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Travels in France and Italy
during the years 1787, 1788
and 1789

Arthur Young

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Economic Thought.

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the constitution of England, freed from its faults, or attempt, from theory, to frame something absolutely speculative: in the former case, they will prove a blessing to their country; in the latter they will probably involve it in inextricable confusions and civil wars, perhaps not in the present period, but certainly at some future one. I hear nothing of their removing from Versailles; if they stay there under the control of an armed mob they must make a government that will please the mob; but they will, I suppose, be wise enough to move to some central town, Tours, Blois, or Orleans, where their deliberations may be free. But the Parisian spirit of commotion spreads quickly; it is here; the troops that were near breaking my neck are employed to keep an eye on the people who show signs of an intended revolt. They have broken the windows of some magistrates that are no favourites; and a great mob of them is at this moment assembled demanding clamorously to have meat at 5 sous a pound. They have a cry among them that will conduct them to good lengths,—*Point d'impôt et vive les états*.—Waited on Monsieur Herman, professor of natural history in the university here, to whom I had letters; he replied to some of my questions, and introduced me for others to Monsieur Zimmer, who having been in some degree a practitioner, had understanding enough of the subject to afford me some information that was valuable. View the public buildings and cross the Rhine, passing for some little distance into Germany, but no new features to mark a change; Alsace is Germany, and the change great on descending the mountains. The exterior of the cathedral is fine, and the tower singularly light and beautiful; it is well known to be one of the highest in Europe; commands a noble and rich plain through which the Rhine, from the number of its islands, has the appearance of a chain of lakes rather than of a river.—Monument of Marechal Saxe, etc., etc. I am puzzled about going to Carlsruhe, the residence of the Margrave of Baden: it was an old intention to do it, if ever I was within a hundred miles, for there are some features in the reputation of that sovereign which made me wish to be there. He fixed Mr. Taylor, of Bifrons in Kent, whose husbandry I describe in my *Eastern Tour*, on a large farm; and the *economistes*, in their writings, speak much of an experiment he made in their physiocratical rubbish, which, however erroneous their principles might be, marked much merit in the prince. Monsieur Herman tells me also that he has sent a person into Spain to purchase rams for the improvement of wool: I wish he had fixed on somebody likely to understand a good ram, which a professor of botany is not likely to do too well. This botanist is the only person

Monsieur Herman knows at Carlsruhe, and therefore can give me no letter thither, and how I can go, unknown to all the world, to the residence of a sovereign prince, for Mr. Taylor has left him, is a difficulty apparently insurmountable.—22½ miles.

21st. I have spent some time this morning at the *cabinet litteraire*, reading the gazettes and journals that give an account of the transactions at Paris: and I have had some conversation with several sensible and intelligent men on the present revolution. The spirit of revolt is gone forth into various parts of the kingdom; the price of bread has prepared the populace everywhere for all sorts of violence; at Lyons there have been commotions as furious as at Paris and the same at a great many other places: Dauphine is in arms and Bretagne in absolute rebellion. The idea is, that the people will, from hunger, be driven to revolt; and when once they find any other means of subsistence than that of honest labour, everything will be to be feared. Of such consequence it is to a country, and indeed to every country, to have a good police of corn; a police that shall, by securing a high price to the farmer, encourage his culture enough to secure the people at the same time from famine. My anxiety about Carlsruhe is at an end; the Margrave is at Spaw; I shall not therefore think of going.—*Night*—I have been witness to a scene curious to a foreigner but dreadful to Frenchmen that are considerate. Passing through the square of the *hotel de ville*, the mob were breaking the windows with stones, notwithstanding an officer and a detachment of horse was in the square. Perceiving that their numbers not only increased, but that they grew bolder and bolder every moment, I thought it worth staying to see what it would end in, and clambered on to the roof of a row of low stalls opposite the building against which their malice was directed. Here I beheld the whole commodiously. Perceiving that the troops would not attack them, except in words and menaces, they grew more violent, and furiously attempted to beat the doors in pieces with iron crows, placing ladders to the windows. In about a quarter of an hour, which gave time for the assembled magistrates to escape by a back door, they burst all open, and entered like a torrent with a universal shout of the spectators. From that minute a shower of casements, sashes, shutters, chairs, tables, sofas, books, papers, pictures, etc., rained incessantly from all the windows of the house, which is 70 or 80 feet long, and which was then succeeded by tiles, skirting boards, bannisters, framework, and every part of the building that force could detach. The troops, both horse and foot, were quiet spectators. They were at first too few to

where defended by stone posts. I have seen no city so regularly laid out, except Turin. The Palazzo of the Marchese de Villa is an object to examine; and at that spot there is a very advantageous view of two noble streets. The Palazzo di Bentivoglio is another considerable building, with a vast garden full of bad statues; and even some of footmen, with laced hats and shoulder-knots, in a style fully as ridiculous as M. du Barre's at Toulouse. In the cathedral, a fine Guercino; and a marriage of Cana, by Bonona, a Ferrarese painter, at the Chartreuse. I paid homage to the tomb of Ariosto, a genius of the first lustre; since all modern ages have produced but three distinguished epic poets, what a glory to Italy to have given birth to two of them! the wonder is greater, however, that the third was not of the same country. From Ferrara to the canal which leads to Bologna the road is, without any idea of comparison, the worst in Europe that pretends to be *great* and *passable*. It is the natural rich soil of a flat wet country, rendered deeper by the late heavy rains; seven horses drew a coach about a mile and a half an hour. Making and mending are philosophical experiments not tried here; and the country being enclosed, the hedges and ditches confine the carriages to poach through the mud of one direction, instead of many. I walked most of it in the adjoining fields, the better to examine them. Arrived at Bologna at twelve o'clock at night.—125 miles.

12th. Deliver letters. I found Signore Bignami at home. He is a considerable merchant, who has attended to agriculture, sensible and intelligent. An English merchant, at the *Three Moors*, informing me that Mr. Taylor, who was at Carlsruhe for some time, was now settled at Bologna; I determined to wait on him, being the gentleman of whose husbandry, at Bifrons in Kent, I gave an account in my *Eastern Tour*. I accordingly went, in the evening, to Mr. Taylor's *conversazione*. He has handsome apartments in the Palazzo Zampiere, and lives here agreeably with his beautiful and amiable family; a finer progeny of daughters and sons is hardly to be seen, or that forms a more pleasing society. As I did not know, till I got to Bologna, that Mr. Taylor had left the court of Carlsruhe, I was eager to hear why he had quitted a situation which was so congenial with his love of agriculture. This gentleman travelling in Germany became known to the Margrave of Baden, where that enthusiastic love of agriculture, which, for the good of mankind some minds feel, induced him to take a farm of that prince. Thus was a gentleman, from the best cultivated part of Kent, fixed on a farm of five hundred acres in Germany. He carried his point, improved the farm, stayed four

years, and would have continued to the infinite advantage of the country, if the ministers of the Margrave had had as much understanding and as liberal a mind as their master. I am inclined to believe that no man can succeed on the continent of Europe (unless under a prince with a character of such decided energy as the late King of Prussia) provided he be really *practical*. He has no chance if he be not well furnished with the rubbish which is found in academies and societies: give him a jargon of learning, the science of names and words, letting things and practice go elsewhere, and he will then make his way and be looked up to. To the opera, where there is nothing worth hearing or seeing, except only a young singer, Signora Nava, whose voice is one of the clearest and sweetest tones I ever heard; she has great powers, and will have, for she is very young, great expression. It was the *Theodore re di Corse*, of Paiesello.

13th. The *Pellegrino* and *St. Marco* being full, has fixed me in this brutal hole, *I Tre Maurretti*, which is the only execrable inn I have been in (in a city) since I entered Italy. It has every circumstance that can render it detestable; dirt; negligence, filth, vermin, and impudence. You sit, walk, eat, drink, and sleep with equal inconvenience. A tour among the palaces and churches. The great collection of paintings in the Zampieri palace contains a few pieces of such exquisite merit that they rivet the spectator by admiration. The *St. Peter*, of Guido; the *Hagar*, of Guercino; and the *Dance*, of Albano. Monsieur Cochin says, the Guido is not only a *chef d'oeuvre*, but the finest picture in Italy, *enfin c'est un chef d'oeuvre et le tableau le plus parfait, par la reunion de toutes les parties de la peinture qui soit en Italie*. It is certainly a most noble piece of two figures, but wants, of necessity, the poetry of a tale told by many. To please me, the Guercino, of which he says little more than its being *très beau*, has an expression delicious that works on a fine subject to a great effect: it is more nature than painting. Hagar's countenance speaks a language that touches the heart; and the pathetic simplicity of the child is in unison with all the mother's feelings. The mellow warmth and tender softness of the colouring of the Albano, with the sweetness of the expression, are inimitable. In the church of *St. Giovanne in Monte*, there is the famous *St. Cecilia* of Raphael, of which Sir Robert Strange has given so fine a print, and in which he has done ample justice to the original. The *St. Agnes* of Domenichino, in the church of that name, and *Job on his throne*, by Guido, at the *Mendicanti*, are two others that must be visited. Dine with Signore Bignami; he is a considerable merchant,

and therefore I need not stare at this hospitality in Italy; with great satisfaction I find that no minute is lost in his company, as he is obliging enough to pardon the number of my inquiries. In the evening to Mr. Taylor's; this gentleman's discourse is interesting to my pursuit, for he has always had a great predilection for agriculture, and has practised it with intelligence and success. The Marchese di Mareschotti, who is married to a very pretty English lady, present also; a sensible man, who seemed pleased with the opportunity of explaining to me several circumstances, relative to tithes and taxation, that I was inquiring into. He is a singular instance at Bologna of going into company with his wife, and consequently superseding the necessity or want of a *cicisbeo*. He is regarded by his countrymen for this pretty much as he would be if walked on his head instead of his feet. How strangely doth it appear to them that an Italian nobleman should prefer the company of a woman he married from affection, and think there is any pleasure when he embraces his children, in believing them his own!—Here I met also the Baron de Rovrure, a French nobleman, and Madame la Marquise de Bouille, both in their way to Naples; they seem agreeable people. Mr. Taylor, and his two charming daughters, have apparently a pleasing society here. These ladies speak French and German like natives, and before they leave Italy will do the same with Italian; they paint agreeably, and have considerable musical talents; thus accomplishments will not be wanted to second the graces they owe to the beneficence of nature. I had some information from Miss Taylor to-night relative to the expenses of house-keeping, which will give an idea of the cheapness of Italy; premising (of which more in another place) that the *paolo* is sixpence, and that there are 10 *baiocche* in it. As to beef, mutton, bread, etc., they are all over Europe too nearly on a par to demand much attention; where meat is very fine, it is *nominally* dear; and where it is bad, it is called cheap: but the difference deserves little notice. Mr. Taylor contracts with a *traiteur* for his table, nine in the parlour and five in the kitchen, 20 *paoli* a-day for dinner; for supper he pays extra, and is supplied to his satisfaction—a proof, if any is wanted, of the cheapness of Bologna. It is remarkable that there is not the difference between the prices of any of the articles, and the same thing in England, that there is between the contracting prices and the *ratio* with us, a few per cent. in the former, but some hundred per cent in the latter; a sure proof that dearness and cheapness of living does not depend on prices per pound, but on the modes of living. Every tavern-keeper, *traiteur*, or other contractor of any sort in

England will have a price that shall give him a fortune in a few years; and servants, instead of submitting to the economy which their masters may think it necessary to establish, will not live an hour with them if they are not permitted to devour him.

