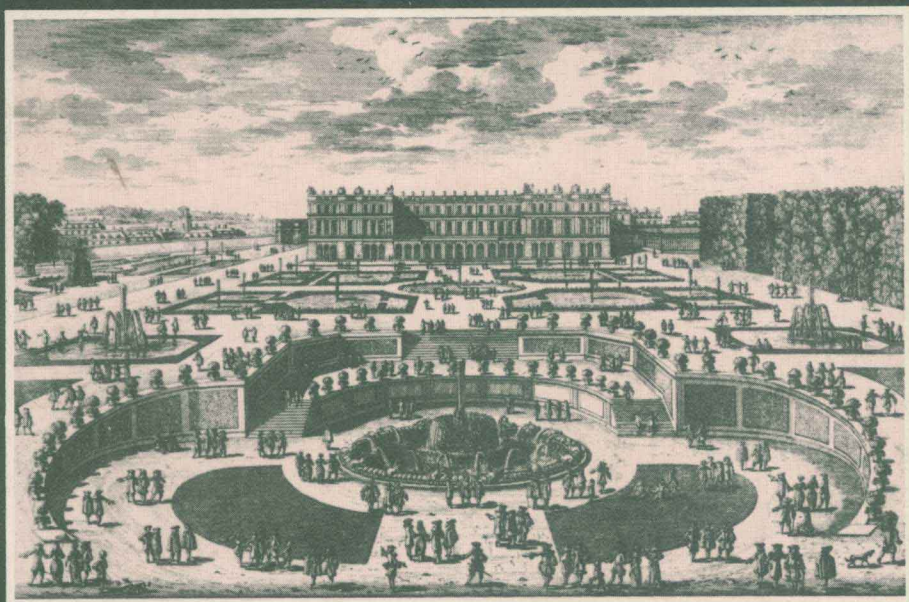


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CLASSICAL THEORY  
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ECONOMIC GROWTH



WALTER ELTIS

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# The Classical Theory of Economic Growth

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# Preface

This book seeks to provide an account of the theory of economic growth and income distribution as it was invented and developed successively by François Quesnay, Adam Smith, Thomas R. Malthus, David Ricardo and Karl Marx. These were five of the most original and distinguished thinkers to devote serious attention to economic problems, and they left important books which have enriched economics and exercised great political influence.

The classical theory of economic growth which they initiated, elaborated and corrected has two fundamental characteristics. Part and only part of the economy generates an investable surplus over costs; and growth depends on the reinvestment of a sufficient fraction of that surplus. In Quesnay's version of the theory, growth depends primarily on the reinvestment of the agricultural surplus, but it is also strongly influenced by the *demand* for agricultural produce which owes much to the extent to which rents are spent on food. The economy's full interrelationships are set out in the celebrated *Tableau Economique*, which Quesnay invented in 1758–9, and this is the subject of Chapter 1.

The theory of economic growth which follows from the conditions set out in the *Tableau* is the subject of Chapter 2. Economic advice streamed to Versailles, Baden Baden and even St Petersburg from Quesnay's Physiocratic school of *Economistes*, and many of his contemporaries were satisfied that profoundly important logical argument based on the *Tableau* underpinned the policy recommendations, but the *Tableau* itself, like much of the modern economics on which government decisions are based, was extremely obscure.

Smith visited Paris in 1765–6 while respect for Quesnay's economics was at its height, and it may be presumed that he achieved a complete grasp of Physiocratic economic theory. *The Nature and Causes of the Wealth of Nations* of 1776 which links the generation of an economic surplus to capital accumulation and economic growth contains the essence of Quesnay's argument, but Smith found a way

of stating it which avoided the complexities of the *Tableau*. In Smith's version, moreover, industry and commerce contribute to the surpluses which influence the rate of growth, and this made more sense to his English and Scottish contemporaries than the Physiocratic propositions where only agriculture matters. Smith's explanation of the causes of economic growth, which is the subject of Chapter 3, was comprehensible to all who were literate and interested in economic questions, and these included Thomas R. Malthus, a Fellow of Jesus College, Cambridge, who sought to understand and account for the inevitability of population growth, and David Ricardo, a wealthy stockbroker who found a copy of Smith's great book in a circulating library in Bath in 1799, and like Malthus went on to correct and develop certain aspects of the argument.

