

III.—*A Plan for the reduction and ultimate extinction of the National Debt.*—by William Pollard Urquhart, M.P.

[Read December 17th, 1855.]

The embarkation of England in a war; the failure of the anticipations at first indulged in by some parties, that this contest could be carried on out of the revenue of the country; the recent addition of sixteen millions to the national debt, and the probability of its progressive augmentation during every year of the continuation of hostilities, all tend to impart interest to the question, whether any means should be taken to provide for the reduction or ultimate extinction of the debts incurred in the prosecution of past and present wars; and if so, by what means this object can best be effected.

Against any scheme for this purpose it may be alleged, that as the real evil of the national debt is rather the *having* unprofitably squandered away so much capital than any unproductive application of the taxes raised to pay its interest, the mischief has already been effected and cannot be retrieved; that whatever addition may now be made to the capital of the nation by paying off any portion of the debt, can only be effected by a further pressure upon the resources of the tax-payers, which may possibly cause a diminution of the savings of individuals, thus producing the very evil which it was intended to remedy; that even the relief that might ultimately be felt from any remission of taxes would be purchased by the present generation for the benefit of posterity, who, as the national resources increase, will probably feel the onus of any given amount of taxes much less than ourselves; and may at length come to regard the capital of the debt* "as a trifling incumbrance which may at any time be discharged;" that there is every reason to believe that in 1941 the debt which existed in 1841 may be considered as insignificant as that left by Sir Robert Walpole, when he quitted power in 1741, would have been in the latter of the two first mentioned years; and that the fears of the exhaustion of the credit of the country, and of the necessity of ultimately compounding with the national creditor, are as groundless as were the anticipations of that minister, that this country could not safely contract more than one hundred millions of debt.

To this it may be replied, that as it is probable that any part of the debt paid off will be regarded as capital by the receiver of it, and that as a part at least of the taxes are defrayed by the increased economy of individuals, and thereby taken from what would otherwise have been unproductively spent—the paying off any portion of it is equivalent to making an addition to the capital, and thereby augmenting the income of the nation, and making a provision for our increasing population. That though that part of the capital which has once been unprofitably squandered is irretrievably lost, much of the mischief effected by this loss may be remedied by increased economy on the part of future generations. That although

* Macaulay's Essays.—Review of "Southey's Colloquies on the Progress of Society."

any arrangement that may be made by the present generation for paying off any portion of the debt, would be equivalent to taxing themselves for the benefit of posterity, it is as much the business of a nation as it is of the father of a family, to provide for its descendants. That as the evils of taxation are to a great extent prospective, it can be no objection to any system of finance that its benefits are so likewise. That as it is probable that the greater part of the capital of the debt which was paid off would be invested in this country, no diminution of the national income would thereby be caused. That its real effect would be merely enforcing the profitable investments of a part of the income of the nation—an object which must be admitted to be in itself highly desirable. That though there is every reason for believing that the resources of the country will continue to increase, nevertheless, no sanguine expectations of futurity ought to make us neglect the management that is dictated by ordinary prudence. That even though this increase may be regarded as tolerably certain, it is nevertheless subject to periodical depressions, caused by such events as the failure of a crop, either at home or in any of the countries whence we derive our supplies, interruptions to trade produced by panics, monetary crises, or commotions at home or abroad, on which occasion the embarrassment is considerably increased by the necessity of having to make fixed payments. That even though the national resources may increase, the value of the money by which the portion of these resources paid to the national creditor is measured may, by a variety of causes, such as the exhaustion of mines, more extensive demand for gold for the purpose of manufacture, commerce, or ornament, also increase, and thereby cause distresses or difficulties of the same nature as those that were experienced on the return to cash payments in 1819. That however hopeful may be the future prospects of the country, yet, as all manufacturing prosperity is unstable, it would be advisable for us to take advantage of such prosperity as we have while it lasts, to free ourselves from a part of our obligations. That as taxation has a tendency to prevent the investment of capital in this country, it would be advisable to take any steps by which its weight will be lessened ere the circumstances which have caused its influx hither, in spite of this disadvantage, may cease to exist; that the probability of increasing foreign competition in many of those branches of industry, which at present make large additions to the income of the country, renders some provisions of this sort peculiarly desirable. And, finally, that as there may be some truth in the supposition put forth some time ago by a leading journal, that the financial plan of the government may not be without its effect upon those of individuals, it would be impossible to overrate the advantages of any plan that would tend to promote economy, providence, and good management among all members of the community.