14th. With Signore Bignami and his family to his country seat, about five miles from Bologna, on the road to Pistoja, spend an agreeable day, entirely dedicated to farming. The house is handsome and finely situated; the entertainment truly hospitable, and the information, given in a cool considerate walk, through every field of the farm, such as is little liable to error. A circumstance at this country seat deserves noting, as it marks the abundance of thieves: the chambers had the windows all shut so close, and fastened with so much attention, that I inquired the reason; and was answered that if the greatest care be not taken thieves will break in and plunder a house of everything portable. The shutters, to both windows and doors, were inlaid with bars of iron, to prevent their being sawn through. The conclusion we must draw from such a circumstance is certainly little favourable at first sight to the lower classes,—but that is always unjust, for they are ever what the police, law, and government of a country make them. In the evening, again at Mr. Taylor's; a house, in which no one will have the *entre*, and want the inclination. The Marchese Mareschotti there, who had the goodness to continue his attentions to my inquiries, and to give some me valuable information: I had also the pleasure of conversing, on the same subjects, with the Conte di Aldrovandi. There is a room, at the *Tre Mauretti*, which, communicating with several apartments, the guests have it in common: among them was a young *Ballarini* waiting here for an Englishman, to attend her to Venice; she was pretty and communicative; had some expensive trinkets given her, to the amount of a considerable sum, by her lover, who proved (for secrecy was not among her qualities) to be a rider, as we should call him, to a manufacturing house in England. An Italian merchant present remarked that the profit of the English, on their manufactures, must be enormous, or they could not support *commissarii* at such an expense, some of whom travel in Italy *post*, from town to town, and when arrived, amuse themselves, it is plain, with such *comforts* as the good humour of the country throws in their way.

15th. The rencontre at Mr. Taylor's of the French gentleman, the Baron de Rovrure, and Madame de Bouille, has been productive of an engagement to travel together to Florence, with Signore Grimaldi, and

Mr. Stewart, a Scotch gentleman¹³ just arrived from Geneva, and going also to Florence. We set off in three *vetturi* this morning. The country from Bologna to Florence is all mountainous; most of it poor and barren, with shabby, ragged, ill-preserved wood, spotted with a weak and straggling cultivation. Houses are scattered over most of it, but very thinly. We dined at Loiano, much in the style of hogs; they spread for us a cloth that had lost, by the snuff and greasy fingers of *vetturini*, all that once was white; our repast was black rice broth, that would not have disgraced the philosophy of Lycurgus, liver fried in rancid oil, and cold cabbage, the remnant of the preceding day. We pleaded hard for sausage, eggs, or good bread and onions, but in vain. We laid, not slept, in our clothes at Covigliano, hoping, not without fears, to escape the itch. Such accommodations, on such a road, are really incredible. It is certainly one of the most frequented that is to be found in Europe. Whether you go to Florence, Rome, and Naples, by Parma, Milan, or Venice; that is, from all Lombardy, as well as from France, Spain, England, Germany, and all the north, you pass by this route, consequently one would expect at every post a tolerably good inn to catch the persons whom accident, business, or any other derangement of plan might induce to stop between Bologna and Florence. The only place possible to sleep at, with comfort, is Maschere, about 40 miles from Bologna, but, for travellers who go any other way than post, 40 miles are no division of 64. If the road were in England, with a tenth of the traffic, there would be an excellent inn at every four or five miles to receive travellers properly, at whatever distance their accidental departure made most convenient: but England and Italy have a gulf between them in the *comforts* of life much wider than the channel that parts Dover and Calais.—27 miles.

16th. On entering Tuscany, our baggage was examined, and plumbed for Florence; the first moment I set foot in this country, therefore, I find one gross error of the *economistes*, who have repeated, from one another, in at least twenty performances, that the Grand Duke had adopted their plan and united all taxes in one upon the net produce of land. Having crossed the highest ridge of the Apennines, for several miles in the clouds, and therefore seeing no prospect, descended at Maschere, for a while, into a better region; from the inn, the view is rich and fine. We noted here a wonderful improvement in the figure and beauty of the sex; the country women are handsome and their dress is very becoming; with jackets, the sleeves puckered and tied in puffs, with coloured rib-

lish gentleman, of the name of Harrington (the younger), whom I had met at Mr. Taylor's, at Bologna, entering into conversation, mentioned, among other topics, that the Margrave of Anspach, who is here with Lady Craven, wished to know me personally, in order to speak to me on the subject of Spanish sheep, his highness having imported them to Anspach. I replied that, on a farming topic, I should be happy in the conversation of any prince who loved the subject enough to import a better breed. The father soon after joining us, and probably having been told, by his son, what had passed, observed to me that the Margrave was very fond of agriculture, and had made great improvements; adding, "that if I wanted to be introduced to him, he would introduce me." This was another business—my expressing a desire to be presented to a sovereign prince, not at his own court, appeared to be an awkward intrusion; for no idea could be more disgusting to me than that of pushing myself into such company. I replied, therefore, that if it were the desire of the Margrave to have any conversation with me, and he would inform me of it, in any way he thought proper, I would certainly pay my respects to him, with great readiness. The Margrave was at the opera; Mr. Harrington quitted me, as if to go to him. I suppose the conversation was misunderstood, for Lady Craven does not seem, by her book, to be much of a farmer.

19th. Call on Signore Tartini, secretary to the royal academy *Georgofili*, and on Lord Hervey, our minister here; both absent. Another turn in the gallery brought a repetition of that pleasure which is there to be reaped in the exuberance of a plentiful harvest. The woman lying on a bed, by Titian, is probably the finest picture, of one figure, that is to be seen in the world. A satyr and nymph, by Hannibal Carracci; a Correggio; a Carlo Dolci.—Among the statues—the Apollo, the Wrestlers, the Whetter, as it is called, the Venus rising from the bath, the Ganimede.—What an amazing collection! I have been many years amusing myself with looking at the statues in England! very harmlessly:—my pleasure of that kind is at an end. In spite of every effort to the contrary, one cannot (unless an artist, who views not for pleasure but as a critic) help forming eternal comparisons, and viewing very coldly pieces that may perhaps have merit, but are inferior to others which have made a deep impression. But the paintings and statues in this gallery are in such profusion that, to view them with an attention adequate to their merit, one ought to walk here two hours a day for six months. In the afternoon, waited on Signore Fabbroni, author of some works on agri-

there would be no danger in living in such a house; certainly as long as the flame continued to bum. It is true the idea of a mine of inflammable air just under a house would sometimes, perhaps, alarm one's female visitors; they would be afraid of a magazine of vital air uniting with it, and at one explosion blowing up the economical edifice. On the whole, the idea is rather too volcanic for Bradfield: Italy has things better worth importing than burning mountains. The King of Poland's brother, the primate, stopping at Pietra Mala a day for illness (the 25th or 26th November), the weather was so severe that it froze his Cyprus wine; milk was as hard as stone, and burst all the vessels that contained it. On whatever account Englishmen may travel to Tuscany, let not a warm winter be among their inducements.—Sleep at that hideous hole *Loiano*, which would be too bad for hogs accustomed to a clean sty.—26 miles.

4th. The passage of the Apennines has been a cold and comfortless journey to me, and would have been much worse if I had not taken refuge in walking. The hills are almost covered with snow; and the road, in many descents, a sheet of ice. At the St. Marco, at Bologna, they brought me, according to custom, the book to write my name for the commandante, and there I see *Lady Erne* and *sua figlia*, and *Mr. Hervey*, *October* 14. Had my stars been lucky enough to have given me more of the society of that cultivated family, during my stay in Italy, it would have smoothed some of my difficulties. I missed Lord Bristol at Nice, and again at Padua. He has travelled and lived in Italy till he knows it as well as Derry; and, unfortunately for the society of Suffolk, ten times better than Ickworth. Call on Mr. Taylor and find, to my great concern, two of his children very ill. Abbate Amoretti, who left Florence a few days ago, is here to my comfort, and we shall continue together till we come to Parma. This is indeed fortunate, for one can hardly wish for a better fellow-traveller.—20 miles.

5th. Visit the Institute, which has acquired a greater reputation than it merits. Whoever has read anything about modern Italy knows what it contains. I never view museums of natural history, and cabinets of machines for experimental philosophy, but with a species of disgust. I hate expense and time thrown away for vanity and show more than utility. A well arranged laboratory, clean, and everything in order, in a holiday dress, is detestable; but I found a combination of many pleasures in the disorderly dirty laboratories of Messrs, de Morveau and la Voisier. There is a face of business; there is evidently work going forwards; and if so, there is use. Why move here and at Florence through rooms well gar-

On the Road Again with Arthur Young: English, Irish, and French Agriculture during the Industrial Revolution

ROBERT C. ALLEN AND CORMAC Ó GRÁDA

In their day Arthur Young's tours of England, Ireland, and France represented a revolutionary approach to agricultural research. Here we avail of one part of the wealth of statistical data collected by Young—that on grain yields—to provide a comparative perspective on agricultural technique and progress in these countries around 1770 to 1850. We show that, ironically, Young's carefully assembled data do not always support some of his best-remembered generalizations.

In the summer of 1767, "some private business carrying [him] to the South of Wales," Arthur Young embarked on what came to be known as his *Six Weeks Tour through the Southern Counties of England and Wales*.¹ By way of amusement—so he tells us—Young noted down particulars of farming practice along the way. This was the beginning of what became a grand design to survey the agriculture of the three Kingdoms. *A Six Months Tour through the North of England and The Farmer's Tour through the East of England*—each four volumes—quickly followed and rapidly went through several editions.² In 1776, 1777, and 1778, Young took three trips to Ireland and in 1780 published the *Tour in Ireland*.³ More short tours of British districts followed in the

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¹ Arthur Young, *A Six Months' Tour Through the North of England* [henceforth *Northern Tour*] (2nd edn., London, 1771), vol. 1, p. iii; Arthur Young, *Six Weeks Tour Through the Southern Counties of England and Wales* (London, 1768) [henceforth *Six Weeks Tour*].

