

VI.—*Decimal Money.* By Richard R. Cherry, Barrister-at-Law.

[Read Tuesday, 5th June, 1888.]

THE issue last year among the jubilee coins, of a new four shilling piece—almost exactly equivalent to the American dollar, drew attention to the subject of a decimal coinage, which, although much discussed thirty or forty years ago, had recently almost altogether fallen out of notice. The advantage of a decimal coinage was first drawn attention to in England, about the year 1824; since then its adoption has been formally recommended by two royal commissions, one in 1841, and the other in 1857. Petitions have been presented to parliament by various mercantile bodies, one by 1,200 merchants of the city of London, in favour of it; and last year (1887), sixty-eight out of sixty-nine of the chambers of commerce presented a petition to the Chancellor of the Exchequer praying for its adoption. The opinion, indeed, of all competent authorities is unanimous in its favour. Nearly every civilized country has already adopted it, and it is strange to say, that the United Kingdom, and some of its colonies and dependencies, enjoy, with the Ottoman Empire, the proud distinction of being the only civilized countries that have not yet done so. Still we appear at the present moment to be just as far as ever from any chance of its being adopted.

I do not think that the great majority of educated persons in this country really understand the advantages of the decimal coinage, although they freely admit that it is superior to our cumbrous and complicated monetary system. If they did, they would not tolerate so long as they have done, the delay in adopting it; nor would they, as many do, consider the slight and temporary inconvenience which would be caused by the change, any hindrance to its being adopted.

We in Ireland, at all events, should not be much affected by such an objection, as up to the year 1825 we possessed a different standard from the one now in use, and we have constantly still to translate Irish money into the present currency.

The advantages of the decimal system of coinage all arise from the fact that our ordinary system of numeration is decimal, and that consequently great complication is introduced into all money calculations by our system of coinage not being so too. I trust it will not be considered superfluous for me to give a few illustrations, showing the simplicity of the decimal system, and the very great complication of our present system; for, as I said before, though theoretically acknowledged, I fear the advantages of the former are not practically recognised.

In the first place, then, the decimal system gets rid at once of all necessity for *reducing* sums of money from one denomination to another. We are all familiar with the constant trouble this causes, when we are obliged to compare odd sums expressed in different denominations. How many pence are there in (say) £47 17s. 7d.? We are obliged to take pencil and paper, and after setting down different rows of figures, arrive at a result which is probably wrong, owing to our haste in calculating. The decimal system, by assimi-

lating the coinage with the ordinary system of numeration, avoids all this trouble. An American or a Frenchman has never to reduce odd sums to another denomination. The very statement of the sum gives him the answer. \$47.17 is identically the *same sum* as 4,717 cents. All reductions are done under the decimal system, simply by moving the decimal point, and thus not only is considerable trouble, but also a constant source of error, entirely avoided.

The identity of sums expressed in different denominations, gets rid also of compound rules of arithmetic. All additions and subtractions, multiplications and divisions, are simple. Take for instance the sum before mentioned, £47 17s. 7d. Suppose we have to multiply it by 11. What a troublesome operation it is! Take its equivalent in American money, \$229.82. To multiply it by 11 you simply write one line of figures under the other and add up, and point off the decimal, thus:—

$$\begin{array}{r} 22982 \\ 22982 \\ \hline \$2528.02 \end{array}$$

The adoption of the decimal system would facilitate all monetary calculations, not only by abolishing all *reductions*, and all *compound* processes of arithmetic, but also, in a third way, scarcely less important—namely, by assimilating all proportionate allowances, such as *poundages* to *percentages*. How often have we to enquire, if a man pays 7d. in the £ income tax, what percentage is that of his income? Or if a landlord allows 30 per cent. reduction in his rent to the tenant, how much is that in the £? Or if a bookseller allows 2d. in the 1s. on the price of books, what percentage—or how much in the £, that is? These, and similar questions in every department of life, give immense trouble every day; and very often two persons calculating by different processes, one taking the percentage and the other the poundage, arrive at different results, and find it impossible to ascertain which is in error, as the processes throughout have been different. With a decimal coinage no such difficulty can arise. A *percentage* and a *poundage* are two different things; a *percentage* and a *dollarage* are exactly the same. There being 100 cents in the dollar, 5 per cent. is necessarily 5 cents in the dollar, 13 per cent. 13 cents in the dollar, and so on. To illustrate the importance of this assimilation, I will just refer to the schedule of reduction of judicial rents, published by the Irish Land Commissioners last December. For convenience the reductions were given both in *percentages* and *poundages*. I take, almost at random, the case of the Claremorris Union, and I find that the judicial rents fixed in 1881 in that union are to be reduced 14 per cent., or 2s. 9½d. in the £. Let us suppose now that a tenant's rent for the half-year, coming under this order, amounts to the sum of £47 17s. 7d., and that he and his landlord proceed to calculate the exact amount to be allowed out of this, under the schedule; the first difficulty in which they are placed is, that 14 per cent. is not precisely equivalent to 2s. 9½d. in the £; 14 per cent. = 2s. 9⅙d.,