The history of Europe is not without examples which shew the wisdom of making some arrangements for the discharge of the national burdens. The French Revolution of 1789, with all its concomitant miseries, is supposed to have been very much accelerated, if not to a great degree caused, by the derangement of the national finances. The decline, or, to speak more correctly, the almost stationary state

of Holland, is ascribable in a great measure to the weight of taxation, which scared capital from its soil, and of the custom and excise duties which rendered her merchants unable to face foreign competition, after the adventitious circumstances which had first caused her prosperity had ceased to exist. It is probable that these evils would not have been experienced, if, at the time of her monopoly of the carrying trade of the world, she had made arrangements to free herself from her financial encumbrances. And although the opinion of Sir Robert Walpole, that England could not bear more than one hundred millions of debt, has turned out to be fallacious, and though it may be hoped that the fears of Lord John Russell,* that the "period will some time or other, in all probability, arrive, when the payment of the full dividend and the safety of the state shall be found to be incompatible," will be found to equally incorrect; nevertheless, national bankruptcies and compositions with the public creditor—either by lowering the standard of coin or otherwise—have not been unknown in Europe; and such an occurrence, calamitous to any nation, would be totally destructive of a country so dependent on its credit, and containing classes so mutually dependent on each other's credit and solvency as Great Britain.

No plan has been more undeservedly extolled or more unjustly blamed than the Sinking Fund of Mr. Pitt. The principle of the plan was, that the Commissioners for the Reduction of the Debt were to borrow money to purchase government stock, and to devote to the same purpose both the dividends received on the stock, and the interest that accrued from the annual addition that was thus made to it. Its real virtue was, that it laid each successive government under an obligation to raise a revenue exceeding the expenditure, by a sum equal to the interest on the money borrowed for this purpose along with the dividends of the stock that was purchased therewith, and to devote this annually increasing excess to the payment of the debt. As a systematic plan of discharging the former debts out of the yearly revenue of the country, it was deserving of praise. As an awkward, roundabout way of doing what might appear a very simple thing, it afforded fair subject for ridicule; but it was, nevertheless, well calculated to effect the purpose for which it was designed, and its abandonment cannot but be matter of regret to all those who wish to see the capital of the debt diminished.†

It is almost needless to say that every plan for the accomplishment of this object must presuppose an excess of revenue over

* Essay on the English Constitution. Chapter on the National Debt.

† I have heard the following humorous illustration of Mr. Pitt's Sinking Fund. "An Irish landlord was anxious to pay off a mortgage of £10,000 during his life. To effect this, he mortgaged his estate for an additional £5,000, which sum, paid at once into different insurance offices, sufficed to insure his life for £15,000. On being asked why he did not insure his life for £10,000, by the payment of an annual premium, instead of borrowing an additional £5,000, he replied that he had an extravagant wife who would never have allowed him to continue to pay the annual premium punctually, but that the payment of the interest of the £5,000 for which he had mortgaged his estate was a compulsory engagement which he could not be induced to violate. The plan of our countryman is, of course, open to the same ridicule as was Mr. Pitt's, viz., that of borrowing in order to pay off; nevertheless, it effected its object, and so would Mr. Pitt's Sinking Fund if it had been persevered in.