² Arthur Young, *Northern Tour*, and Arthur Young, *The Farmer's Tour Through the East of England* (London, 1771) [henceforth *Eastern Tour*].

³ Arthur Young, *Arthur Young's Tour in Ireland* (1780; A. W. Hutton, ed., London, 1892) [henceforth *Tour in Ireland*].



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1780s, but Young's interests turned to continental Europe.⁴ He traveled to France three times between 1787 and 1789, with excursions into Catalonia and Italy. The result was the enormously influential *Travels in France*.⁵

Young's tours are unique in travel literature because his objective was original. In the late eighteenth century it was widely believed that national prosperity depended on a productive agriculture. Yet important as agrarian issues were universally believed to be, they were discussed in a factual vacuum. Even the most basic matters, like the size of the agricultural sector, were unknown in this prestatistical age. Young aimed to remedy this deficiency by collecting the details of farming in different districts and using those findings to address major questions of agrarian policy. He was aware of the originality of the task: "Describing the husbandry of the kingdom, by registering minutes on the spot, was a new undertaking, having never been executed either in this or any other country of Europe."⁶ He anticipated great benefits as he explained in the *Eastern Tour*:

I am now come to a part of my undertaking, which I esteem of greater national importance than any other; it is the particulars of farms. From the average of a great number we may certainly be able to calculate with much truth the general state of the whole kingdom; respecting the application, product and value, of the soil; the livestock it carries, and the people it maintains . . . [T]his method of coming at the real state of the nation, respecting its agriculture, is the only one tolerably sure, and that is not open to an infinity of objections and errors. A book containing these particulars of all the farms in the kingdom, I should esteem the pocket book of a *British* minister; it would be as useful to *study*, as it would be tedious to read.⁷

Although Young began the *Six Weeks Tour* without a firm plan for collecting information, by the tour's end he had evolved a questionnaire that he used—in longer and shorter versions—on all his subsequent trips. He kept a register, which he dutifully added to each evening; the published work follows these day-by-day entries closely. Moreover, he also tried hard to build generalizations on this information. He endeavored to compute national income accounts, to compare the productivity and profitability of farming systems, to explain variations in rents and wage rates, and to measure the effects of farm size on productivity.

Young was a man of decided opinion on agrarian issues, and his views gained credibility from these positivistic inquiries. Many historians have

⁴ Arthur Young, "A Tour to the West," *Annals of Agriculture*, 6 (1786), pp. 116–51; "A Tour in Wales, etc.," *Annals of Agriculture*, 8 (1787), pp. 31–88; "A Tour in Sussex," *Annals of Agriculture*, 11 (1789), pp. 170–304.

⁵ Arthur Young, *Travel during the Years 1787, 1788, 1789, Undertaken with a View of Ascertaining the Cultivation, Wealth, Resources, and National Prosperity of . . . France* (2nd edn., London, 1794) [henceforth *Travels . . . [in] France*].

⁶ Young, *Eastern Tour*, vol. 1, p. xi.

⁷ *Ibid.*, vol. 4, p. 367.

done him the honor of erecting their interpretations on the foundation of his opinions, but few have done him the honor of analyzing anew the information he worked so hard to collect. In view of the paucity of farming data, this neglect is surprising, but the many criticisms made of him and his methods during his own lifetime and since are probably part of the answer. He was routinely accused of being a poor farmer himself, and thus hardly in a position to judge the success of others. His "conversational" methods of research were attacked, and some of his hobbyhorses ridiculed. He was accused of highlighting what was "best" and thus giving a distorted overall picture. We will touch on these points again.⁸ Yet these objections are surely not the whole explanation. The decisive reason, in a precomputer age, for neglecting the data is probably the sheer drudgery of making sense of the bewildering amount of information in the various tours.

Young himself wrestled with that problem, and he was concerned that he had not extracted all the knowledge his data contained. "I want several penetrating political arithmeticians at my elbow," he stated, "to point out the combinations between different, and seemingly distinct circumstances, too many of which will, I fear, escape me."⁹ We here make a start at that task by using Young's data to reexamine his judgments on the agricultures of Ireland, England, and France.

Many indicators could be used to gauge productivity—yield per acre, output per worker, real rent, revenue per farm acre, total output relative to total input. We concentrate on yields. Like any single-dimensional measure, output per acre has its drawbacks, analogous to the ambiguities of relying on output per worker as an efficiency measure in industry studies. Comparisons of agricultural regimes based on yields may be biased by factors such as differences in labor intensity, land quality, or fallowing practice. None of the comparisons we make is entirely free from such objections, although we do draw attention to them when we can. We focus on yields for three reasons. First, there are good historiographical reasons for assessing Arthur Young, and this is the only measure that Young collected on all his tours.¹⁰ Second, yields at least measure the biological efficiency of grain cultivation, if not overall economic efficiency.¹¹ Third, yields are critical in resolving several

⁸ Meanwhile, see Gordon E. Mingay, ed., *Arthur Young and His Times* (London, 1975), pp. 3–4.

⁹ Young, *Northern Tour*, vol. 3, p. 378.

¹⁰ Young also collected considerable information on land values, and it is conceivable that they might shed light on total factor productivity. However, Young, *Travels . . . [in] France*, vol. 2, pp. 120–23, doubted that the numbers measured the economic rent of land.

¹¹ Zvi Griliches, "Agriculture: Productivity and Technology," *International Encyclopedia of the Social Sciences* (1968), vol. 1, p. 242, maintained that in the twentieth century yields have depended on factors like seed variety, fertilization, and soil moisture. Mechanization and the intensity of cultivation have been unimportant in raising yields. G.P.H. Chorley, "The Agricultural Revolution in Northern Europe, 1750–1880: Nitrogen, Legumes, and Crop Productivity," *Economic History Review*, 2nd series, 34 (Feb. 1981), pp. 71–93, explained the growth of yields in

long-standing disputes. In England the critics of enclosure argued that it led to the conversion of arable to pasture, thereby reducing grain production. The defenders of enclosure (like Young) countered that it boosted yields so output was maintained in spite of any reduction in tilled acreage. For Ireland, the level and rate of growth of yields between 1770 and 1846 is central for deciding whether food production kept pace with population. For France, the issue of when—or whether—an agricultural revolution occurred has revolved around the history of yields. For these reasons historians have used grain yields as a measure of agricultural productivity in the past.¹² We do likewise. Although our focus is comparative, we also take the chance to look forward from Young into the nineteenth century. Building on Young's data, rather than his opinions, we reassess European agriculture during the industrial revolution.

We begin with Young in England. There "improvement" was his theme, and he firmly believed that enclosure was its prerequisite. Yet the data in his tours show enclosure had little effect on yields. Moreover, comparing Young's yields with earlier and later ones suggests that by this criterion his age was notably stagnant in the history of productivity growth in English farming.

Next we follow Young to Ireland. He concluded that Irish farming was much less productive than English. In this he was the first of a long

eighteenth- and nineteenth-century Europe in terms of cropping changes that raised soil nitrogen. William N. Parker and Judith L. Klein, "Productivity Growth in Grain Production in the United States, 1840–60 and 1900–10," in *Output, Employment and Productivity in the U.S. after 1800*. Studies in Income and Wealth, vol. 30 (Princeton, 1966), pp. 523–46, explained the growth in nineteenth-century American yields in terms of chemical inventions and (in contrast to Griliches) new mechanical equipment.

¹² For instance, M. K. Bennett, "British Wheat Yield Per Acre for Seven Centuries," *Economic Journal* (Supplement, 1937), pp. 12–29; P.M.A. Bourke, "The Average Yield of Food Crops in Ireland on the Eve of the Great Famine," *Department of Agriculture Journal*, 66 (1969), pp. 26–39; Bruce M. S. Campbell, "Agricultural Progress in Medieval England: Some Evidence from Eastern Norfolk," *Economic History Review*, 2nd series, 36 (Feb. 1983), pp. 26–46; Chorley, "The Agricultural Revolution"; Hugh Clout, *Agriculture in France on the Eve of the Railway Age* (London, 1980); G. E. Fussell, "Population and Wheat Production in the Eighteenth Century," *The History Teachers' Miscellany*, 7 (1929), pp. 65–68, 84–88, 108–11, 120–27; B. A. Holderness, "Productivity Trends in English Agriculture, 1600–1850: Observations and Preliminary Results" (presented to International Economic History Conference, Edinburgh, 1978); Michel Morineau, "Y-a-t-il eu une révolution agricole en France au XVIIIe siècle?" *Revue historique*, 239 (April–June 1968), pp. 299–326; Morineau, *Les faux-semblants d'un démarrage économique: agriculture et démographie en France au XVIIIe siècle* (Paris, 1970); Morineau, "Révolution agricole, révolution alimentaire, révolution démographique," *Annales de Démographie Historique*, (1974), p. 335–71; William Newell, "The Agricultural Revolution in Nineteenth-Century France," this JOURNAL, 33 (Dec. 1973), pp. 697–731; Mark Overton, "Estimating Crop Yields from Probate Inventories: An Example from East Anglia, 1585–1735," this JOURNAL, 39 (June 1979), pp. 363–78; B. H. Slicher van Bath, *Yield Ratios, 810–1820*, *A.A.G. Bijdragen*, No. 10 (1963); J. Z. Titow, *Winchester Yields: A Study in Medieval Agricultural Productivity* (Cambridge, 1972); Michael Turner, "Agricultural Productivity in England in the Eighteenth Century: Evidence from Crop Yields," *Economic History Review*, 2nd series, 35 (Nov. 1982), pp. 489–510; J. A. Yelling, *Common Field and Enclosure in England, 1450–1850* (Hamden, 1977).

line of commentators and historians who have portrayed rural Ireland in the century before 1846 as unproductive, overpopulated, and inevitably headed for the Great Famine. Yet Young's *data* suggest a radically different interpretation, for they show Irish farming in the 1770s to have been scarcely less productive, in terms of yields, than English farming.

Finally, we travel with Young to France. Once again Young's yield figures per se make much of France look relatively advanced, despite his repeated, not to say tedious, castigations of farming practice across the Channel. We show why some of Young's data here may be misleading and make a case for using his yield-seed ratios instead. Nonetheless, the conclusion is inescapable that northeastern France, if not the rest of the country, compares much more favorably with England and Ireland than Young allowed.

Finally, we speculate on the gap between Young's statistical evidence and the conclusions apparently founded on it. Young's methods were revolutionary, but questions remain. Why was Young misled? Why have historians not spotted the contradictions before? Why were Young's findings both popular and false?

