

this important element. For aught that we learn from the context the work of the last thirty years outside of France, with the exception of that done by a few English and Austrian writers on theory, has been completely thrown away. The only exception to this apparently general neglect is that the French translation of Roscher is continually mentioned. But Roscher is not typical of the newer writers; and to quote him ninety-nine times, while Schmoller is rather contemptuously brushed aside in two bare allusions, is not likely to give the reader confidence in the author's wide reading.

But if the work is accepted for what it is, and not for what others might desire it to be, the verdict must be distinctly favorable. M. Leroy-Beaulieu has a decidedly sane and evenly balanced mind (except possibly when he contemplates the wickedness of the socialists and protectionists); and the work is replete with interesting criticism on an abundance of well-chosen facts. Perhaps nowhere can be found a better collection of ample and well-digested statements from every field of business activity; while the comments are usually sensible and moderate. If not profound, the work is decidedly even and interesting; and if it is not calculated to give an impetus to any new movement in economic thought, it sums up, at all events, with undoubted ability, most of what is striking in the "liberal" school of French economists.

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*Appreciation and Interest.* By IRVING FISHER, Assistant Professor of Political Science in Yale University. (Publications of the American Economic Association, Vol. XI, No. 4.) New York, The Macmillan Co., 1896.—111 pp.

The fundamental idea enlarged upon in this very able memoir is that variations in the value of money, if steady or foreknowable, tend to be neutralized, so far as the relations of debtor and creditor are concerned, by compensatory changes in the rate of interest. Professor Fisher justly says that the subject has received scant attention from economists, and that the neglect of it constitutes a serious deficiency in economic discussion, more especially as regards the burning question of the effect of the appreciation of gold (assuming it to exist) upon debtors. Indeed, there are only two important references that the author is able to give to writings in which the factor in question is recognized—first being a paper by Jacob de Haas in the *Journal of the Royal Statistical Society*, March, 1889, entitled "A Third Element in the Rate of Interest"; and the second, Professor J. B.

Clark's paper in the *POLITICAL SCIENCE QUARTERLY*, September, 1895, on "The Gold Standard in the Light of Recent Theory."

The work is divided into three parts. The first part (34 pp.) contains a statement of the theory, which is extremely simple, together with a discussion of various mathematical questions involved in it, some of which are quite intricate. The second part (45 pp.) is devoted to an examination of a large number of facts fitted for the testing of the theory, and also for the determination of the degree to which, in actual experience, the compensatory modification of the rate of interest has been adequate or inadequate to the neutralization of the effect upon debts of variations in the value of money. The third part (13 pp.) deals with the application of the theory and the facts in the first two parts to the bimetallic controversy and to the general theory of interest.

The theory of the connection between appreciation (or depreciation) and interest is essentially contained in the second chapter, and is, of course, very simple. If we positively knew that the standard of value in actual use was rising in comparison with some other standard, the rate of interest which any one would be willing to pay, if the transaction were carried on in terms of the first standard, would be less than that which he would be willing to pay if it were carried on in the second. He would make allowance for the relatively increased value of the principal and interest which would become due in the one case as compared with the other. The standards in question might be gold and silver, or gold and wheat, or gold and labor, or what not. For convenience of language we shall for the moment speak of them as gold and silver. If we knew for certain that gold was appreciating relatively to silver at such a rate that a unit of gold would, at the end of a year, purchase  $(1 + a)$  times as much silver as at the beginning, and if the rate of interest we were willing to pay in silver were  $j$ , we should be equally willing to pay in gold a rate of interest  $i$ , which is obviously determined as follows :

At the end of a year, the amount arising from a unit of gold would be  $(1 + i)$ , and the quantity of silver which this would purchase would be  $(1 + a)(1 + i)$  times the quantity that a unit of gold would have purchased at the beginning of the year. But, on the other hand, if this purchase had been made and the silver had been placed at interest at the rate  $j$ , the amount at the end of the year would have been  $(1 + j)$  times the quantity purchased at the beginning. In order, then, that the result of the two transactions be the same, it is necessary that  $(1 + a)(1 + i) = 1 + j$ , whence

$j = i + a + ai$ . The formula of course reduces approximately to  $i = j - a$ , which is quite accurate enough for most purposes; and Professor Fisher lays too much stress on the deviation from this simple equation.