i.e., a difference of one-tenth of a penny in the £, or very nearly 5d. in the sum named! Thus, suppose our landlord proceeds to calculate the poundage, and our tenant the percentage, and that they are both faultless arithmeticians, their results will differ by 5d.—the landlord offering to allow £6 13s. 7½d., and the tenant claiming £6 14s. 0½d. It may be some time before they discover the cause of this difference, and when they do, there is no means whatsoever of settling it. It is well that we are not an exact people.

But, putting aside this unavoidable source of error, look at the difficulty of the calculation according to our present system; supposing we desire to ascertain the result accurately, and not merely in the hap-hazard way we are generally satisfied with, we may proceed either by the rule of three or by practice. Let us take the former, and here is the sum:—

£ s. d.	:	s. d.	::	£ s. d.
1 0 0		2 9½		47 17 7
20		12		20
20		33		957
12		2		12
240		67		11491
2				67
480				80437
				68946
				480) 769897(1603½
				480
				2898
				2880
				1897
				1440
12)1603½				457
20)133s. 7½d.				2
£6 13s. 7½d.	Result.			914
				960 (nearly)

If we proceed by the method called practice our sum will appear much shorter; but this will result from our merely calculating mentally what is here done out in full. The danger of error too is much greater. The rule of three method is the more accurate, and the more likely to be selected of the two.

Now, let us see how matters would be under the decimal system. Taking the dollar as = 4s. 2d. Our tenant's half-year's rent would be \$229.82. The reduction is 14 per cent., or 14 cents in the dollar. There is no possibility of mistake in adopting different methods, nor is there any necessity for stating the dollarage, which is necessarily the same as the percentage. To ascertain the reduction, we simply multiply 229.82 by .14, thus:—

$$\begin{array}{r}
 229.82 \\
 .14 \\
 \hline
 91928 \\
 22982 \\
 \hline
 32.1748
 \end{array}$$

\$32.17 is thus our result; or, if we desire extreme accuracy, 32 dollars, $17\frac{18}{100}$ cents. Thus we obtain, working under the decimal system, by a sum involving only 23 figures, a result to the exact fraction, while under our own delightfully complicated method, a sum five times as long, involving no less than 120 figures, gives us a result which is only approximate. Under the decimal system there is only one possible method of doing the sum; under ours there are three, one of which must be different from the other two. It is true that in the case I have selected, it would have been much simpler to have calculated the percentage in the first instance, even with our present coinage; but this is not immediately apparent, and I venture to say, that in four cases out of every five in which the calculation has been actually made, the poundage has been chosen, and not the percentage.

If the decimal system possesses such advantages, as it undoubtedly does, in all calculations, why is it that England and some of her colonies alone among civilized nations adhere to the old system? Why have we not adopted a system which, it may truly be said, has commended itself to the whole civilized world. The answer, I think, is to be found in a confusion of thought with reference to the system which has generally prevailed between coinage and money of account. It is in calculations on paper, *i.e.*, in money of account, that the benefits of the decimal system are experienced. As regards the coinage itself, the decimal system has no advantages whatsoever; it is as easy to count 20 or 12 as 10. In fact, in coinage, the duodecimal system is distinctly superior, as it admits of a larger number of factors—12 is divisible by 2, 3, 4, and 6; while 10 is only divisible by 2 and 5. This is, however, only a slight advantage. Many suppose that the decimal system means a change in the coinage, and nothing more—a change which would cause much inconvenience, and would have no advantage. But as a matter of fact, the change in our money of account might be made with the least possible alteration in the coinage. Many of our present coins might continue, not only of the same size and value, but even with the same names as they at present possess. In France, although the decimal system has been in use for now nearly a century, the five centime piece is still called a sou. Our own half-crowns and florins are, like the French sou, not money of account, in our present system; and under a carefully-selected decimal system, we might preserve many of our existing coins, with great convenience to ignorant and uneducated persons.