expenditure. Even if it were not advisable to make any provision for the payment of the debt, common prudence would suggest the maintaining this excess. Neither nations nor individuals, who in ordinary years live up to their incomes, can be in comfortable financial circumstances. It has been too frequently the practice of chancellors of the exchequer to ground their financial calculations on a revenue which, according to their anticipations, should exceed the expenditure by only one or two hundred thousand pounds. The consequence has been that, whenever any check on the prosperity of the country has prevented the full realisation of their expectations, the revenue has been insufficient to meet the expenditure; the public mind has been agitated by the prospect of imposing fresh taxes; the money-market has been disordered by the prospect of a loan being required by the government; exchequer bills, deficiency bills, and such like expedients have been resorted to; and the general credit of the country has been shaken.* If, however, our finance ministers were to ground their calculations on the collection of a revenue which should, in times of average prosperity, exceed the expenditure by at least one million, all these evils would be avoided. In ordinary years, these excesses would leave a considerable balance in the exchequer, which might afterwards be applied to the payment of the debt. Whenever the revenue fell short of their expectations, all the embarrassments now caused by such deficiencies would be avoided.

Secondly.—At periods when money was abundant, the government might make arrangements to pay off part of the debt by terminable annuities. In addition to the advantage of such engagements being compulsory on successive governments, the country might, by choosing times at which such transactions in the money-market could be favourably effected, free itself of a certain actual amount of debt by a smaller excess of revenue over expenditure than would otherwise be necessary. Of course this plan should be adopted only when a steadily increasing revenue rendered it probable that the engagements entailed thereby might be fulfilled without the imposition of an additional tax. It appears to me certain, however, that this expedient, combined with the method of management already proposed, might free us from all apprehensions as to the ultimate consequences of the debt.

If the revenue were to continue, as it has done hitherto, progressively to increase, and the annual charge were to be diminished by the interest of a portion of the debt paid off each year, there would be a continually augmenting surplus in the hands of the chancellor of the exchequer. A part of such surplus would, of course, be absorbed by the carrying out of the suggestion of occasionally converting some of the debt into terminable annuities. But as the whole of the surplus need not be so appropriated, and as the necessary expenditure would ultimately be diminished by the termination of these annuities, it is obvious that a government, while it carried on a system of finance for the payment of the debt, might also take off those imposts which are most obnoxious to the payers, and press most severely upon the industry of the country.

* Of course this reasoning is applicable only to the time of peace.

Before attempting to form any calculation of the rate at which the debt may thus be paid off, it is necessary to make some estimate of the probable annual increase of the revenue in a time of peace. At the conclusion of the war in 1815, the revenue amounted to £72,210,312, which, allowing a diminution of ten per cent., or £7,221,031, for the change in the value of money consequent on the return to cash payments, is equivalent to about £64,989,281 of the present currency. That of 1845 was £53,060,354, which was less than the former by £11,928,927; say, in round numbers, £12,000,000; but in the meantime there were repealed taxes that used to yield £50,000,000, while others producing £13,000,000 per annum have been imposed in their place; so that during the first thirty years of the peace the nation was freed from burdens to the amount of £37,000,000 per annum. But as the revenue of 1845 fell short of that of 1815 by less than £12,000,000, it follows that the same taxes produced at least £25,000,000 more in the former than in the latter year. The average annual increase, therefore, of the produce of the same taxes during that period must have exceeded £800,000 per annum; but for fear of making any over-estimate of the buoyancy of the revenue, I shall assume a probable increase of revenue to the amount of £700,000 per annum, and make it the basis of my calculations.

In the year 1860, long annuities amounting to £1,294,089 10s. 6d. expire; and as the same year will be the seventh year of the war, it may not be unreasonable to hope that, assuming it to continue for the same period as did those which begun in 1741, 1756, and 1776, it may also be the last. It will, therefore, be convenient to select that year as the one in which the proposed operations on the debt are to commence; and, for simplicity sake, we shall also assume that the chancellor of the exchequer, whoever he may then be, will frame his budgets so that the probable revenue may exceed the expenditure by about £1,000,000 per annum; and that, as after the peace of 1815, the annual increase of the produce of the same taxes will be not less than £700,000.