Malthus's first important extension, his *Essay on the Principle of Population* of 1798, integrated into the argument the implications of scarce natural resources on the planet. Capital was the principal scarce factor of production so far as Smith and Quesnay were concerned, and they both took it for granted that if a country could expand its capital stock, then population and output would grow almost as rapidly. Malthus in contrast believed that the production of food could be expanded only slowly and with difficulty, and that it was this that fundamentally limited the scope for growth in population and hence in output. The economic and social conclusions which follow from his theory of population are the subject of Chapter 4.

Malthus also questioned Smith's belief in the overriding importance of capital accumulation as a determinant of growth. He believed that growth would cease if effective demand failed to expand. He considered that lack of effective demand provided an explanation of the underdevelopment of most of the world, which was no less important than a general inability to raise supply. Malthus's theory of effective demand which he set out in his *Principles of Political Economy Considered With a View to Their Practical Application* of 1820 is the subject of Chapter 5. It was remarkably prescient, and in several respects it anticipates the twentieth-century theories of Keynes and Kalecki.

Ricardo was entirely unconvinced that effective demand influences growth, and his great extension and correction of Smith was the powerful theory of income distribution which follows from a grafting of agricultural diminishing returns on to the argument of *The Wealth of Nations*. With this and other important new theoretical insights, he was able to evolve a precise and logically complete theory of the

interactions of the economy which allowed him to offer a wide range of policy advice to the House of Commons, of which he was a member from 1819 until his death in 1823. His *Principles of Political Economy and Taxation* of 1817 had offered an analysis of the influence on income distribution of every kind of tax, and like Quesnay before him, he was able to offer his contemporaries a complete account of the underlying forces which produce economic growth or decline, and how these can be expected to influence wages, profits and rents. This is the subject of Chapter 6.

Marx absorbed *all* the economic writings of his great predecessors, and he wrote thousands of pages (which mostly remained unpublished until long after his death) to explain where they were correct and where they had been superficial. By 1867, when he published the first volume of *Capital*, Britain was far more industrialised than in the time of Malthus and Ricardo, and this had raised profits vastly more than wages. Marx believed that his predecessors had overlooked the fundamental explanation of this development. They had failed to appreciate that all surpluses over wage costs, on which profits and rents and a society's investment potential must ultimately depend, are due to the social, political and legal conditions which allow the capitalist class to squeeze more labour from the working class than the production of goods for workers' subsistence actually requires. To Marx, profits and rents were ultimately due to the power of capitalists to coerce workers to labour with unnecessary intensity and for excessive hours, and his theory of exploitation is the subject of Chapter 7.

Marx believed in addition that his predecessors had erred in taking it for granted that capital accumulation would raise the demand for labour. He believed instead that industrial and agricultural investment was beginning to displace labour, and that increases in the capital stock would in the end cease to create opportunities to raise employment. The fruits of technical advance would then go entirely to capitalists because competition for jobs from the growing reserve army of the unemployed could be guaranteed to hold wages down. Even capitalists would begin to suffer from a declining rate of profit as mechanisation continued to advance, though their aggregate profits would continue to grow for some time after the rate of profit began to fall. Moreover, capitalists could not be expected to spend all the gains which market forces together with these technical trends allocated to them. Hence capitalism would collapse because effective demand would cease to keep pace with the enormous growth in

productive potential which increasing mechanisation was all the time creating. These technical trends and their implications are the subject of Chapter 8.

Finally, the way in which each of these theories of growth follows from its predecessors, which is merely touched on here, is the subject of Chapter 9, which sums up the classical theory of economic growth and explains why some aspects of these eighteenth- and nineteenth-century theories have become obsolete, while others are still vitally relevant to our world.

Restatements of the theories of the great eighteenth- and nineteenth-century economists present particular problems. What they had to say was of exceptional originality and interest, but they did not write with the clarity and rigour of modern economics, and the presentation of economic argument has advanced. Nowadays assumptions are stated clearly, and conclusions are derived from these and tested against the available data. Does logical theory of the modern kind underpin the far less clear writings of Quesnay, Smith, Malthus, Ricardo and Marx? It has been my assumption in writing this book that it does. The inferior economists of the eighteenth and nineteenth centuries are inconsistent and episodic in a way in which these great authors are not, and it has seemed overwhelmingly plausible that their argument rests on an underlying logical structure. The problem is to ascertain what that structure is.

