Comment on Rent under Increasing Returns

A reawakening interest in problems of theory has been evidenced in recent years by an increasing number of thoughtful essays in the leading economic journals. Several articles and communications in the last number of the REVIEW present a good American example; but the tendency since the war is probably world-wide. Even in Germany, so long under the domination of a historical school most inhospitable to the logical, formative type of theory, may be seen renewed efforts to attain more generalized, logical statements of economic truths. Professor Adolph Weber of the University of Munich in the preface to his systematic text has recently expressed his full agreement with H. Herkner in the belief that the understanding of economic relationships is best to be attained by a timely rebirth of the methods and doctrines of the classical economists. Weber adds that "Herkner makes this confession at the end of his self-biography (in 1924), which he himself calls 'the life of a socialist of the chair,' and therefore it comes out of a camp in which for decades many of our best minds have felt compelled to combat the classicists with passionate zeal." Interpreted in the light of well-known circumstances in Germany, this is not a plea for the revival in its details of an antique Ricardianism, but rather is evidence of the growing influence of the Austrian psychological school which the German historical economists long embraced in one sweeping condemnation of every attempt to utilize deductive, logical and formative methods of study.

Reprinted from *American Economic Review* 20 (March 1930). The comments refer to a paper by Albert Benedict Wolfe entitled "Rent under Increasing Returns," *American Economic Review* 19 (December 1929): 580-604.

The article in the December REVIEW on "Rent under Increasing Returns" serves a useful purpose at this time in stimulating interest in the older rent doctrine. That grim ghost still is "doomed to stalk the night till the foul deeds done in its days of nature are burned and purged away." But, despite the earnest and laudable purpose of the article in question, it may contribute to further misunderstanding if it is accepted uncritically and without amendment.

Its thesis is perhaps best expressed in its final sentence: "It may be questioned whether theory has not assumed a more invariable and certain relation between rent and diminishing returns than the facts entirely justify" (p. 604). More specifically, the article denies what "most textbooks state that rent does not emerge until the point of diminishing returns . . . . is reached, and thereby imply that rent does emerge immediately that point is passed" (p. 581).

The results arrived at in this article are presented modestly as "of doubtful applicability to actual conditions in a settled and mature country," but as probably having a "practical bearing" under the conditions that will be necessitated by an "indefinitely continued growth of world population."

However, a careful reading of the article raises doubts as to even these very qualified claims, inasmuch as the results seem to be deduced from mutually contradictory assumptions, and from a mistaken interpretation of some of the very essentials of the doctrine that the author is seeking merely to revise in minor details. Let us consider the treatment in the article: first, of cost on the marginal no-rent land, and secondly, of the concept of increasing returns. The one question relates to the interpretation of the most valid feature of the Ricardian doctrine, the other to certain points of more modern theory.

(1) In the classical rent doctrine, cost (which Professor Wolfe not inaptly prefers to call input) is always held to equal, or to absorb, the *whole* product on the no-rent land. The Ricardian rent doctrine was really a study in the valuation of complementary agents by the residual method; the costs on the rent land

being reckoned from those on the no-rent land where there was no surplus above costs—on the marginal land, as it has been called recently. But in the article before us it is at once (see Figure 3) assumed as a fixed condition that the B land is and remains free, or no-rent, land and at the same time that no matter how intensive the cultivation or how large the surplus product, each dose of "input" (cost) continues to absorb (or equal in value) less than the product on the free land. When cultivation extends to and stops at 5 doses on the B land, as is assumed, total return, according to the illustrative table (p. 584), is 50 units of product, costs are only 25 units (5 doses each equal to 5 units of product), and there is a surplus over input of 25 units of product. The author repeatedly indicates such a situation as a possible and conceivable static equilibrium. But is this true? If B is free land, there can be no surplus product (physical or value) above input except on the extreme condition that the product itself is a free good, and in that case evidently there would be no rent on the A land or on any other. If B land is free when cultivated with 5 doses of input, then, in a static equilibrium, the input would have a value of 10 units of product per dose and absorb all the product of 50 units on B, and similar agents would "cost" 10 units a dose if bought for use on A (and a similar "opportunity" cost).

The erroneous method yields equally bad results as applied to the A land in its interrelation with the B land. A fleeting glimpse of the truth is given in the following words (p. 584): "If there were no free land productive enough to yield a surplus over expense of input, tract A would be given 16 doses of input." That is in accord with a feature of the old Ricardian rent doctrine frequently misunderstood in the old days, *viz.*, it is not necessary to have an *extensive* margin of no-rent land from which to measure the rent on good land; an intensive margin of no profit on additional doses of input is an equally effective no-rent margin. Professor Hollander away back in 1895 (*Quarterly Journal of Economics,* vol. ix, p. 175) corrected this then current misunderstanding. But immediately after the recognition above that cultivation on the A land (logically) stops at the point where additional costs produce no surplus above the added costs (and

not until then), the argument turns to the assumption that "since land B is free, cultivation of A" stops at 13 doses, although the accompanying table shows that the total net surplus above costs on A can be maximized by going on to the fifteenth (or sixteenth) dose.

The error just noted is magnified in elaborate tables, calculations and diagrams (pp. 585-596), by which it is made to appear that under certain conditions, when the individual cultivator employs the equivalent of 13 doses, he will apply eight of them on the A land yielding a rent, and five on B, free land (p. 596). Observe that this all relates to what an individual will do in adapting himself to a general rent level and situation determined by broad, general forces beyond his control. This leaves the cultivation stopping (see Table III) where an additional dose of input (claiming 5 units of product) would yield 11.5 units of product on A and 12 units of product on B. The absurdity lies not in the slight inequality between the two surpluses— that is probably a mere accident of the arbitrarily chosen figures—but in the lack of correspondence at the margins in both cases between the inputs (costs) and the products.