This constant accruing of this increase for seven years, from 1860 to 1867, ought to produce a surplus amounting in the latter year to
£4,900,000. (1)

The annual surplus of £1,000,000 applied in the meantime to pay off debt will have diminished the permanent charge by the interest on £7,000,000, which, at three per cent., amounts to
£210,000. (2)

In addition to this, it is probable that at least one half of the life annuities, and of the Tontine annuities granted previously to the year 1846, will have expired. As these, in the above year, amounted in round numbers to £1,000,000 per annum,* we may

* Accurately.—Life Annuities . . .	£962,983
Tontine do.	18,010
Do. in Ireland	34,230
Do., do.	6,524
	£1,021,747

therefore expect in the year 1687, fixed on above, an additional diminution in the annual charge amounting to

£500,000; (3)

besides which, there were granted annuities at different times, which, in the year 1846, amounted to £1,065,513, of which it may be assumed that

£500,000 (4)

will have fallen in before the year 1867.*

In this year, also, the long annuities granted by 4 George IV., cap. 22, amounting to

£585,740 (5)

will have expired.

The addition of the sums marked (1, 2, 3, 4, and 5,) will give

£6,695,740

as the probable available surplus which in 1867 the taxes of 1860 may be expected to yield.

Of this sum, I would recommend that one half be applied to the remission of taxation, the other half to the extinction of the debt, by the conversion of the permanent charge into terminable annuities. It may be assumed that in years of average prosperity, the government may borrow money on terminable annuities of twenty-two years, at six and a-half per cent., the rate at which it was able, without loss to itself, to make advances under the Land Improvement Act; and we may therefore, without risk of error, make this rate the basis of our calculations on the subject. Every £100 three-per-cent. stock so redeemed will impose an additional annual charge of £3 10s. for the abovementioned period. One half of the above surplus of £6,695,740, say, in round numbers, £3,300,000 so appropriated, will suffice to redeem £94,285,704 three-per-cent. stock, by the process suggested. We may therefore say, in round numbers, that £90,000,000 of the capital of the debt may thus be dealt with between the years 1860 and 1867.

Again, in the year 1889, after all the annuities granted for twenty-five years before 1867 will have expired, the annual income of £700,000 will have amounted to a further surplus of

£15,400,000. (1)

The paying off £22,000,000 of debt, by devoting £1,000,000 a-year to that purpose, will have caused a saving equal to the interest on that sum, amounting at three per cent. to

£660,000. (2)

The expiration of the annuities which I have supposed to be granted in the year 1867, being six and a-half per cent. on £90,000,000 of the debt, will leave a third surplus equal to

£5,850,000, (3)

and it is probable that out of the sum of 1,000,000 per annum, which I have supposed will in 1867 remain unexpired, out of the Tontine annuities, life annuities, and others, granted at various

periods, amounting in 1846 to upwards of £2,000,000 per annum a further sum amounting to

£800,000 (4)

will have expired.

The addition of the sums marked (1, 2, 3, and 4,) gives

£22,710,000

as the probable surplus that may be disposed of between the years 1867 and 1889.

Of this surplus I would recommend that, as before, one half be devoted to the remission of taxation, the other to the redemption of the permanent debt by means of terminable annuities. Say then, for the sake of simplifying the calculation, and being at the same time under the mark, that there were devoted to this purpose £10,500,000 per annum (considerably less than half the abovementioned surplus), which would suffice to convert £300,000,000 of the three-per-cent. stock into annuities of twenty-two years, yielding six and a-half per cent. interest on the capital sunk in them.

By continuing the same system of finance for another twenty-two years, we should have in the year 1911 sums equal to those marked 1 and 2 in the last calculation, arising from the same causes being in operation for the same period of time, which will leave, as before, surplusses of

£15,400,000 (1)

and 660,000. (2)

Moreover, as the long annuities, amounting to

£19,500,000, (3)

six and a-half per cent. on 300,000,000 supposed to have been granted in or before the year 1889, will also have expired in or before the year 1911, we shall have, by the addition of the sums 1, 2, and 3,

£35,560,000,

as the total surplus that will then be at the disposal of the government.