ENGLISH FARMING

Arthur Young is best remembered today as a proponent of the enclosure of open fields. In a famous passage written late in his life, Young contrasted "the Goths and Vandals of open fields" with "the civilization of enclosures."¹³ The theme that enclosure led to productivity growth runs throughout his writings, and his favorite evidence for this claim was the rise in rent that followed enclosure.¹⁴

The great rise in rent which has taken place in nineteen cases out of twenty should alone be accepted as a sufficient proof of this point [that is, the higher productivity of enclosed farming], for what can be the inducement to the farmer to give double or treble his former rent unless with a view to the profit of his business. And how is he to increase his profit without increasing the value of his produce?¹⁵

The obvious retort is that a reduction in employment would raise a farmer's profits, thereby allowing a higher rent to be paid "without increasing the value of his product." Indeed, a big enough fall in labor

¹³ Arthur Young, *General View of the Agriculture of Oxfordshire* (London, 1813), pp. 35–36.

¹⁴ In the modern literature Donald McCloskey, "The Enclosure of Open Fields: Preface to a Study of its Impact on the Efficiency of English Agriculture in the Eighteenth Century," this *JOURNAL*, 32 (Mar. 1972), pp. 15–35, has advocated the use of rents to measure efficiency gains at enclosure. Robert C. Allen, "The Efficiency and Distributional Consequences of Eighteenth Century Enclosures," *Economic Journal*, 92 (Dec. 1982), pp. 937–53, analyzes the farm reports Young collected in his English tours and finds that rents rose at enclosure because income was transferred from farmers to landlords, not because productivity went up. See also Yelling, *Common Field*, pp. 210–13.

¹⁵ Arthur Young, *General Report on Enclosures* (London, 1808), pp. 37–38, as quoted by Yelling, *Common Field*, p. 210.

condescending contemporary he was “particularly interesting to those who study agriculture for amusement and recreation”; to agricultural historian Eric Kerridge, “a mountibank, charlatan, and a scribbler.”¹⁸ But Young’s most trenchant contemporary critic was William Marshall, also an agricultural writer. In Marshall’s *Review and Abstract*, Young’s methods of amassing and assessing information are repeatedly ridiculed. To Marshall, Young surveyed like “an enquiring tourist,” relying

not so much [on] the results of the deliberate examinations of the author, *on the spot*; as the remarks of others, *in conversation*—many of them, no doubt, the bare assertions of guarded, or perchance designing men; others, the mere opinions of the prejudiced; the incoherencies of the unintelligent; or, possibly, the extempore answers of those who could scarcely have put the enquirer into the right road to the next market town.¹⁹

There are two approaches to assessing a charge like this. The first is to examine the survey procedure. The reliability of any survey depends on the competence of the enumerator and the knowledge of those queried. Was Young as slipshod a reporter and his informants as ignorant as Marshall claimed?

Young’s description of his method does not bear out Marshall’s accusations. Young worked hard to distinguish informed observation from vacuous speculation. He was well aware of the need to cross question his informants to obtain accurate information.

For many miles, I had nothing but provincial weights and measures, totally unknown in the south: These were all reduced to the common standard;—the intelligence I received in the most common points was conceived in such uncommon terms, and in such barbarous measures, that had I not gained numerous explanations, my work would have been a volume of contradictions. A practical knowledge of agriculture, is as requisite to such an undertaking as plenty of patience. After abundance of explanations, I frequently had such intelligence as would have passed current with those who were unexperienced in husbandry, but which forced me to a most uncommon attention to discover wherein was the mistake. My business was likewise so very unusual, that some art was requisite to gain intelligence from many farmers, &c. who were startled at the first attack. I found that even a profusion of expense was often necessary to gain the ends I had in view: I was forced to make more than one honest farmer half drunk, before I could get sober, unprejudiced intelligence. Nor were such my only difficulties; I met with some farmers who gave me accounts too improbable to credit; whether from ignorance, or an attention to deceive, I know not; but I always repeated my enquiries upon those occasions, until I gained the truth.²⁰

These remarks hardly suggest a casual approach to collecting data; they read more like a manual for an agricultural survey in a third world country today.

¹⁸ The contemporary is quoted in John G. Gazley, *The Life of Arthur Young* (Philadelphia, 1973), p. 196; Kerridge is quoted in Mingay, *Arthur Young*, p. 3.

¹⁹ William Marshall, *Review of the Reports of the Board of Agriculture* (London, 1808–1817), vol. 3, pp. 65–66. See also vol. 3, pp. 358, 491–92, and vol. 4, pp. 456–60.

²⁰ Young, *Northern Tour*, vol. 1, pp. xii–xiii.

TABLE I
ENGLISH CROP YIELDS BY ENCLOSURE STATUS
(bushels per acre)

Crop	Open	Enclosed	Partly Open	All
Wheat	22.6 [54]	24.5 [137]	22.7 [19]	23.8 [210]
Rye	23.3 [9]	27.2 [33]	19.5 [2]	26.0 [44]
Barley	31.0 [55]	33.2 [129]	28.6 [19]	32.2 [203]
Oats	34.5 [41]	38.7 [126]	32.5 [16]	37.2 [183]
Peas	21.1 [34]	22.7 [81]	20.9 [15]	22.1 [130]
Beans	27.6 [39]	29.5 [67]	25.1 [12]	28.4 [118]

Notes: The number of observations is in brackets. "Partly open" villages contained considerable quantities of both open and enclosed land.

Sources: The returns for villages in Arthur Young, *A Six Months Tour Through the North of England* (2nd edn., London, 1771) and *The Farmer's Tour Through the East of England* (London, 1771), passim.

costs—say from converting arable to pasture—could allow rents to rise even as the value of agricultural output fell. This would be a technical advance to be sure, but not "improvement" that increased England's food supply. A concern with grain production or productivity in its own right requires a comparison of yields—not rents—in open and enclosed villages.

Young never made the comparison, yet his tours include the yield information needed to do it. Because the summary tables in the *Northern* and *Eastern Tours* are incomplete, we have abstracted new summaries from the village reports for 231 villages scattered from Northumberland to Hampshire and Somerset to East Anglia.¹⁶ To compare open and enclosed farming, it was necessary to determine which villages were open and which enclosed, and that has been done for most of the 231 villages. Table 1 compares average yields for the principal field crops.¹⁷ In every case the table shows a higher average yield for enclosed than for open villages. The differences are never statistically significant, however, and the percentage differences in the means are quite small. (Curiously, the small number of "partly open" villages had the lowest yields.)

Before accepting the conclusion that enclosure had only a small effect on yields, we must satisfy ourselves as to the reliability of Young's data. Though he was the best-known agricultural writer of his generation, Young's reputation as an expert has never gone unquestioned. To a

¹⁶ Allen describes the general character of these data in "Efficiency and Distributional Consequences." While that paper concentrated on analyzing the data relating to *farms*, this article analyzes a broader sample of *villages*. Robert C. Allen and Cormac Ó Gráda, "On the Road Again with Arthur Young: English, Irish and French Agriculture During the Industrial Revolution," University of British Columbia, Department of Economics Discussion Paper No. 86-38 and University College, Department of Economics, Centre for Economic Research Working Paper No. 45, Appendix Table 1, reports the average yields county by county.

¹⁷ Throughout, national yield averages have been computed as unweighted arithmetic means of the county data. The absence of county acreage data left no other option.

If Young was reliable as a questioner, what of the people he interviewed? We know a good deal about them. The modest success of the *Six Weeks Tour* prompted Young and his publisher to try something more ambitious. And so Young, then relatively unknown and still in his late twenties, accordingly placed notices in the northern press, announcing that the author of the *Six Weeks Tour* would visit the area and

beg[ging] leave to request such of the nobility, gentry, landlords, farmers, and others, as possess, or are acquainted with, any particular improvements, experiments, customs, implements, etc. in [those] counties, . . . to inform him of such circumstances, with exact directions to the places where such improvements, etc. are carried on.²¹

This appeal elicited no response, but Young proceeded north anyway. Gaps in the early part of his register are “not to be laid to [his] account; but to those who could have given me better intelligence, but neglected or slighted the undertaking.” Young’s luck changed in York, however, where many of the gentry were congregated for race-week. He was invited to many estates. The gentry themselves provided much information, but they were especially valuable in having their bailiffs arrange interviews with their tenant farmers. These circumstances made the farmers more cooperative than those Young approached on his own early in the tour, so the completeness of his information rises dramatically after York.

The *Northern Tour* was an immediate success and quickly went into a second edition. Young’s reputation rose sharply, ensuring his hospitable reception by the landed classes throughout his next trip. As a result he was able to continue the interview techniques he had developed in the North, and the *Eastern Tour* contains essentially comparable material.

If Young had relied only on the accounts that improving landlords gave him of their own methods, then his tours would be useless for judging average productivity. But he was always aware of the difference between best practice and average practice and specifically inquired after the latter. The lion’s share of his attention was devoted to “general husbandry,” the ordinary farmers whom he refers to throughout as “they.” “They plough four times for wheat”; “they usually rear by turning cow and calf to grass together”; “they sow seven bushels and gain eight quarters in return.”²² His questioning of common farmers guaranteed his gaining much information on typical methods and results. Therefore, Young’s informants as a whole appear a reliable basis for assessing English productivity. Marshall’s “no doubt” sounds liked sour grapes from a man piqued at the hospitality extended to his rival.

²¹ Young, *Northern Tour*, vol. 1, p. iv.

²² Young, *Eastern Tour*, vol. 1, pp. 3, 82, 165.

A second way to judge the reliability of Young's information is to compare it with other, contemporaneous material. Between Young's tours and the middle of the nineteenth century, five enquiries provided wide-ranging information on English grain yields. They are the official inquiries of 1795, 1800, and 1801; the county reports conducted under the direction of the Board of Agriculture between 1790 and about 1810; and the findings of James Caird in his tour of British farming districts.²³ The first set of data have been most usefully collated by Michael Turner. We extracted the second from William Marshall's summary of the Board of Agriculture surveys and, where necessary, from the original county reports. Caird produced a summary table for wheat only, but county data on barley and oats are scattered throughout his book.

These sources present several difficulties of interpretation. The official inquiries collected returns for some specific years (including some of extremely good and bad harvests) as well as estimates of "average" yields. Since that is what concerns us, we confine our discussion to the 1795 return for an "average" year and the return for 1800 (said to be about average). Most commentaries on British grain yields have relied on J. R. McCulloch's putative extraction of the figures from the Board of Agriculture reports, but it has been impossible to duplicate his table.²⁴ Where, for instance, did McCulloch find all those potato yields? We have therefore constructed new averages, relying mainly on Marshall's *Review and Abstract* and consulting the original reports in ambiguous cases. Our national averages do not differ dramatically from McCulloch's, but ours conform a bit more to the other sources. All together, we have five estimates for English grain yields from about 1770 to about 1850.