We can scarcely blame those who confuse this question as to coinage and money of account in discussions on the decimal system; for the blunder has been made in the most outrageous manner by the

government, in the only attempt which has yet been made to approximate to the decimal system. In 1847, in consequence of the agitation for a decimal coinage, florins were first issued. The inscription, which they still bear, "one florin, one-tenth of a pound," shows their origin. Now, as the florin is not a coin of account, but is expressed as two shillings, its issue was really no advance whatsoever towards the decimal system. Nor did anyone, so far as I know, ever contemplate making it a coin of account. It is difficult, therefore, to see what was the object of its issue, except either to discredit the decimal system, or to prove that the mint authorities did not understand it. In the *coinage* the decimal division has no advantage; the half-crown has been, indeed, found a more convenient coin than the florin, two making exactly a quarter of a pound. Had the pound and mil scheme been adopted, *i.e.*, to divide the pound into 1,000 mils, the florin would have been a convenient coin of 100 mils, just as the shilling (50 mils) and sixpence (25 mils) might have continued to be issued; but until our money of account had been based on the decimal system, there was no step taken towards it by the issue of a single coin, which happened to be one-tenth of the value of another coin; but which was not, and from its high value could not be, the unit of calculation.

The advantages of the decimal system being admitted, the next question is, which of the various schemes proposed should be adopted? Before dealing with these in detail, I desire to state what, in my opinion, are the chief requisites of the system to be selected.—(1) It should necessitate as few changes as possible in the coins in actual circulation. Our money of account must be completely revolutionised. This may, however, be done without disturbing many of our existing coins, which, though expressed on paper entirely differently, may continue to circulate among poor and uneducated persons just as before. (2) The coins which remain unaltered should be the smaller and not the larger ones. As the reason for continuing our existing coins is to convenience the poor, it follows that it is their coins, and not those of the rich, which should remain—the *penny* is in this respect more important than the *pound*. It is the coin of the poor, and the coin of general circulation among all classes. A change in its value would cause very great confusion, and as the change would be only fractional, it would be exceedingly difficult to estimate its amount. It is not the poor alone who would be affected by the change in the value of the penny. Many large incomes are really based on penny charges—the proprietors of penny newspapers, the owners of tolls and ferries, shareholders in railways (the charges on which are invariably calculated at so many pence a mile), are equally interested with the poor in preserving the penny as a coin unchanged in value. (3) That the unit of monetary calculation adopted should correspond with the smallest coin in actual circulation; if it is larger, the use of fractions becomes necessary, which is extremely inconvenient in calculation; if smaller, it multiplies, unnecessarily, the number of figures in every sum. The French centime, and the Portuguese rei, are both unnecessarily small as units; our penny is too large. (4) That some regular proportion should exist between our present coinage and the new money, so that one

could be readily converted into the other. (5) That (provided the foregoing conditions be complied with) the system adopted should be one already in use among some other people, rather than a new one invented for ourselves. National vanity, indeed, might hinder us from copying the coinage of another nation, and lead us rather, as it has led the Germans, to adopt the latter course ; but the manifest convenience of assimilating our coinage to that of some great nation with whom we trade, and the advance which would thus be made towards the establishment of an international system of money, should outweigh any sentimental consideration of this kind. Taking these, then, as the requisites for the new monetary system, let us see how far the proposed scheme, and the existing systems in other countries comply with them.

The scheme originally put forward in this country by those who advocated the adoption of decimal money was what is known as the pound and mil scheme. This was proposed in parliament by Lord Wrottesley in 1824. It is based on the fact that the farthing is very nearly the one thousandth part of a pound. According to it the pound should be divided into 1,000 mils, instead of 960 farthings, as at present. The pound and the mil being the only coins of account, every sum of money would be expressed by the number of mils, which, pointed off to three places of decimals, would give the number of pounds. Thus £1 1s. would be expressed either as 1,050 mils or as £1.050 (one pound, fifty mils). The advantages of this system are that it would enable us to retain the pound as the principal unit of value, and also most of our existing silver coins. The florin (100 mils), shilling (50 mils), and sixpence (25 mils), would still be convenient coins for actual circulation ; and prices might still be expressed in them, if people were so disposed. The great *disadvantage* is that the penny finds no place in the system. The penny is equivalent to 4.16 mils, and could not in any way be accommodated to the new system, except by altering its value. Instead of it we should have a new coin of 5 mils, an alteration which, as has been pointed out, would seriously derange almost all pecuniary transactions.