£17,500,000, or less than half this surplus, will suffice to convert 500,000,000 three-per-cent. stock into terminable annuities, yielding six and a-half per cent. per annum for twenty-two years.

Before that time, the plan of finance here proposed will have diminished the debt.

First, by the annual devotion to that purpose of £1,000,000 per annum from 1860 to 1911, or fifty-one years, amounting at the end of that time to

£51,000,000. (1)

Secondly, by three-per-cent stock converted into terminable annuities, amounting in 1867 to

£90,000,000, (2)

and in 1889 to

£300,000,000, (3)

making a total of 441,000,000, as given by the addition of the sums marked 1, 2, and 3.

And it is to be hoped, that neither by the present nor any future war, will the capital of the debt have been so augmented as that the remaining portion of it will exceed the sum of £500,000,000,

which the resources of the country will then enable it to deal with in the manner suggested.

In the above calculations I have assumed the great operations in our debt to be effected in the year 1867-1889, and, subsequently, when the annuities granted for twenty-two years at the above periods would expire. But I do not for one instant suppose that operations of this nature would be made merely at such long intervals and on so great a scale at once; of course the government should choose its own times for dealing with the debt, and the annuities into which the debt would be converted would be for many other periods besides those that I have assumed of twenty-two years; but if my calculations are not incorrect, they are quite sufficient to show what may be done by dealing with the national debt on the principles here suggested, viz., raising a surplus revenue of £1,000,000 per annum, and devoting half the increase of the revenue to the conversion of the permanent debt into terminable annuities.

Should it be found impracticable in the money market, to borrow money on terminable annuities for the purpose of paying off the capital of the debt, the same result may be arrived at by investing in the hands of commissioners appointed for the purpose—say the present Commissioners for the reduction of the National Debt—each year, half the annual increase of the revenue, which, in the plan above proposed, it was supposed would be applied to the converting the permanent debt into terminable annuities; authorising them to purchase stock therewith, to retain in their hands the stock so purchased for any given number of years, and to apply the dividends arising from the said stock each year to the purchase of additional stock, to remain in their hands in the same manner.

It is easy to find an algebraical formula, expressing the amount of debt that would thus be paid off after any number of years; thus, let $2a$ be the probable annual increase of the revenue, of which it is proposed that one half should be applied to the redemption of the debt in the manner explained.

Then the sum applicable to the extinction of the debt in the 1st, 2nd, 3rd, n^{th} year after the commencement of the plan, will be a , $2a$, $3a$, na respectively; and if $r-1$ be the interest per cent. afforded by the purchase of stock, the above sums at the end of the n^{th} year will have increased, by compound interest, to

$$\begin{aligned}
 & a r^{n-1}, 2 a r^{n-2}, 3 a r^{n-3} \dots \overline{n-1} a r, n a, \\
 = & a r^{n-1} + a r^{n-2} + a r^{n-3} \dots + a r + a \\
 & + a r^{n-2} + a r^{n-3} \dots + a r + a \\
 & + a r^{n-3} + \dots + a r + a \\
 & + \dots + a r + a \\
 & + a r + a \\
 & + a.
 \end{aligned}$$

$$\begin{aligned}
 = & a \{ r^{n-1} + r^{n-2} + r^{n-3} + \dots + r + 1 \} \\
 & + a \{ r^{n-2} + r^{n-3} + \dots + r + 1 \} \\
 & + a \{ r^{n-3} + \dots + r + 1 \} \\
 & + a \{ \dots + r + 1 \} \\
 & + \dots \\
 & + a (r + 1) \\
 & + a.
 \end{aligned}$$

$$= a \frac{r^n - 1}{r - 1}$$

$$+ a \frac{r^{n-1} - 1}{r - 1}$$

$$+ a \frac{r^{n-2} - 1}{r - 1}$$

$$+ \dots$$

$$+ a \frac{r^2 - 1}{r - 1}$$

$$+ a \frac{r - 1}{r - 1}$$

$$= \frac{a}{r - 1} \{ r^n + r^{n-1} + r^{n-2} + r^n + r - n \}$$

$$= \frac{a}{r - 1} \left\{ \frac{r^{n+1} - 1}{r - 1} - (n+1) \right\}$$

If, as before, we suppose the annual increase of the revenue to be £700,000 per annum, and three per cent. to be the rate of