Quesnay-like, Smith-like, Malthus-like, Ricardo-like and Marx-like theories can be constructed *ad infinitum*. How can there be any confidence that modern restatements amount to the theory which actually underlies the thought of the economists in question? For this two conditions must be met. The assumptions must be precisely those of these authors and the conclusions derived from the assumptions must be theirs. It is a relatively simple matter to set out a model which claims to be Smith's or Malthus's, to arrive at several of their results, and then to claim that those of their conclusions which differ from purported twentieth-century restatements do so because of eighteenth- and nineteenth-century logical error. Modern restatements are only likely to be the appropriate ones if the conclusions are overwhelmingly those arrived at by the original authors.

In the present book I have followed the procedure of stating the assumptions of these economists entirely through quotation from their own work. As well as ensuring that their own assumptions are indeed being followed, this should give readers some feel for the way in which they thought, which bald modern restatements of their

assumptions can hardly provide. In the case of Malthus's theory of population, and Marx's theory of exploitation, with which Chapters 4 and 7 are concerned, a full statement of their assumptions in their own words was almost all that was needed. Their conclusions follow easily and naturally from these, and further problems of interpretation are only slightly controversial. For the explanation of Quesnay's *Tableau*, Smith's theory of growth, Malthus's theory of effective demand, Ricardo's theory of distribution, and Marx's theory of the tendency towards a declining rate of profit and a growing reserve army of labour, far more is involved. The conclusions do not follow at once from these authors' published premises, so it is necessary to find simple but convincing logical argument which leads from the assumptions to the conclusions.

The restatements which are offered here contain non-mathematical accounts of the argument, and in addition brief mathematical restatements. These are there to show how a mathematical argument would go, and to convince readers that the economists in question arrived at logically consistent conclusions which can be stated in the modern way. Such mathematics forms only a small fraction of the book, and readers will follow almost all of its argument if they are unable (or decline) to read the mathematical sections (which are preceded by an asterisk). I have however allowed a little mathematics to pervade the whole of the chapter on Ricardo. His work is so deep-rooted in abstract logic that a wholly non-algebraic statement confined to a single chapter could make known to readers only a travesty of his contribution. The present restatement which arrives at many of his principal results should be comprehensible to all who are not resistant to a little algebra of the most elemental kind.

My first effort to write about classical economics resulted from the invitation I received in 1972 to contribute an account of Adam Smith's theory of economic growth, set out in modern terms, to the *Essays on Adam Smith* which Tom Wilson and Andrew Skinner were editing for the Oxford University Press in connection with the bicentenary of *The Wealth of Nations*. Klaus Hennings gave me the admirable advice that when I was satisfied that I had found an appropriate modern representation of Smith's argument, I should re-read *The Wealth of Nations* and only be content if I found no passages in the book which were in conflict with my attempted restatement. I have followed this procedure with all the chapters, and I was fortunate enough to find a reformulation of Smith's argument which arrived at results which corresponded to all his statements



about the growth process of which I was aware. This forms the basis of Chapter 3, but this has developed considerably from the version I published in *Essays on Adam Smith*. It has benefited especially from a reaction of Max Hartwell's. He believed that I had looked at Smith peculiarly as an economist, by focusing attention on technical connections such as those between investment, laws of returns and the rate of growth, and ignored Smith's deep concern with the nature of social institutions. Capital would inevitably accumulate in an environment in which individuals' natural motivations to increase their personal wealth could flourish, and the technicalities of the accumulation process were of secondary importance compared with this. That vital thread in Smith's argument, with its origins in *The Theory of Moral Sentiments*, and others which I neglected in my original version, are now very much a part of the argument.