By means of this formula referring to a single year, it is possible, of course, to deduce the amount which should accrue in the course of any number of years, so as to produce equivalence in the whole outcome, as between transactions in the two standards, whether regular or irregular instalments be paid by way of interest or partial payments. The author gives the mathematical discussion of questions of this kind, including also the problem of perpetual annuities, in the third and fourth chapters; and in the fifth chapter he considers the case in which the rates of appreciation and interest vary during the period. The reader interested in the economic problem under discussion may without loss take all this for granted, and simply assume that so far as the formulas are needed for the purposes of Part II — comparison with the facts — they have been correctly obtained and are correctly applied by the author. In the sixth chapter it is pointed out that a limit is set to the possibility of compensation by the obvious requirement that appreciation must not be so rapid as to require for its correction a negative rate of interest.

Coming to the consideration of facts, Professor Fisher begins by stating (Chapter VII) that while, speaking generally, appreciation of the standard is not explicitly foreseen, it is virtually foreseen through experience of the course of prices, wages, profits, *etc.* The practical business man has this virtual foresight in a high degree, and can tell better than the academic bimetallist what interest he can afford to pay. The eighth, ninth and tenth chapters contain the most interesting matter in the memoir, being devoted in the main to the discussion of statistical data by which an attempt is made to measure the actual influence which this virtual prevision of appreciation has had upon the rate of interest. The first specific comparison made is that between two classes of United States bonds, the coin 4's and the currency 6's. The most interesting confirmation of the theory furnished by the table here presented is given by the fact that all the way from 1870 to 1875 any purchaser of the currency bonds realized a decidedly *lower* rate of interest than a purchaser of the gold bonds (both being supposed to hold the bonds to maturity), a result which can be accounted for only by supposing that there was an expectation of a rise in the gold value of the paper. It was only after 1878, when resumption had been virtually accomplished, that the relation

between the two classes of bonds was reversed, the gold bonds thereafter yielding a lower net interest.

The next comparison instituted is that between gold and silver. For this purpose the author avails himself of the simultaneous quotations in the London market for gold and silver India bonds. The simultaneous presence, in the same market, for a long series of years, of these two classes of bonds issued by the same government, adapts them peculiarly to serve the purpose of a study of the way in which the fall of silver since 1873 has operated upon the rate of interest. It has been objected by a reviewer of Professor Fisher's memoir that the comparison is entirely vitiated by the circumstance that the silver bonds were repayable on three months' notice, while the gold bonds had a long period to run—a circumstance which the critic says "is of itself sufficient to account for the major part of the difference in the interest rate."<sup>1</sup> In making this remark, however, he overlooks the circumstance that the table extends back to 1865, and that from that time until 1875, when the fall of India exchange began, the difference in rates of interest realized seems to have been only two-tenths of one per cent. Moreover, this antecedent difference is taken into account by the author in arriving at his conclusion concerning the period subsequent to 1875.

From the data furnished by the quotations, Professor Fisher finds that the average annual interest realized by persons purchasing silver bonds (the whole transaction being of course looked upon as carried on in silver) between 1875 and 1895 was 4.5 per cent, while in the case of gold bonds the average interest was 3.7 per cent, showing an estimated annual appreciation of gold relatively to silver of 0.8 per cent, or after allowance for the antecedent difference above referred to, of 0.7 per cent. But the actual annual appreciation of gold in relation to silver during these twenty years was 2.1 per cent. Accordingly, the anticipation of the decline of silver operated in a marked degree upon the rate of interest, but by no means in an adequate degree. Against the 2.1 per cent annual fall, investors protected themselves to the extent of 0.7 per cent, and the remaining 1.4 per cent means a *relative* loss to the purchasers of silver bonds.