interest in the time of peace, and £350,000, or one half of the annual increase of the revenue to be applied to the extinction of the debt, the above formula will give

$$\frac{350\,000}{\cdot 03} \left\{ \frac{(1\cdot 03)^{n+1} - 1}{\cdot 03} - (n+1) \right\}$$

$$= \left\{ 11,666,666 \right\} \left\{ \frac{(1\cdot 03)^{n+1} - 1}{\cdot 03} - (n+1) \right\}$$

Or, if we suppose that in addition to the annual increase of revenue of £700,000, the government has a further annually increasing surplus of £30,000, arising from the interest of £1,000,000 debt actually paid off each year, half of which is applied to the same purpose, the above formula will give

$$\frac{365\cdot 000}{\cdot 03} \left\{ \frac{1\cdot 03^{n+1} - 1}{\cdot 03} - (n+1) \right\}$$

$$= \left\{ \pounds 12,166,666 \right\} \left\{ \frac{1\cdot 03^{n+1} - 1}{\cdot 03} - (n+1) \right\}$$

It may be curious to remark how the same result might be arrived at by means of Mr. Pitt's sinking fund. For this purpose it would be merely necessary that the commissioners should, at the beginning of each year borrow a sum, the interest of which should be equal to half the annual increase of the revenue, apply it to the purchase of stock, and apply in the same manner the interest of the stock so purchased; the interest of the loan being, of course, paid out of the annual increase of the revenue.

If S be the sum thus borrowed at the beginning of each year, the quantity of stock purchased by the commissioners at the end of n years will amount to (r-1) as before, S being the rate of interest,

$$S r + S r^{n-1} + S r^{n-2} + \dots + S r$$

$$= S \{ r^n + r^{n-1} + \dots + r + n + 1 \}$$

$$= S \left\{ \frac{-1}{r-1} - 1 \right\}$$

which sum will be applicable to the redemption of the debt.

But, at the same time, the debt will have increased by the amount borrowed by the commissioners, which, at the end of n years, will be

Therefore the debt will have been diminished by this process continued for n years, by an amount

$$\begin{aligned} & S \frac{r^{n+1} - 1}{r - 1} - S \cdot (n + 1) \\ &= S \left\{ \frac{r^{n+1} - 1}{r - 1} - (n + 1) \right\} \end{aligned}$$

to calculate S .

The interest of S must equal half the supposed annual increase of the revenue, continuing the same notation must = a .

$$\begin{aligned} \text{We have, therefore, } S \overline{r-1} &= a \\ S &= \frac{a}{r-1} \end{aligned}$$

and the above formula becomes

$$\frac{a}{r-1} \left\{ \frac{r^{n+1} - 1}{r - 1} - (n + 1) \right\}$$

which exactly agrees with the preceding one.

IV.—*Observations on the Gold Crisis, the Price of Silver and the Demand for it; with answer to the question, "What becomes of the New Supplies of Gold."**—By Richard Hussey Walsh, LL.B., Archbishop Whately's Professor of Political Economy in the University of Dublin.

INTRODUCTION.—A few years ago, when we first heard of the astonishing discoveries in our modern El Dorados, and read of diggers finding miraculous nuggets, and realising fortunes at a single blow of the pickaxe, many began to imagine that sovereigns and half sovereigns would soon be as common as shillings and sixpences, and were almost ready to believe that the old legend of London streets being paved with gold might at last be turned into a sober fact. But when production at the diggings continued and augmented, and the value of gold exhibited no marked decline, public opinion ran into the opposite extreme, and numbers were not only disabused of their extravagant anticipations, but even became willing to allow that no change whatsoever should be expected. The first of these conclusions—an exaggeration generated by a striking novelty, and the

* Read before the Statistical Section of the British Association, Glasgow, September 14, 1855.