I followed my essay on Smith's theory of growth with an attempt which began in 1973 to understand Quesnay's challenging *Tableau Economique* and its implications. In the next eighteen months I read everything I could find by Quesnay and about him, and I only fully grasped the richness and depth of his argument after the Library of the Taylor Institution in Oxford University had managed to obtain a copy of *L'Ami des Hommes*, which included the final volumes to which Quesnay contributed, through an intra-library loan from Berlin. Eighteenth-century Oxford had failed to appreciate that important economics was being published in France, and there were no copies of Quesnay's work in collaboration with Victor de Riqueti, Marquis de Mirabeau, in the Bodleian Library or in any of the twenty-eight College libraries. The explanation of the *Tableau* in disequilibrium in *L'Ami des Hommes* made it crystal clear to me for the first time that this eighteenth-century French doctor was actually making the Keynes-like assumption that the demand for food and manufactures depended upon the repeated expenditures of precise fractions of the coin originally received by landlords. Once I grasped this (and there had been several references to this multiplier process in other passages which I had not taken in because it had not occurred to me that Quesnay could have discovered anything so 'modern'), the rest fell into place quite naturally, and I was able to publish restatements of the *Tableau* and of Quesnay's theory of economic growth in *Oxford Economic Papers* in 1975. These two articles have been republished since in Italian and in Spanish, and they form the basis for Chapters 1 and 2. The versions here have benefited from literature which followed their publication including Guido

# Abbreviations for Much-cited Works and the Editions Used

## FRANÇOIS QUESNAY

- Q      *François Quesnay et la Physiocratie*, Institut National d'Etudes Démographiques, Paris, 2 vols, 1958, which contains the text of most of Quesnay's economic writings.
- Tab     *Quesnay's Tableau Economique*, ed. Marguerite Kuczyinski and Ronald L. Meek, Macmillan, London, 1972.
- AH     *L'Ami des Hommes*, Mirabeau (and Quesnay), a 1756–60 Avignon edition reprinted by Scientia Verlag Aalen, 1970.
- PR     *Philosophie Rurale*, Mirabeau (and Quesnay), one of the 1764 Amsterdam editions (there is another with different pagination) reprinted by Scientia Verlag Aalen, 1972.

Where the letter [E] follows a page reference the responsibility for a translation is the present author's, while the letter [M] signifies that a translation is by Ronald Meek.

## ADAM SMITH

- TMS    *The Theory of Moral Sentiments*, ed. D. D. Raphael and A.L. Macfie.
- WN     *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. R. H. Campbell and A. S. Skinner, 2 vols.
- Jur     *Lectures on Jurisprudence*, ed. R. L. Meek and D. D. Raphael and P. G. Stein.

Candela's 'La Fisiocrazia Secondo Eltis' (1976), and from correspondence with the late Ronald Meek.

My subsequent work on Malthus and Ricardo which preoccupied me from 1976 to 1979 (although I had started to lecture on them in the early 1960s) has benefited immeasurably from the help and kindness of Samuel Hollander. He was instrumental in my receiving an invitation to spend a sabbatical year as a Visiting Professor in the University of Toronto in 1976–7, he read earlier versions of each chapter, and his comments and many insights into the work of Malthus and Ricardo have been of immense value to me. My restatement of Ricardo in Chapter 6 has more of the 'corn model' than his *The Economics of David Ricardo* (1979), though I have followed John Hicks (1972) in substituting 'necessities' – a workers' consumer basket which includes both food and manufactures – for the far more limited assumption which Ricardo rapidly discarded that workers consume only corn. My work on Ricardo has also benefited from comments and discussion with Carlo Casarosa, while my work on Malthus has been much assisted by the detailed and sharp criticisms of Robert Dixon when I spent a term in the University of Melbourne in 1979. The account of Malthus's theory of effective demand which appeared in *Oxford Economic Papers* in 1980 owes much to his advice. The version which appears here as Chapter 5 should be easier to follow than that 1980 version, as I believe I have been able to simplify the argument without losing anything essential.

My most recent work, which has been on Marx, has benefited greatly from comments by Wlodek Brus, Robert Dixon, Andrew Glyn, Geoffrey Harcourt and Michael Kaser, and above all, when I believed the work was done, from Alberto Chilosì. He uncovered a major weakness in Chapter 8 when I presented a seminar in Pisa in 1981 at the invitation of Carlo Casarosa, and the present form of Chapter 8 owes much to his criticisms, both personal and in subsequent correspondence.

Finally I am indebted to my colleague, Paul Slack, and to my pupils who have read most of these chapters in various versions in the past ten years. Their final form has been influenced by their often acute criticisms and comments.

WALTER ELTIS

S.Corr *The Correspondence of Adam Smith*, ed. E. C. Mossener and I. S. Ross.