"The question arises at this point," says Professor Fisher, "How is this 1½ per cent to be distributed? Did investors overestimate silver or underestimate gold most? There is nothing in the foregoing investigation to decide this vexed question. Our quantitative

<sup>1</sup> H. H. Powers in the *Annals of the American Academy*.

result is purely a differential one." He arrives at the conclusion, however, that almost certainly not more than three-fourths of one per cent was due to an underestimate of gold, since there is every reason to believe that foreknowledge in the case of gold was far better than in the case of silver. In his reasoning on this point, however, Professor Fisher seems to have fallen into a serious error. The fact that the "result is a purely differential one" not only prevents one from inferring how the difference "is to be distributed," but from asserting that it is, in any ordinary sense, to be distributed at all. There is nothing in the data presented at this point to preclude the theoretical possibility that, with reference to some third standard—and some kind of third standard must be had in mind when one speaks of a distinction between overestimating silver and underestimating gold—both silver and gold had been overestimated, and that the difference was one of degree of overestimation.

More interesting than the foregoing investigation is that next taken up, in which money (gold) is compared with commodities generally by means of index numbers. There being no recorded "commodity interest," recourse must be had to comparisons of successive periods, instead of rates simultaneously realized. Space will not permit a detailed account of the extensive and laborious comparisons instituted; suffice it to say that the record of rates of interest prevailing in periods of rising and of falling prices seems to show with sufficient uniformity that these tendencies are regularly countervailed in some measure by changes in the rate of interest, which is high or low according as prices are rising or falling. But, as in the case of the comparison between gold and silver, the adjustment is found to have been inadequate, so that commodity interest was high when money interest was low, and *vice versa*. The author regards the results arrived at as enabling us to "understand why a high rate of interest need not retard trade, nor a low rate stimulate it." While he is entirely right in his criticism of what distinguished authorities have rather fatuously said on this point, and while his conclusions throw useful light on the subject, would it not be more to the purpose simply to say, in reply to those who may be puzzled by the phenomenon in question, that the rate of interest is more the effect than the cause of business conditions, and may therefore in general be expected to be somewhere near what is justified by results?

Comparison is made not only between money and commodities, but also between money and labor; and, in view of this comparison more particularly, the final conclusion reached by the author is that

the loss sustained by debtors in general, by the appreciation of gold, after allowing for the fall of interest due to the anticipation of this appreciation, has been about two-thirds of one per cent per annum.

The foregoing will serve to convey an idea of Professor Fisher's work. It abounds in acute observations of which no mention has been made; nor has any account been given of Part III, which, while bearing directly on the living question of bimetallism, is less distinctive. The labor involved in the construction of the tables must have been extremely great. The argument is sometimes open to the charge of being one-sided, the author's attention being so strongly concentrated upon the single factor he is discussing; but it is marked throughout by great ability and insight. Professor Fisher's monograph will repay close study, and is certainly a valuable contribution to scientific economics.

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*An Essay on the Present Distribution of Wealth in the United States.* By CHARLES B. SPAHR, Ph.D. New York, Thos. Y. Crowell & Co., 1896. — 184 pp.

Dr. Spahr has brought together what statistics there are bearing on the distribution of wealth and of incomes in Europe and the United States. It is needless to say that such statistics are very difficult to get. A census of individual wealth or income has never been attempted; and it could never be successful, because of the ignorance, untruthfulness and suspiciousness of individuals. Statistics based on income taxes, probate returns, *etc.*, suffer from the desire of people to minimize their tax burdens, and from the policy of exempting the lower incomes. The doubtfulness of the absolute figures is still further accentuated by the necessity of filling up the *lacunae* with estimates of wages, of the average amount of property enjoyed, of average consumption, *etc.*, which allow a wide margin for the subjective bias of the operator to work in.

Of these dangers Dr. Spahr is well aware. In his preface he says:

The writer has learned, and hopes to teach, that, upon matters coming within its field, the common observation of common people is more trustworthy than the statistical investigations of the most unprejudiced experts. Indeed, he has come to believe that social statistics are only trustworthy when they show the world at large what common observation shows to those personally familiar with the conditions described.