This is not the only disadvantage of the pound and mil scheme : the difficulty of converting shillings and pence into mils is another serious drawback, there being no direct relation between mils and pence. Again, the mil is too small a unit of value. It is equivalent to 2 centimes—a piece of the value of which, though, I believe, actually coined, is scarcely ever met with in actual circulation in France. In fact, of the five conditions which, as I have stated, the new system should comply with, the pound and mil scheme only partially satisfies the first, and distinctly violates all the others.

As a modification of this scheme, it has been proposed to take the farthing instead of the pound as the fixed unit, to make the pound consist of 1,000 farthings, and to introduce a new coin called a doit (2½d.), equivalent to 10 farthings, so that the coinage would stand thus :—

10 farthings	= 1 doit.
10 doits	= 1 florin (2s. 1d.).
10 florins	= 1 pound (£1 os. 10d.).

The advantages of this system are that the smaller retail coins might be continued unaltered, the penny being still coined as 4 farthings. Retail prices, rates of postage, tolls, mileage charges, etc., need incur no alteration. The disadvantages are that it alters so considerably the value of the pound, and, what is even worse, retains old coins (the pound and the florin) with different values. It would be inconvenient to retain old coins with new values, but this could easily be avoided. This scheme appears to me by far the best of the systems proposed on the basis of our existing coinage.

The third scheme proposed by Mr. Rivers Wilson is aimed at an assimilation of the English and French monetary systems. He proposes to create a new coin of the value of 100 pence (8s. 4d.), which would be almost equivalent to 10 francs. The disadvantages of this scheme are that the penny is too large a coin for a unit of value, and were it adopted, it would be necessary either to use fractions (which are totally at variance with the decimal system) or an additional place of decimals.

It is not necessary to mention all the other schemes which have been suggested, the three above mentioned being undoubtedly the best put forward on the basis of our existing coinage—the first taking the pound, the second the farthing, and the third the penny, as the basis of the new system.

As regards foreign systems, it is only necessary to mention three, namely, those of the three most important nations with which we carry on trade—France, Germany, and the United States of America.

The French, alone of the nations, were enabled to decimalise their money, without in any way altering existing coins. Originally in France the system of coinage corresponded to the English system. The *livre* (like our *pound*, being one lb. of silver) was divided into 20 *sous*, and the *sou* into 12 *deniers*. But through successive depreciations of the coinage by dishonest governments, the *livre* became reduced in value to 10d., and the *denier* consequently disappeared altogether, as too minute. The *livre*, re-named *franc*, was adopted as the basis of the new system, divided into 100 centimes, the *sou* as 5 centimes finding a convenient place in the new coinage, and still retaining its old name. The French system (with different names for the coins) has been adopted by Italy, Belgium, Switzerland, and Greece. These countries constitute what is known as the Latin Union, their coins being alike in fineness and weight, and circulating indifferently in each country.

It would of course be a great convenience if we adopted the decimal system, to bring our coinage into correspondence with that of five other nations ; but the French system cannot be said to be recommended by any other consideration. The centime is entirely too small as a unit. Its multiple, the franc, is also too small as a coin of commerce ; and the French system would leave none of our existing coins in circulation. The 10 and 5 centime pieces would approximate, but only approximate, to the value of the penny and half-penny respectively.

The new German monetary system is similar to the French in the smallness of its unit and its multiple ; but to the great regret of all

those who look forward to the future adoption of a scheme of international money, the German government studiously avoided assimilation to the French system, although completely altering their old system or systems. The mark, value about $1\text{ r}\frac{1}{4}\text{d.}$, divided into 100 pfennige, is now the established coin of the German Empire. To us, this system has nothing to recommend it, except the approximate equal value of the mark and shilling. As against this, it has all the disadvantages of the French system.