How do Young's yields compare to the later ones? If we begin with the "average 1790s" figure, the 1800 return, and the Board of Agriculture average, Young is clearly not far out of line. In fact, the discordant return is always the average 1790s, which is consistently lower than the others. Turner was disturbed that this average was less than the 1800 return.²⁵ He noted that some returning officers believed that farmers had understated their yields. Our results reinforce that concern and suggest the average 1790s figure is the least reliable. Not too much should be made of this, however, since the standard errors applying to all these means are several bushels per acre, so the statistical hypothesis that the means for each crop are equal across the four samples cannot be rejected. The high standard errors are a measure of the weakness of all

²³ James Caird, *English Agriculture in 1850-1*, G. E. Mingay, ed. (London, 1968), p. 474.

²⁴ J. R. McCulloch, *A Descriptive and Statistical Account of the British Empire* (London, 1837), vol. 1, p. 482; Fussell, "Population and Wheat Production," p. 109 fn. 35.

²⁵ Turner, "Agricultural Productivity," pp. 502-3, 494.

TABLE 2
ESTIMATES OF ENGLISH GRAIN YIELDS, c. 1770 TO c. 1850
(bushels per acre)

Survey	Wheat	Barley	Oats
About 1770 (Young)	23.8	32.1	37.0
Average 1790s	19.1	27.7	27.2
Typical about 1800	21.6	32.0	34.9
1794–1816 (Board of Agriculture)	22.6	32.6	36.1
About 1850 (Caird)	26.7	39.6	46.4

Sources: The "average 1790s" and "typical about 1800" yields are computed from Michael Turner, "Agricultural Productivity in England in the Eighteenth Century: Evidence from Crop Yields," *Economic History Review*, 2nd series, 35 (Nov. 1982), pp. 506–10. The remaining means are computed from R. C. Allen and Cormac Ó Gráda, "On the Road Again with Arthur Young: English, Irish and French Agriculture during the Industrial Revolution" (University of British Columbia, Department of Economics Discussion Paper No. 86-38), appendix tables 1A, 1B, 1C.

the data and a reminder that not too much should be read into differences of a few bushels.

Table 2 is a useful corrective to persistent fears that Young's yields were too high.²⁶ Discarding the average 1790s return throughout as an underestimate, we see for wheat that Young's return is 5 percent greater than the Board of Agriculture average and 10 percent above the 1800 average. For barley, Young's average is *lower* than the Board of Agriculture average and almost identical to the 1800 return. For oats, Young is again a bit higher than the 1800 or Board of Agriculture means, but the excess is less than for wheat. Given the large standard errors of all of these numbers, the most reasonable conclusion is that English grain yields did not change much between the time of Young's tours and the Board of Agriculture reports.

Table 2 also shows that Caird's yields for about 1850 are consistently higher than the earlier yields for all crops. The implication that yields increased in the first half of the nineteenth century is confirmed by the Healy-Jones series of wheat yields between 1815 and 1859.²⁷ By its construction, the Healy-Jones series overstates yields actually reaped, but it is reliable in establishing the upward trend.

Young's yields also invite comparison with earlier returns. Monastic accounts record yields for many demesnes in southern England from the thirteenth to the fifteenth century. These records suggest that wheat and oats yielded, in round numbers, about 10 bushels per acre, while barley yielded up to 50 percent more.²⁸ Table 2 shows that crop yields had

²⁶ For example, Bennett, "British Wheat Yields."

²⁷ Eric L. Jones, *Agriculture and the Industrial Revolution* (Oxford, 1974), pp. 184–90.

²⁸ Thus, for instance, Titow's, *Winchester Yields*, pp. 121–35, summary of the yields of 40 manors of the Bishop of Winchester between 1209 and 1349 showed wheat yielding 10.7 bushels per acre, barley 16.8 bushels, and oats 11.7 bushels. Titow's figures have been divided by 0.9 to compensate for the tithe. (Titow, *Winchester Yields*, p. 8.) D. L. Farmer, "Grain Yields on the

about doubled in England sometime between the Middle Ages and the late eighteenth century. Since the difference between open and enclosed yields in Table 1 is small compared to the total advance, it is clear that enclosure made little contribution to this aspect of the English agricultural revolution.

When did the increase in yields occur? G. E. Fussell combed contemporary farming books to discover what informed observers believed were typical crop yields.²⁹ For the early eighteenth century the consensus was 20 bushels per acre for wheat. Michael Turner and Mark Overton have recently challenged this conclusion as too high, but it has received strong support from a recent analysis of probate inventories.³⁰ This investigation established that most of the growth of wheat yields in the south midlands was accomplished by open field farmers in the seventeenth century. The Goths and Vandals were certainly busy in those years! By the early eighteenth century, however, productivity growth, as measured by grain yields, seems to have ceased, to resume only in the first half of the nineteenth century.

The information that Turner has recently abstracted from the 1801 crop returns also allows comparison of open and enclosed yields.³¹ He found that the yield of wheat in enclosed villages was 26.4 percent higher than in open villages; barley was 21.4 percent higher and oats were 25.5 percent higher. These increments are considerably larger than those implied by Young's data. Which source is more reliable? It is not obvious that the 1801 yields should be preferred to Young's because 1801 was an exceptional year. Equally disturbing, it is not clear whether all the reports refer to 1801 or to an "average" year. Moreover, there is an unknown selection bias in that the yields were not called for but were voluntarily returned as supplemental information under "General Remarks." In any event the reporting was done by parish clergy. What were their motives and biases? Were they as assiduous as Young? The 1801 comparisons do not square with other data summarized by Turner

Winchester Manors in the Later Middle Ages," *Economic History Review*, 2nd series, 30 (Nov. 1977) pp. 555-66 reports yield-seed ratios for the same manors into the fifteenth century, and those ratios are scarcely different from the ones Titow reports. P. F. Brandon, "Cereal Yields on the Sussex Estates of Battle Abbey during the Later Middle Ages," *Economic History Review*, 2nd series, 25 (Aug. 1972), pp. 403-20, reports similar numbers for some Sussex manors on p. 417. See Slicher van Bath, *Yield-Ratios*, summarizing yield-seed ratios for all English records in print when he wrote. Again those ratios are fully consistent with our argument. The only discordant findings are the high yields in some East Norfolk manors recently discussed by Campbell, "Agricultural Progress."

²⁹ Fussell, "Population and Wheat Production," p. 111.

³⁰ Turner, "Agricultural Productivity"; Mark Overton, "Agricultural Productivity in Eighteenth-Century England: Some Further Speculations," *Economic History Review*, 2nd series, 37 (May 1984), pp. 244-51; and Robert C. Allen, "Enclosure, Capitalist Agriculture, and the Growth in Corn Yields in Early Modern England" (University of British Columbia Department of Economics, Discussion Paper 86-39).

³¹ Turner, "Agricultural Productivity."

either. He compared average 1790s yields in open and enclosed villages in Northamptonshire and found only modest differences for wheat and barley, the main crops.

Whatever the ultimate resolution of that matter, two things are clear. Based on the evidence of his tours, Young was incorrect in his view that enclosure radically raised efficiency. He was also wrong in believing that he lived in an age of improvement, at least as far as grain yields are concerned, for his yield data imply that the late eighteenth century was an age of stasis.

IRELAND

"In the management of arable ground," declared Young in 1780, "the Irish are five centuries behind the best cultivated of the English counties."³² Young's claim was echoed repeatedly in the decades before the Great Famine, both by outside observers and by those seeking to impress English notions of "improvement" on Irish farmers and landowners. Histories of the period which seek to "predict" or "explain" the Great Famine also repeat the spirit of Young's condemnation. These accounts tend to highlight the abject poverty of the cottier-laborer—a poverty often put down to sloth and compounded by agrarian violence—and the notion that an inefficient system of land tenure led to low and stagnant productivity. Government Blue Books—especially the evidence presented to the Devon (1842/45) and Poor Inquiry Commissioners (1835/36)—and the accounts of travelers such as J. G. Kohl and Gustave de Beaumont provide plenty of support for such arguments.³³ A recent estimate putting output per worker in Irish agriculture on the eve of the Famine at less than half that of his British counterpart only emphasizes Irish backwardness.³⁴

Yet there has always been scope for another assessment of Irish farming. Accounts of improved livestock breeds and farm equipment abound in statistical and topographical surveys of the day. Moreover, some simple political arithmetic comparing the rise in population and exports suggests that production increased. Between the 1770s and the Famine Ireland's population rose from 4 to 8.5 million, while exports grew from small beginnings to providing the sustenance of one-tenth of Britain's population.³⁵ These shipments amounted to about one-third of

³² Young, *Tour in Ireland*, (Dublin, 1780 edn.), pt 2, p. 75.

³³ Compare George O'Brien, *The Economic History of Ireland from the Union to the Famine* (London, 1921), pp. 27–128, and E.R.R. Green, "Agriculture," in R. Dudley Edwards and T. Desmond Williams, eds., *The Great Famine: Studies in Irish History* (Dublin, 1956), pp. 89–128.

³⁴ Cormac Ó Gráda, *Ireland Before and After the Famine: Explorations in Economic History* (Manchester, 1988), chap. 2.

³⁵ Brinley Thomas, "Food Supply in the United Kingdom during the Industrial Revolution," in Joel Mokyr, ed., *The Economics of the Industrial Revolution* (Totowa, 1985), pp. 137–50.

Irish output. Irish farmers must have done a great deal to prevent the Law of Diminishing Returns from asserting itself.

This conclusion gains credibility from recent attempts to measure the growth in total factor productivity in Irish and English agriculture. In Ireland in the half-century before the Famine capital accumulation and technical change were adding 0.5 to 1.0 percent annually to productivity.³⁶ Recently N.F.R. Crafts found that capital accumulation and technical change increased the productivity of English farming 0.42 percent annually between 1760 and 1800 and 1.27 percent between 1820 and 1840.³⁷ By the English yardstick, the Irish were doing quite well.

