearly margin is the progressive sinking fund that during the term of the bond gradually pays the two dollars unaccounted for.

Proportional Amortization.

Leaving the progressive sinking fund we pass to the final type — the proportional sinking fund. In this type the yearly appropriation is a certain fixed percentage of the outstanding debt, whatever it may be. In the simple form of the proportional sinking fund, this would mean diminishing or regressive amortization — a policy without reason and without precedent. In the other form, exemplified in the sinking fund of February 25, 1862, the annual payment is increased by the interest on all bonds purchased. Hence, just as the progressive sinking fund is composed of two elements — the fixed annual payment and the released interest — so the proportional sinking fund of 1862 has been composed of two ele-

ments — the decreasing payment of one per cent. of all outstanding debt, and the released interest.

In the latter, one component diminishes while the other increases, and the question as to whether the regress of the one will prevail over the progress of the other, is decided by ascertaining the ratio of the rate of proportional payment to the rate of interest on the debt. This type of sinking fund, then, may be either regressive, progressive, or fixed. Indeed we can even imagine such a fund as, at first progressing, and then declining when successive refundings at lower rates of interest have checked the growth of the interest component. To this class belong the sinking funds of Belgium and the United States.

Variations from the Type.

After this survey of the various distinct species of sinking fund it remains to add that, in practice, two or more species are often united. Thus the yearly supply of the progressive sinking fund, besides the released interest, is sometimes a fixed sum, sometimes a certain group of revenues, sometimes both together. The budgetary surplus usually goes to the debt, either as a separate sinking fund, or as an eventual resource of the main fund. It has been no uncommon thing for a nation to have at the same time a whole group of sinking funds operating each on its own portion of the debt. This naturally results from the policy of creating a special sinking fund with each loan. Sometimes these sinking funds are of different kinds and represent antagonistic financial principles. Thus England, besides her five small special sinking funds, has the "Old Sinking Fund,"

the "New Sinking Fund," and the terminable annuities. The first marks the farthest recoil from the system of inviolable payment, while the third is the most rigid kind of amortization.

Tendency to uniform treatment of a public debt.

It is probable that, with certain exceptions to be noted later, all specialization, either of revenue, or of debt, is bound to disappear. If the treatment of public debt exhibits any pronounced change, it is in the direction of unity of administration. Formerly the national revenues were parcelled and assigned to particular uses. Now they are usually treated as an indiscriminate whole. Formerly the national debt existed in the form of various loans, each having its own interest fund and its own sinking fund. Now the debt is consolidated, based on the general credit and subjected throughout to the same policy of amortization. The tendency, hence, is toward unity and simplicity.

Suspension of Amortization.

A further point is to be noted in reference to inviolability. We have laid down the general rule that a sinking fund should be suspended in a time of borrowing. Indeed we can say that it should be suspended as soon as the need of a future resort to loans is first felt. This is not to say, however, that cash for amortization is to be left to lie idle in the treasury in anticipation of a remote deficit. There is always some point, at which the gain by stopping current interest will outweigh the ultimate loss by procuring money with new bonds.

Now it is possible to suspend a regular sinking fund, in whole or in part, indirectly, without the formality and publicity of a legislative enactment. Thus, into the act establishing Pitt's sinking fund Fox introduced a clause permitting the commission to use their funds in buying new stock directly of the government, instead of buying on the market. Part of the French sinking fund of 1833 could be expended, only when five per cents were below par. As this never happened, the government was able to borrow this part from the sinking fund by giving certificates in acknowledgment. The Walpole sinking fund was practically confiscated by being charged with the interest on new loans. Gallatin's sinking fund was quickly tied up, in 1812-15, by being charged with the payment of short loans in the form of treasury notes. By these methods, the simplest sinking fund may be practically suspended without direct enactment.

What is the Best Mode of Amortization?

In selecting a mode of amortization, the financier should ask himself whether it is desirable that the debt should weigh most heavily during the early years of sinking, or should bear evenly over the whole period. If, as is likely, the latter is preferable, then he should choose some form of the progressive sinking fund. Of the four species, the specific revenue debt fund seems the most appropriate, when a loan has been incurred on behalf of a productive enterprise. When money has been borrowed for the building of railways, or the purchase of telegraphs, there seems to be a peculiar propriety in setting aside the earnings for payment of interest and reim-

bursement of the principal. By this kind of limited liability, that requires that each business that comes into the hands of the government should pay for itself, the people are secured against certain odious forms of patronage and favoritism. But apart from productive loans, the appropriation of specific revenues for a debt is clumsy and antiquated.

The second species — the formally progressive sinking fund — has been the subject of frenetic diatribe by second-rate writers for half a century. It has been stigmatized as the "compound-interest sinking fund," as if every species of progressive amortization did not involve growth at compound interest. As formerly it aroused baseless hopes, so later it aroused baseless fears. Of it Gibbon says: "Every dollar in its keeping yields less interest than in private bonds . . ." In fact, the sinking fund has no dollars in its keeping. He goes on: "On the theory of its advocates, the first step required to give it efficacy is to increase the taxation to something more than the interest on the debt, and this is to be carried on from year to year, and, with every other addition, invested in some productive securities. It is not to be presumed that any other securities than those of the government would be selected for such treatment, and these must be purchased at the market rate. The farce is too transparent to need further exposure. It resolves itself into borrowing money to pay borrowed money, and increasing the debt by the amount of expenses incurred for the transaction of the business."[1]

The way in which this passage associates the formally progressive sinking fund with borrowing

[1]Gibbon, "United States Debt.", pp. 119-121.

shows a complete misapprehension of its nature. In truth the Pitt-Hamilton sinking fund is simply a complicated and round-about way of amortizing with a constant debt charge. Though no more inviolable than other sinking funds, it is more liable to confuse the popular mind, partly by its want of simplicity and clearness, partly by introducing the fiction that government paper is productive property. Because it has peculiar dangers and no peculiar merits, it has been generally discarded.

Terminable annuities, as we have seen, involve obligatory amortization. It would, therefore, be folly to provide by means of them for the amortization of an entire national debt. In conclusion, then, we are forced to recognize in the combined sinking fund of Gallatin the best method of amortization yet discovered. The example of England and other nations enforces the conclusion of our theoretical discussion, that finds in this American contribution to practical finance the simplest, clearest, and most effective mode of reducing public debts that has so far been employed.

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