At this point (p. 596), the true limiting factor being lost to sight, the curious suggestion is made that the rent on A is determined by the difference between the gross product which could be secured by first, distributing between A and B the 13 doses of input, and secondly, applying all 13 doses of input upon B (to wit, 164 minus 107, leaving 57). But this assumes a most irrational procedure and two errors. First, if B is really free land, then the 5 doses of input applied to it must have a value of, or be rewarded by, the whole physical product, that is, each dose by 10 units of product. Call this, if you will, the marginal valuation of input doses. If, then, 8 doses of input (costing 80 units of product) are used on A to secure a total return of 114, the remainder, 34, is the surplus on the better land and indicates the maximum possible rent under these conditions. It is still another error in this connection to assume, as is done, that if all the 13 doses were used on B land they would be applied intensively on one piece and give a gross product of only 107 units; whereas

Table I, containing the assumed data, shows that by spreading the 13 doses of input over two pieces of free land (6½ doses on each or 6 and 7 respectively) an average return of 10.3 units per dose or a total of 134 units of products could be secured.

(2) The second great source of difficulty in the argument is that elusive term "increasing returns." In the history of economic thought increasing returns (also its converse, decreasing returns) has been conceived of chiefly in connection with long-time dynamic changes in the whole national economy, accompanying changes in the state of the arts, etc., and in the pressure of population— long thus intimately related with the Malthusian doctrine. But sometimes ambiguously it has been used in connection also with the smaller problem of a single enterprise and the static situation in which the user of agents (tenant of land) seeks individually to adjust the proportion of the factors which he controls to the larger situation and equilibrium of which he is an almost negligible part. The former, a social welfare concept, is on historical and logical grounds, the better—indeed the only defensible usage in the study of rent levels. The other pertains only to the problem of individual profit. Professor Wolfe, if he is aware of this alternative, prefers and follows the second meaning and (as above indicated) is concerned throughout his discussion with this smaller problem of the individual enterpriser who is trying to adjust his own operations as best he can to a prevailing norm, or to improve upon it, and who, when he succeeds, gets the maximum profit from his agents. In this epoch of still divided and ambiguous usage of terms, an author is of course within his rights and still has respectable company when he thus chooses; but his choice entails certain illogical consequences now pretty generally recognized.

Some of these results appear in connection with the treatment of incremental and average returns in the article before us. It is said (p. 580) that "most writers mean by the phrase 'diminishing returns' diminishing average returns," though, as is added critically, "some do not take the trouble to say what they mean." This statement, in which "returns" pretty evidently refers to

individual profit-returns, is doubtless right. The sufficient explanation of the preference for average rather than incremental lies in this simple fact, that in any comparison between two average returns resulting from the use of one dose more or less of input, there is contained and expressed all that is significant of an incremental nature. The question which the individual cultivator has to decide is not whether another dose of input will give a gross result greater or less than did a preceding dose, but whether it will increase the gross result by more than the amount (or value) of the added dose of input. If it thus gives any net gain, it is economically justified. Most of the comparisons in the article between the gross results of successive increments of input are thus beside the mark. As Ricardianism they are unorthodox, and as marginalism they are misconceived.

A crucial difficulty in the article is thus in the way of thinking of the alternative choices of levels of returns as giving increasing returns. The author professes to be using the terms "successive," etc., in a logical and not a time sense (p. 581). He declares that in his analysis he is assuming "static conditions." But the various average and incremental returns in all the invented tables and in the figures could not possibly exist contemporaneously. The moment that a new general rent level is reached (in imagination or in reality) as a result of technological changes causing a different proportion of input to be generally the more economic, the other points and levels become impossible choices for the individual. To think otherwise is an error of interpretation of marginal valuation curves once almost universal, and still common. It is involved in the notion of consumers' and producers' surpluses. Here it is erroneous to think of each dose of input beyond the first as having a separable amount of returns. When, say, 8 doses are used in combination, no single dose has the separate or distinctive return that it had when used separately, but only its *pro rata* now of the new total return. Moreover, in the problem treated in this article, the most profitable mode of use by an individual of a valuable (rent bearing) agent, the rent—either as contractual or as an alternative valuation—is a part of the "costs" of the cultivator, as is now conceded by

neo-Ricardian enlightened economists such as Marshall and Taussig. Truly competitive rent implies the use of land by methods and to the degree of intensiveness abreast of current technology and practice. That being so, the attempt of the individual to use only 7 or 6 or fewer doses when 8 was the proper or best dosage, would simply mean loss or utter bankruptcy. These options do not exist in fact or in sound theory. The answer that Professor F. M. Taylor would give, which appears to be fairly stated (p. 596), is conceded by Professor Wolfe to be "in pure static theory . . . . unassailable." In seeking to weaken its force, he patently shifts to dynamic conditions which are not those of the problem he has been discussing. In sum, the static increasing returns, the effects of which upon rent it is the purpose of the article to elucidate, have no existence excepting in the whimsical sense of the correction by an enterpriser of successive costly blunders. This has been accepted doctrine in the newer theory for well-nigh a third of a century.

In the preceding comments Professor Wolfe's use of the word "rent" as the yield or income merely from agricultural land has been followed, although I cannot but look upon such a conception as passé in the light of a past generation of constructive criticism in this field. Can it now be doubted that the idea of a most profitable proportion of complementary inputs is equally applicable to all kinds of agents, or that the most useful aspect of the old rent concept is applicable as well to the durative separable uses of any kind of goods? I trust therefore that no reader will infer from certain expressions above, regarding the consistent interpretation of Ricardian doctrine, that I mean to signify my own adherence to it. *Gott bewahre!*