This result is suggestive but not definitive. Another, important way to judge the performance of Irish agriculture is to assemble contemporary evidence on grain yields and use them to measure productivity growth before the Famine and to compare Irish with English levels of efficiency.³⁸ For England our sources provide yield estimates for about 1770, about 1800, and about 1850. Irish sources are available for the same periods. Arthur Young provides a window on the 1770s in his *Tour in Ireland*. The early nineteenth century is dealt with by two sources: several of the county surveys produced for the Dublin Society between 1801 and 1824 (and inspired by the English Board of Agriculture reports) provide yield data, as does Wakefield in his *Ireland Statistical and Political*.³⁹ The official *Agricultural Statistics* begin in 1847 and report yields at mid-century. Presumably yields for grains in the late 1840s (but of course not potatoes) are similar to levels immediately prior to the Famine.⁴⁰

We must question the reliability of these data, just as we did for England. Similar doubts surround Young's Irish reports as surround his English reports. Despite the claim that "he spent the best part of three years in Ireland," the *Tour in Ireland* is based mainly on data collected during a whistle-stop tour in the summer of 1776, so in many respects the Irish book is inevitably superficial.⁴¹ In his haste to cover lots of

³⁶ Cormac Ó Gráda, *Ireland*, chap. 2. See also P. M. Solar, "Agricultural Productivity and Economic Development in Ireland and Scotland in the Early Nineteenth Century," in Tom Devine and David Dickson, eds., *Ireland and Scotland* (Edinburgh, 1983).

³⁷ N.F.R. Crafts, "Income Elasticities of Demand and the Release of Labour from Agriculture during the Industrial Revolution: A Further Appraisal," in Mokyr, ed., *The Economics of the Industrial Revolution*, p. 160.

³⁸ For an earlier assessment of Irish grain yields before 1845, see Bourke, "Average Yields," pp. 26-39. Bourke, however, largely eschews comparisons across countries and over time.

³⁹ E. Wakefield, *An Account of Ireland, Statistical and Political* (London, 1812) [henceforth *Ireland*].

⁴⁰ Another source is the parish yield data in the Ordnance Survey memoirs for the 1830s. Available for Ulster counties only, these data are often ambiguous in terms of the measurement units used. Omitting unclear cases, however, yields a 34-parish average of 37.0 bushels for oats and a 31-parish average of 26.6 bushels for wheat. We are grateful to Liam Kennedy of Queen's University, Belfast, for sharing his O.S.M. data.

⁴¹ Mingay, *Arthur Young*, p. 6.

ground, Young spent most of his time with the gentlemen who entertained him. The reaction of Robert Fraser, who surveyed Wexford for the Dublin Society in 1807 and was particularly upset by Young's appraisal of that county, is perhaps apposite:

It is, indeed, of little moment to notice anything, that is said by a man, who, professing he had a great desire to visit these baronies, of which he had heard so much, passed through them in part of a day, and left them the next morning at an early hour.⁴²

Young's itinerary immediately recalls Marshall's charge that he merely recorded idle, after-dinner conversation. By the time Young visited Ireland he was a national figure and his informants came from far up the social scale.⁴³ He sought and received letters of introduction from, among others, Edmund Burke and Lord Shelbourne. In Dublin he was immediately taken charge of by Colonel Burton, the Viceroy's aide-de-camp, and thereafter steered from the home of one grandee to the next.⁴⁴ The hospitality of the Irish gentry and nobility at this time was legendary.⁴⁵ Young was hosted by Lord Chief Baron Foster, Lord Courtown, Archbishop Robinson, the Earl of Ross, Sir James Caldwell, Sir Lucius O'Brien, the Earl of Shannon, Mr. Herbert of Muckross, the Earl of Clanwilliam, and many others. Only rarely was he forced back on his own resources for accommodation. When "Mr. Lowther to whom [he] had a letter, not being at home [he] was forced to take refuge in a cabin, called an inn at Rathoath."⁴⁶ "Preserve me Fates from such another!" he remarked.⁴⁷

Had this been Young's first tour, the result might have been meaningless as an indicator of the average level of productivity. But by 1776 Young was experienced and was clear in his own mind on the information he sought. Most of his hosts seem to have had an interest in farming. He was an industrious reporter of facts about Irish agriculture and was careful to distinguish between improvers and the general run of farmers. The format of the reporting closely follows that of the English tours. He was at pains to record *average* crop yields, and his numbers for the most part do not reflect the experience of individual "improvers." Young's findings certainly deserve a careful look.⁴⁸

⁴² Robert Fraser, *Statistical Survey of the County of Wexford* (Dublin, 1807), p. 56.

⁴³ A condensed single-volume version of the first and second tours had been produced by John Wynn Baker for the Dublin Society in 1771. This abridgement of the *Six Weeks, and Six Months Tour of Arthur Young, Esq.* was aimed at "the common farmer of Ireland," and 3,000 copies were printed.

⁴⁴ Gazley, *Arthur Young*, pp. 96–100.

⁴⁵ L. M. Cullen, *The Emergence of Modern Ireland, 1600–1900* (London, 1981), pp. 172–92.

⁴⁶ Arthur Young, *A Tour in Ireland*, selected and edited by C. Maxwell (Cambridge, 1925), p. 32.

⁴⁷ Also Arthur Young, *The Autobiography of Arthur Young*, M. Beatham-Edwards, ed. (London, 1898), vol. 1, p. 85.

⁴⁸ It is worth noting that French writers have generally been impressed with Young's Irish inquiry. When C. Millon, "Editor's Preface," Arthur Young, *Voyage en Irlande* (Paris, 1800),

TABLE 3
ESTIMATES OF IRISH GRAIN YIELDS, 1770s–1847/53
(bushels per acre)

Survey	Wheat	Barley	Oats
1770s (Young)	21.2	34.7	34.6
1801/24 (Dublin Society)	22.1	34.7	36.6
About 1812 (Wakefield)	23.3	39.3	41.4
Early 1840s (Bourke)	23.3	39.7	36.4
1847/53 Average	24.7	41.0	38.7

Sources: P.M. Austin Bourke, "The Average Yields of Food Crops in Ireland on the Eve of the Great Famine," *Department of Agriculture Journal*, 66 (1969), pp. 26–39; R. C. Allen and C. Ó Gráda, "On the Road Again with Arthur Young: English, Irish and French Agriculture During the French Revolution" (University of British Columbia, Department of Economics Discussion Paper No. 86-38), appendix tables 2A, 2B, 2C.

The same is true of the Dublin Society reports and Wakefield's *Ireland*. These sources probably suffer from the same limitations as the corresponding English sources. The yields derived from the Dublin Society reports are again no more than educated estimates. The quality of the reports varies, although those which record yields tend to be more carefully written in other respects. The best—those by Hely Dutton, John Dubourdieu, Robert Fraser, George Sampson, and William Tighe—are excellent examples of the genre. Wakefield's somewhat idiosyncratic survey took far more work than Young's. It overlaps with the Dublin Society's in time, and more of Wakefield's numbers may reflect "best practice" farming than the other sources we use. Still, they should not be discarded out of hand.

Table 3 shows the average yields computed from Young, the Dublin Society, Wakefield, and the official returns for 1847/53 along with Bourke's "best estimates" for the early 1840s.⁴⁹ The table contradicts Young's claim that the Irish were five hundred years behind the English. Comparing Tables 2 and 3 shows that Irish wheat and oats yields in the 1770s were slightly lower than English yields, while Irish barley yields were higher. The differences are small compared to the gap between eighteenth-century and medieval England. The results derived from the Dublin Society reports and Wakefield are in agreement (although Wakefield tends to be higher) and imply yields comparable to England's at the beginning of the nineteenth century. Nor were these respectable Irish yields attained at the cost of liberal fallowing: the rotations suggested by Wakefield's considerable body of evidence are "modern."

produced a work "qui fasse connaître d'une manière satisfaisante l'Irlande," it was a translation of Part II of Young's *Tour in Ireland*. Young's reputation was a "sure guarantee" of success; "nothing escaped his inquiries." H. Séé, "Introduction," A. Young, *Voyages en France 1787, 1788, 1789* (Paris, 1931; 1976 edn.), vol. 1, p. 27, fn., suggests, rightly in our view, that Young's knowledge of Irish agriculture was "plus précise et plus exacte."

⁴⁹ Bourke, "Average Yields," p. 27.

Finally, though Irish yield growth seems to have faltered just before the Famine, it still seems that between Young's time and mid-century productivity growth in both countries was roughly comparable.⁵⁰

The history of crop yields thus shows Irish farming to have been much more productive than Young and many other observers concluded. Why did they come to other conclusions? The immediate answer is that, some enthusiasts aside, the Irish did not use the new crops (in particular clover and turnips) that were diffusing through England. Young and others took their absence as an indicator of agricultural backwardness.

But neglect of clover and turnips was probably sensible under Irish conditions. After all, the potato was doing for Irish agriculture what the turnip did for English—and more. Besides its role as fodder crop and soil cleanser, it provided a healthy diet for the poor. In this sense the potato, far from characterizing a separate, antediluvian system of farming, was part of Ireland's agricultural revolution. As for artificial grasses, their slow diffusion in Ireland was almost certainly related to climate and soil. Let Robert Fraser and John Dubourdieu, Dublin society writers on counties Wicklow and Down, explain:

In this county, like many other parts of the island, they trust so much to the natural disposition of the soil to produce grass, that they are at no pains to improve it. The inclosed pasture is chiefly natural grass, arising on worn out arable fields, on which according to their expression, they have left it to God Almighty to sow the seeds; some meadows there are, which have never been ploughed.⁵¹

While we are celebrating the fertility of our isle, let us not ungratefully pass by the white clover (*trifolium repens*), the never failing attendant on good farming, and which, in despite of the very worst management, often clothes, in winter, our fields with green, or in summer enamels them with its favourite flowers.⁵²

In the circumstances, why should Irish farmers have wasted their time and money sowing clover?

YOUNG ON FRANCE

What of Young on France? His *Travels . . . [in] France* remains his best-known work, though it is probably remembered more nowadays for its account of the Revolution than its research of agriculture. Nevertheless, the *Travels*, like the *Tours*, is mainly a book about farming. While Young is sometimes reproached for superficiality,

⁵⁰ Even Bourke's "Average Yield," p. 27, more conservative assessment—reflecting a belief that the reduction in acreage during the Famine boosted yields—still implies progress between Young's time and 1845. On rotations see Wakefield, *Ireland*, pp. 368–426. His data are tabulated in Joel Mokyr, "Irish History with the Potato," *Irish Economic and Social History*, 8 (1981), p. 12.

⁵¹ Robert Fraser, *General View of the Agriculture and Minerology, Present State and Circumstances of the County Wicklow* (Dublin, 1801), p. 178.