These volumes are from *The Glasgow Edition of the Works and Correspondence of Adam Smith*, Oxford University Press, 1976 onwards.

### THOMAS R. MALTHUS

Pop *Essay on Population*, 1st edn 1798, signified by edn 1; and similarly for 2nd edn 1803; 3rd edn 1806; 4th edn 1807; 5th edn 1817; and 6th edn 1826.

Pr *Principles of Political Economy*, 1st edn 1820; signified by edn 1; and similarly for 2nd edn 1836.

Def *Definitions of Political Economy*, 1st edn 1827.

Ess *The Pamphlets of Thomas Robert Malthus*, Kelley, New York, 1970, in which Malthus's shorter pamphlets are reprinted.

Occ *Occasional Papers of T. R. Malthus*, ed. B. Semmel, Franklin, New York, 1963, in which Malthus's articles in the *Edinburgh Review* and the *Quarterly Review* are reprinted.

### DAVID RICARDO

R *The Works and Correspondence of David Ricardo*, ed. Piero Sraffa, Cambridge University Press, 11 vols, 1951–73.

### KARL MARX

WPP *Wages, Price and Profit* (1865). reprinted in K. Marx and F. Engels, *Selected Works*, 3 vols, Moscow, 1969.

Cap *Capital*, 1867–83, reprinted in Moscow for Lawrence & Wishart, London, 3 vols, 1974. The pagination of the various Moscow editions of *Capital* differs.

TSV *Theories of Surplus Value*, published in Moscow for Lawrence & Wishart, London, 3 vols, 1969–71.

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# 1 François Quesnay's *Tableau Economique*

François Quesnay's achievement is one of the most remarkable in the history of economics. He published his first article on an economic problem in 1756 when he was 62 years old, and in the following twelve years he produced a series of influential articles and successive versions of his famous *Tableau Economique*. He also became the centre of the first school of economists, the Physiocrats or *Economistes* of pre-revolutionary France. The *Tableau* has two multipliers, one of them almost Keynesian, and Leontief has said that he was following Quesnay when he constructed his input-output table of the United States economy in 1941.<sup>1</sup> Marx, who according to Schumpeter derived his fundamental conception of the economic process as a whole from Quesnay,<sup>2</sup> called it 'an extremely brilliant conception, incontestably the most brilliant for which political economy had up to then been responsible',<sup>3</sup> and in 1935 Schumpeter himself described Quesnay as one of the four greatest economists of all time.<sup>4</sup>

Born the son of a farmer, Quesnay first achieved distinction as a surgeon, becoming Secretary of the French Association of Surgeons, a member of the French Academy of Sciences, and a Fellow of the Royal Society of London. In addition he became one of four consultant doctors to King Louis XV, with an entresol at Versailles, where he was also Madame de Pompadour's private physician.<sup>5</sup> His first economic publications were two articles, '*Fermiers*' (1756) and '*Grains*' (1757), which Diderot and D'Alembert published in the *Encyclopedia*. These provide a more detailed account of the agriculture of the time than the work of any other great classical economist, and they set out the foundations of Quesnay's theory of the working of economies, and the policies needed to ensure France's recovery

from expensive wars and rural depopulation. The first edition of the *Tableau* followed a year later. This was gradually modified and refined until, in 1764, Quesnay's principal collaborator, Victor de Riqueti, Marquis de Mirabeau, was able to write in a Preface to *Philosophie Rurale*, the book (written with Quesnay) which 'provides the most complete and authentic account of the Physiocratic system considered as a whole',<sup>6</sup> that he was providing all the propositions needed to form an exact and complete theory of the working of economies, and:

The *Tableau Economique* is the first rule of arithmetic which has been invented to reduce elementary economic science to precise and exact calculations ...