[$\frac{1}{2}$ The American monetary system;—dollar (= 49·316 pence) divided into 100 cents, appears to me by far the best decimal system in existence, and better than any scheme which has been suggested for our own coinage. The unit selected corresponds with the smallest coin in actual circulation, which is the first desideratum. No coin less than one cent is either circulated or recognised in accounts in America. That this is not due to the particular circumstances of the United States, is proved by the fact, that in other countries, where the units are different, the coin which is equivalent in value to the cent is also the smallest coin in actual circulation. Thus in the United Kingdom, the half-penny is really the smallest coin of circulation. Farthings are coined, but are scarcely at all used. We have half-penny newspapers, half-penny tolls and fares, half-penny buns, etc.; but nothing sells for a farthing. In France, similarly, the five centime piece is the smallest circulating coin. Thus the cent, sou, and half-penny, which are practically equal in value, are the real units of coinage in the three greatest trading nations of the world, though the nominal standard differs widely in each. In some other countries, indeed, coins of a lesser value circulate, such as in Italy and Holland; but I believe they have been there rather forced into circulation by the low standard, than spontaneously adopted.

[$\frac{1}{2}$ If the decimal system is adopted in this country, it seems to me, therefore, that by far the best course would be for us to assimilate our coinage with that of the United States. The American system fulfils all the conditions which I have mentioned as being desirable for the new decimal system. In the first place, convenient coins can be found almost exactly equal in value to our existing coins. The cent differs from the half-penny by a fraction so slight, that the difference may fairly be disregarded—being $\cdot 007$ or $\frac{1}{143}$ part less in value. The penny would remain as two cents. The shilling as a quarter dollar (= 12·329 pence), and the florin, as a half dollar, might still remain in circulation. The unit of the system would correspond with the smallest coin in circulation, and the coinage of farthings might well be discontinued. Sums of money according to our present system could be readily converted into dollars and cents, merely by reducing to half-pence, and pointing off the decimal places. In addition to all these advantages, most people in this country, even among the poorer classes, are already familiar with the respective values of dollars and cents. The advantage, moreover, of having a common system of coinage to the two greatest English speaking nations would be very great, and as the other English colonies, which still retain our old fashioned

money system, would probably follow us in adopting the new coinage, we would thus start a great English Union, as opposed to the Latin Union, with a far better system of coinage than the latter, and one, therefore, more likely to be adopted as an international coinage, should the dreams of such, which some sanguine persons indulge in, ever be realized.

It may be said that even the dollar is too small a coin for large calculations, and perhaps it is; but it is the largest which can be adopted with a division into 100 units. The pound must be divided under the decimal scheme into 1,000 units, which necessitates pointing off three places of decimals, and this is far less convenient in many ways.

The fractional change in the value of the penny, may appear some objection to the American system: I think even this might be avoided by the adoption of what has frequently been urged for other reasons, namely, the charge of a seignorage for coining at the mint. It has often been pointed out that there is no reason in the world why the government should coin gold free for its subjects, as the English government does, thereby encouraging the melting of the coins. The American dollar consists of 25.8 grains of gold, valued at 49.316 pence of English money. If therefore coins of this actual weight were issued by our mint, and a seignorage charged of 1.368 cents in each dollar, the value in circulation would be exactly fifty pence, so that our small coins might be issued with both values printed on them. "One cent—one half-penny." "Two cents—one penny." In this way, I think we could introduce a decimal system of money, with the least possible inconvenience, and without making any very great change in our existing coins, while at the same time we would obtain the great advantage of assimilating our coinage with that of the largest English speaking nation in the world—the country with which we have most intercourse, both commercially and individually—the country, too, which seems destined by nature to become in a short time by far the richest and the greatest nation of the world.

VII.—*Emigration and Immigration.* By C. F. Bastable, M.A.

[Read Tuesday, 26th June, 1888.]

ALIKE in old and new countries there has been, during the last few years, a remarkable revival of interest in the long debated and apparently exhausted problems of emigration and colonization. Many important European states have shown by their official enquiries and reports, as well as by public discussion, that the attention of statesmen and publicists has been directed to the effects, both social and economic, likely to follow from the recent movements of population. On the other hand, the United States and our Australian and American colonies, looking at the same set of facts from an opposite stand-point, have been engaged in an examination of the influence