⁵² John Dubourdieu, *Statistical Survey of the County of Down* (Dublin, 1801), p. 137.

historians quote him repeatedly as an authority on French agriculture.⁵³ According to Lord Ernle, discussion in France “always centred round his name . . . France has made an adopted child of Arthur Young.”⁵⁴

A comparison of the English, Irish, and French tours suggests that, at least as far as yields are concerned, Young had much more trouble finding the kind of information he wanted in France. His difficulties resulted from the change in the nature of his informants. His first travel book was written “as an amusement on the road.” When he hit his stride in the *Northern and Eastern Tours*, Young relied on interviews with farmers. His connections with the gentry were critical in arranging those interviews, and the list of acknowledgments in the *Eastern Tour* reads like a Who’s Who of the farmers and landowners of the region.⁵⁵ In Ireland Young’s informants came from farther up the social scale: instead of relying on progressive capitalist tenants, who were relatively thin on the ground, he was feted, entertained, and informed mainly by the nobility and the very rich.

In France, however—and we think this is important—he relied on his own resources, traveling alone or with friends, and generally staying in wretched inns.⁵⁶ His agricultural researches reflected the change. Thus we find him reporting yields using “the measure I took with my eye” on walks along fields, with no consideration for how typical the summers of his trip were.⁵⁷ In England and Ireland his hosts dealt with the relatively minor problem of weights and measures. By contrast, Young spent five pages of his chapter on “Produce—Rent—Price” in his *Travels . . . [in] France* on the “infinite perplexity” of French measures, before warning the reader that “after all my labour, it would be a want of candour were I to offer the result . . . as correct.”⁵⁸ In addition, though Young’s command of French was passable, the panoply of dialects and regional languages then spoken can only have added to his confusion.⁵⁹

Nevertheless he tried his best to estimate grain yields on his first two trips. It was a constant struggle.

At La Fere re-enter Picardy, but do not here meet with the arpent of the province. The measure eighty verge of twenty-two feet, 38,720 [square] feet. Variations of measure

⁵³ A. Bourde, *Agronomie et agronomes en France au XVIIIe siècle* (Paris, 1967), vol. 3, pp. 1653–65. Young is accused of superficiality but the historians who quote him include Clout, *Agriculture in France*; Morineau, *Les faux-semblants*; Bourde, *Influence*; B. Sexauer, “English and French Agriculture in the late Eighteenth Century,” *Agricultural History* (1976), pp. 491–505. See also Sée’s balanced appraisal in his introduction to first complete translation of Young’s French trip, *Voyages en France*, pp. 15–35.

⁵⁴ Lord Ernle, *English Farming, Past and Present* (4th edn., London, 1927), p. 206.

⁵⁵ Young, *Eastern Tour*, vol 1, pp. xxvii–xlvi.

⁵⁶ Gazley, *Arthur Young*, pp. 177, 203–4, 206, 208, 214, 221, 234, 239.

⁵⁷ Young, *Travels . . . [in] France*, vol. 2, pp. 45, 56, 76.

⁵⁸ *Ibid.*, pp. 43–46.

⁵⁹ See E. Weber, *Peasants into Frenchmen* (London, 1977), chap. 6.

now occur at almost every town. At St. Quintin they reckon by the septier of land being eighty verge of twenty-four feet, 46,080 [square] feet. . . .⁶⁰

Earlier Young had explained how “a practical knowledge of agriculture is as requisite to such an undertaking as plenty of patience.” Now we can see him putting his practical knowledge to work in trying to test the “intelligence” he received about French weights and measures.

At La Belle Angloise the rent is three septiers of wheat per septier of land On a farm of eight hundred septiers thirty-five horses are kept; on another, of four hundred septiers there are twenty. This evidently makes the measure about an arpent, as well as the price noted above, and agrees also with the produce; hence the St. Quintin measure continues here of 46,080 [square] feet,—but the septier of wheat cannot be the quantity of seed for a septier of land. . . .⁶¹

His difficulties increased as he entered French Flanders.

In the way from Cambray to Valenciennes, enter this celebrated province, which, among the French themselves, has the reputation of being the best cultivated in the kingdom. The difficulties, however, of gaining intelligence increased every step, for not one farmer in twenty speaks French; and all the way to Valenciennes, the confusion of measures, both of land and corn, makes the utmost circumspection necessary. The manco of land is sown with the manco of seed wheat, which weights 80 lb. being one-third of a Paris septier; the present price is 7 liv. 10s.—and of a sack 22 liv. 10 s. If they sow as we do, which, from their earliness, and the appearance of the young plant, I believe they do, this makes the manco two-thirds of an acre, which agrees very well with the measure I took by my eye of a piece, which I was informed contained six mancos of land, the rent I was informed, was five to seven mancos of the corn produced, or the value per manco of land, six will be 480 lb. of wheat, or two sacks 45 liv.; add two sacks of oats at 5-1/2 liv. it is 56 liv. for three years, or 18 liv. rent per manco, which agrees well enough with the quality of the soil, and other circumstances of the country⁶²

These excerpts show an active mind at work. We quote them at length to dispel any lingering claims that Young was credulous or superficial in collecting his data.

On Young’s third, and longest trip through France, he changed his reporting in an important way. While still noting yields per acre, he also frequently reported that easier number, the yield-seed ratio. This change may have reflected his frustration at the units of measure. “At Avignon, we meet with the same difficulty in discovering the measure of land accurately as at Montilimart. I must therefore take the seed for my guide here also.”⁶³ Too much should not be made of this, however, since he did work out bushels per acre at Montélimart and continued to do so despite the difficulties. It is more likely that his use of yield-seed

⁶⁰ Young, *Travels . . . [in] France*, vol. 2, p. 55.

⁶¹ *Ibid.*

⁶² *Ibid.*, pp. 55–56.

⁶³ *Ibid.*, p. 92.

TABLE 4
FRENCH WHEAT YIELDS, 1780s–1850s
(bushels per acre)

District	Young's Own	Young's Ours	Implied by Young's		
			Yield-Seed Ratio	Récoltes 1815/6	Récoltes 1850/1
Loam	23.5	22.2	21.6	14.5	21.1
Heath	19.0	17.5	14.4	11.1	15.5
Mountain	18.0	20.2	11.0	10.6	12.6
Stony	18.0	17.3	11.2	8.6	15.9
Chalk	13.5	15.3	7.7	6.8	13.0

Notes and Sources: The districts are Young's.

"Young's own" yields are from his summary table in Young, *Travels . . . [in] France* (2nd edn., London, 1794), vol. 2, p. 118. We have used the average for "loam, N.E." instead of the average for all loam districts (25 bushels per acre) since all the other data relating to loam in the table come from the northeast. "Young's Ours" are our averages of Young's data, as computed from the departmental averages in Allen and Ó Gráda, "On the Road Again with Arthur Young: English, Irish and French Agriculture during the French Revolution" (University of British Columbia, Department of Economics Discussion Paper No. 86-38), appendix table 3. "Implied by Young's Yield-Seed Ratios" equal his yield ratios—in descending order by district they are 8, 6, 5, 4, 4.5—multiplied by seed rates collected in the agricultural inquiry of the mid-1830s. (Young, *Travels . . . [in] France*, vol. 2, pp. 104–5, 119). These were read off Hugh Clout's map for the departments where Young recorded yields, in *Agriculture in France on the Eve of the Railway Age* (London, 1980), p. 112. "Récoltes 1815/6" are average yields for 1815 and 1816 from *Récoltes des céréales et des pommes de terre, 1815–1876* for the departments that include the places where Young recorded yields. "Récoltes 1850/1" are average yields for 1850 and 1851. These averages are calculated from Allen and Ó Gráda, "On the Road," appendix table 3.

ratios was a concession to the usual idiom for discussing productivity. Thus, "at Marseilles, the celebrated Abbe Raynal assured me, that he had been informed by many agriculturalists, who well know France, that the whole kingdom does not produce more than 4-1/2 for one of the seed, on an average."⁶⁴ To get an overall view of productivity he had to rely on this sort of testimony much more on his third trip. His first two trips were mainly in northeastern France, where the land was almost uniformly fertile, so he could reasonably expect that the yields he sampled were representative of the whole region. His last trip concentrated on less fertile districts, and he tended to follow the main roads through river valleys where the land was more productive than in the districts as a whole. So while he could directly ascertain yields where he was, he had to rely on the testimony of others for yields in the hinterlands. And those assessments were given in terms of yield-seed ratios.

In sum, Young gives us two estimates of yields for France—yields per acre and yield-seed ratios. (He retrospectively added yield-seed ratios for districts where he had not collected them on his first tours.) Table 4 shows the yields per acre of wheat implied by the two methods.

⁶⁴ *Ibid.*, p. 93.

Table 4 follows Young's division of the country into soil districts.⁶⁵ The first column in Table 4 shows Young's own averages of his yield-per-acre figures, while the second column reports our averages of his data for the same regions. Although we have tried to exclude returns for exceptionally good years or rich soils, our results are broadly similar to Young's. The third column shows the yields implied by multiplying Young's yield-seed ratios by seed rates for the same places reported in the 1837 agricultural inquiry.⁶⁶ For the loam district of northeastern France the three estimates are within 10 percent of each other. For the rest of the country, however, and especially the mountain, stony, and chalk districts, the directly measured yields are much higher than the yields implied by the yield-seed ratios. As previously suggested, this discrepancy probably reflects the difference between productivity in the valleys, where Young was doing his measuring, and productivity elsewhere. He was explicit about this in the case of the mountain district. He noted "the great roads lead mostly along vales," adding that

another circumstance, in countries where irrigation is well understood, is that the waters of great tracks of mountains being directed over small ones of vallies, to their prodigious improvement, must of necessity add a value to them, which would grossly deceive us, if the slightest general idea was formed from it.⁶⁷

Nor did he forget this admonition when he drew his general conclusions.

The average [rent] thus stated is that of land improved and cultivated, and chiefly vales, in this mountainous district. . . . The product of wheat and rye, proportioned to the seed, rises from four for one, to ten for one, but the latter is in watered vales; such advantages excepted, about four or five for one.⁶⁸

In summarizing the heath district, Young noted "that the cultivated and improved lands, or those naturally rich and good, have been here in contemplation."⁶⁹

⁶⁵ The loam district includes Picardy, Flanders, Artois, the Ile de France, and parts of Normandy, Alsace, and Auvergne. The heath district includes Brittany, Anjou, and Gascony. The mountain district includes Roussillon, Languedoc, Auvergne, Dauphiné, and Provence. The stony district includes Lorraine, Alsace, Franche Comté, and Burgundy. The chalk district includes Sologne, Saintonge, Angoumois, Poitou, Touraine, Champagne. Young also distinguished a gravel district and a district of "various loams," but he collected little information about them. Hugh Clout, *Themes in the Historical Geography of France* (London, 1977), p. 549, has produced a useful map of Young's soil districts with his route superimposed.