Calculations are to economic science what bones are to the human body ... economic science is deepened and extended by examination and reasoning, but without calculations it will always be an inexact science, confused and everywhere open to error and prejudice. (PR XL–XLI [E])

By 1764 Quesnay had indeed evolved a complete model of the working of economies as Mirabeau claims, and this allowed the full dynamic effects of changes in, for instance, the productivity of the soil, taxation, and the propensities to consume food and manufactures to be estimated. However, subsequent writers who have attempted to reconstruct the model have faced considerable difficulties, for each version of the argument, read in isolation, contains assertions that have no clear logical basis and apparent gaps in the argument, inconsistencies, and puzzling calculations. Almost all the problems are solved, however, and the apparent inconsistencies removed when Quesnay's published works are read as a whole (most have still been published only in French), and in addition, the important books he wrote in collaboration with Mirabeau, in particular Part VI of *L'Ami des Hommes* entitled '*Tableau Economique avec ses Explications*', and *Philosophie Rurale*. Clearly only scholars with a particular interest in his work will go to this much trouble to understand him, but those like Schumpeter who persevered until they understood the model developed a great admiration for its originator.

In this chapter and the next on François Quesnay's theory of economic growth, an attempt will be made to present a modern reconstruction of Quesnay's account of the working of economies. In the present chapter an account will be given of the basic assumptions

on which his analysis is based, and how these lead directly to the famous *Tableau Economique*. The successive versions of the *Tableau* will then be explained. In the chapter that follows on Quesnay's theory of economic growth, the effects of departures from the *Tableau's* equilibrium proportions will be shown. The scheme of simple reproduction depicted in the *Tableau* is merely the starting-point for the analysis of real problems, and any departure from the *Tableau's* exact equilibrium proportions must produce clearly analysable effects, including growth or decline in the economy's level of output and employment. The conditions which produce growth and decline will be systematically set out, and it will be shown that they are precisely those which Quesnay emphasised when he discussed real economies.

The exposition of his argument in this chapter and the next follows closely Mirabeau's plan for the teaching of economic science to French children in a school the Physiocrats set up in 1767:

The class shall learn: 1° to know and understand the *Tableau* as it is ... 2° After this, the assumptions will be changed ... and they should be left to do the addition and work out the result themselves; this to be continued until they can work out each case easily, be it of growth or decline. 3° When they are at this stage, we should come to the problems, that is to say of arbitrary disturbances to distribution ...

This completes that part of education of this type which is absolutely necessary and indispensable for all those who have received enough education to learn the four first rules of arithmetic.<sup>7</sup>

The Physiocrats were clearly convinced that they had discovered important truths about the working of economies.

## QUESNAY'S ASSUMPTIONS

In this part of the chapter, Quesnay's basic assumptions about the factors which influence the development of economies will be outlined in turn. The first stage of the exposition is an account of his assumptions about techniques of production in agriculture and industry and their effectiveness, for this leads to the fundamental Physiocratic proposition that only agriculture produces a surplus or



'net product' over costs (where these arguably include a 'normal profit'), the size of the surplus depending on the capital intensity of agriculture. The second stage of the exposition, which follows directly from this, is an account of Quesnay's remarkable assumption that the economy's effective demand for marketable output depends on the expenditure of the agricultural surplus by landlords which has a multiplier effect on demand, and the further assumption that the relative size of the agricultural and industrial sectors of the economy depends upon how demand is distributed between them. The best known Physiocratic propositions all follow from these assumptions, that is, that agriculture which alone produces a 'net product' must be the ultimate source of all tax revenue; that the economy cannot grow without agricultural growth; and that the industrial sector is wholly dependent on the agricultural, since the demand for manufactures depends on the size of the 'net product' which is wholly derived from agriculture.

The foundation of the whole system of thought is Quesnay's analysis of agricultural techniques of production which he first outlined in his *Encyclopedia* articles of 1756 and 1757. There he distinguished three techniques of production: the cultivation of land with labour alone, cultivation with ox-drawn ploughs, and cultivation with horse-drawn ploughs.

Where labourers cannot find employment with a *métayer* using oxen or a farmer using horses:

they leave the countryside, or else they are reduced to feeding themselves on oatmeal, barley, buckwheat, potatoes, and other cheap products which they grow themselves, and which they don't need to wait long to harvest. The cultivation of corn takes too much time and effort; they cannot wait two years for a crop.<sup>8</sup> Its cultivation is reserved for the farmer who can meet the expense, or the *métayer* who is helped by the landlord. (Q 446–7 [E])

and

When the peasant works the soil himself, it is evidence of his wretchedness and uselessness. Four horses cultivate more than a hundred *arpents* [125 acres]; four men cultivate less than eight. (Q 453 [E])

and finally