⁶⁶ The seed rates were read off Clout's, *Agriculture*, p. 112, map for the departments where Young recorded yields. Mainly on his third trip, Young reported seed rates for some places in France (*Travels . . . [in] France*, vol. 2, p. 118). The average level of seeding he recorded is consistent with the 1837 inquiry, but seed rates do not correspond very closely place by place.

⁶⁷ Young, *Travels . . . [in] France*, vol. 2, p. 89.

⁶⁸ *Ibid.*, p. 95.

⁶⁹ *Ibid.*, p. 88. R. Specklin, "Les campagnes à leur apogée 1852-1880," in M. Agulhon et al., *Histoire de la France rurale* (Paris, 1976), vol. 3, p. 265, noted that Young "n'a vu le pays que le long des routes traversées, et entre elles, principalement dans l'Ouest, il y avait de grands espaces qu'il n'a connus que par oui-dite ou pas de tout."

The upshot is that Young's French yield data need careful handling. The estimates based on his own observations in the northeast are probably reliable enough, but his yield-per-acre estimates for the rest of the country are dubious. The logic of his own caveats would have been to omit them entirely. For these regions one can do no better than use the yield-seed ratios reported to him.

How do these numbers compare to other information we have about grain productivity? We can compare Young's yields with those returned annually beginning in 1815 in the *Récoltes des céréales et pommes de terre, 1815-1876*.⁷⁰ The *Récoltes* returns are on a departmental basis. Table 4 shows the average yield in 1815/16 for the departments Young had reported on a generation earlier. The *Récoltes* yields for the mountain, stony, and chalk districts do not differ much from those implied by Young's yield-seed ratios, but they are, of course, much lower than his direct estimates of yields. For the loam district, however, the discrepancy with Young's estimates is impressive. Either Young's numbers are too high, or the *Récoltes* averages are too low, or the productivity of farming in northeastern France was depressed by war damage and dislocation.⁷¹

The last column in Table 4, which reports the *Récoltes* averages for 1850/51 for the departments Young surveyed, raises some important questions about the timing of the agricultural revolution in France. In these comparisons we use the yields implied by Young's yield-seed ratios as being more broadly representative than his directly measured yields. Yields rose substantially in the chalk and stony districts between either 1787/89 or 1815/16 and 1850/51. This finding is consistent with Newell's chronology and inconsistent with Morineau's.⁷² Productivity growth was negligible, however, in the mountain district at the same time. Productivity may have grown in the heath district, depending on whether one prefers Young's implied yields or the *Récoltes* yields.

The productivity history of these districts should be compared with the histories of Ireland and England. Evidently yields in the mountain, stony, and chalk districts were much less than in Ireland and England. The heath district, environmentally similar to much of Ireland, does not compare at all favorably with the Irish yields reported in Table 3. (Indeed, Ireland compares very well with France, for Irish farmers reaped yields at least as high as French farmers did in the more favored loam district.) All the French districts aside from the loam district had low yields by the standard of international comparison. One can interpret the yield rise in the heath, stony, and chalk districts in the first

⁷⁰ France, Ministère de l'Agriculture, *Récoltes des céréales et pommes de terre, 1815-1876* (Paris, 1913).

⁷¹ George Grantham, "The Diffusion of the New Husbandry in Northern France," this JOURNAL, 38 (June 1978), pp. 311-37.

⁷² Newell, "Agricultural Revolution," Morineau, "Y-a-t-il," and *Les faux-semblants*.

half of the nineteenth century as catching up to productivity levels already achieved elsewhere in Europe, but the catching up was far from complete.

The loam district provides the biggest mystery in Table 4. If one accepts the *Récoltes* yields, productivity grew between 1815/16 and 1850/51, but if one accepts Young's yields there was stasis. The issue is sharpened by comparing yields in the loam district to those in England, which was environmentally similar and much of which was farmed for a long time under a similar open-field system. The 1815/16 *Récoltes* average is significantly below the English wheat yields shown in Table 2, but Young's yields are quite similar. French yields in 1850/51, however, were lower than those reported by Caird. Setting aside the 1815/16 *Récoltes* figure for the moment, the worst one can fault French farming for is not keeping up with the advance in yields recorded in England in the first half of the nineteenth century.⁷³

And the *Récoltes* yields probably should be set aside. B. Gille dismissed the returns as useless.⁷⁴ Grantham points out that the *Récoltes* could not be replicated during the 1837 agricultural inquiry and suggests that, at most, the rapid rise in production from 1815 to 1825 shows recovery from the Napoleonic Wars.⁷⁵ The evidence of Young's *Travels . . . [in] France*, which we have suggested was carefully collected, must count as further evidence against interpreting the *Récoltes* in its early years as evidence of the "normal" level of French yields at the turn of the century.

Whether one accepts Young's findings for northeastern France or the *Récoltes* yields, Table 4 poses a serious dilemma for the usual stagnationist view of French agricultural history.⁷⁶ If the 1815/16 *Récoltes* yield is accepted, then an agricultural revolution undoubtedly occurred in northeastern France in the first half of the nineteenth century. The history of the district conforms to that of the chalk and stony districts, so the revolution was national. Alternatively, if Young's yield estimate for the late 1780s is accepted, there was indeed long-term stagnation in the northeast, but at a very high level. Stasis to be sure, but not low productivity!

Where does this leave Arthur Young? He would not like the hypotheses just advanced. He believed France was backward. Rather than comparing the loam district with England, he preferred to compare

⁷³ See P. K. O'Brien and C. Keydar, *Economic Growth in Britain and France, 1780-1914* (London, 1978), pp. 125-26.

⁷⁴ B. Gille, *Les Sources statistiques de l'histoire de France des enquêtes du 17e siècle à 1870* (Paris, 1964), p. 158.

⁷⁵ Grantham, "Diffusion," p. 313-14.

⁷⁶ C. Heywood, "The Role of the Peasantry in French Industrialization, 1815-80," *Economic History Review*, 2nd series, 34 (Aug. 1981), pp. 359-76, and J. L. Goldsmith, "The Agrarian History of Preindustrial France. Where Do We Go from Here?" *Journal of European Economic History*, 13 (Spring 1984), pp. 175-99.

average yields for France as a whole. But he still seemed troubled that the French, on average, were getting 18 bushels per acre—even that was too high—and proposed various rationales to denigrate the achievement.⁷⁷ As with his dismissal of Irish performance, the judgment was not based so much on crop yields as on the failure to adopt clover and turnips.⁷⁸

The average [yield-seed ratio] may probably be stated at six for one. It is hardly to be conceived by what miserable management they can contrive to get such a wretched produce; but as they are universal fallowists, except on the richest soils, we may consider it as an exact picture of the consequences that flow from this absurd practice.⁷⁹

CONCLUSION

Arthur Young collected a wealth of data for the economic historian, which, despite its faults, should not be discarded. For England, Ireland, and parts of France, the data are consistent with slightly later, less detailed sources. We have here focused on crop yields and have emphasized the contradiction between Young's views on agrarian issues and the conclusions his data support. This disjunction raises three questions.

First, why did Young misinterpret his own data? There were intellectual barriers in the way, and yet it is hard to believe they were overwhelming. The mass of data in the English tours would have been difficult to analyze in a precomputer age. But Volume 4 and part of Volume 3 of the *Northern Tour* were devoted to analysis and show that Young was adept at breakdowns and cross tabulations. There was no reason he could not have produced our Table 1 had he thought to or wanted to.

One reason that he did not is that he preferred other indicators of agricultural efficiency to crop yields. His judgment of agricultural performance generally hinged on whether the farmer was paying a high rent and whether new techniques, particularly growing clover and turnips, were being used. He condemned English open-field farmers, Irish farmers, and French farmers for failing to grow those crops. Certainly, Young's criticism of Irish farmers was unfair and inappropriate. Why Young chose high rents and new crops—rather than grain yields—as his productivity measures is an important question.

⁷⁷ Young, *Travels . . . [in] France*, vol. 2, pp. 123–26.

⁷⁸ More recent assessments rely on labor productivity, and by that standard French agriculture was only two-thirds as productive as English early in the nineteenth century. See, for instance, O'Brien and Keyder, *Economic Growth*; P. Bairoch, "Niveau de développement économique de 1810 à 1910," *Annales: Economies, Sociétés, Civilisations*, 20 (Nov.–Dec. 1965), pp. 1091–1117; E. A. Wrigley, "Urban Growth and Agricultural Change: England and the Continent in the Early Modern Period," *Journal of Interdisciplinary History*, 15 (Spring 1985), pp. 683–728; Robert C. Allen, "The Growth in Labor Productivity in Early Modern English Agriculture," *Explorations in Economic History*, forthcoming.

⁷⁹ Young, *Travels . . . [in] France*, vol. 2, 119.

Second, why were Young's judgments so popular in his age? One must remember the controversies surrounding the English agricultural revolution. Landlords undoubtedly benefited from enclosures and the amalgamation of farms after rents rose. It was widely believed that laborers and consumers suffered as employment declined and bread prices increased. Young's views were popular with the landed classes since his ideas provided a rationale for "unequal development." In contrast to the critics of enclosure, who pointed to the hardships it caused the poor, Young argued that enclosure served the public interest since it modernized agriculture. Hence it was important to show that enclosed farmers grew the new crops, while open-field farmers and foreigners did not. Young helped promote the myth that the diffusion of turnips and clover depended on the landed classes, so they deserved the higher rents they got. If it were known that respectable yields were reaped by peasant farmers in Ireland—or especially by *open-field* peasant farmers in France—then the case against enclosure and capitalist agriculture would have been much stronger. With Arthur Young focusing on clover and turnips and writing the reviews of the Irish and the French, however, there was no fear of that.

These considerations have a bearing on Young's use of his data. No one without a scientific temperament could have written the discussion of the "manco" that we quoted earlier. And yet no one without an ideological preconception could have stared at Young's table of French wheat yields—the table that shows the loam district producing 25 bushels per acre—and then have written "in England, the average produce of wheat . . . is twenty-four bushels, which form a vast superiority to eighteen, the produce of France."⁸⁰ Young's writings are a weaving together of the scientific and the ideological, but close attention allows us to separate the threads. We have concentrated on his numerical data, which were collected by the scientific half of his brain, and left aside his opinions and conclusions, which emanated from the ideological half.

Third, why have so many historians instead accepted Young's judgments? There is no mystery why Tory apologists like Lord Ernle did. The real puzzle is why Marx and the Marxists did the same. The *facts* collected by Arthur Young do not support the conclusion that enclosures or capitalist farming caused the growth in English grain yields. That was just landlord ideology in the eighteenth century.

⁸⁰ *Ibid.*, pp. 118, 123.

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