Industrialization

From Farm to Factories: Urbanization

Context: What was the situation in England with the open field system?

Problem		***Solution***
How do you maximize the land around you?	→	
How do you increase your crops on the land?	→	Inventor: Invention Purpose
How do you keep the soil fertile and prevent the depletion of its nutrients?	→	Inventor: Invention Purpose
Where do farmers go after being displaced by the enclosure movement and better farming techniques?	→	

Enclosure Movement

It is hard to believe that the most remarkable change in the history of mankind took place within the lifespan of a single generation. But the series of social, scientific, and economic changes which we call the Industrial Revolution did actually take place within the space of about seventy years.

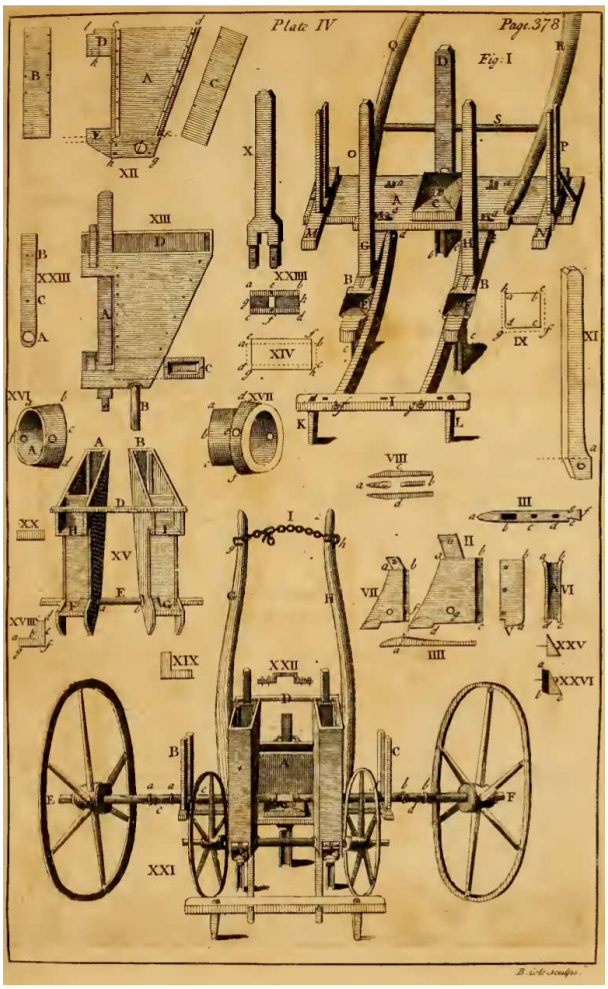
It is difficult to pinpoint an exact date on which this revolution began. All revolutions take a very long time to come into force and the seeds of change may be sown long before they take root and finally burst through the soil. But we can say that Britain's transformation from an agricultural country into an industrial nation began in about the year 1760.

Before that date, eighty per cent of Britain's population lived on the land. The purpose of farming had been simply to provide enough food for a man's family, and to make a little money by selling his surplus produce in the nearby town. Life for the farm labourer was tough, but so long as his primitive farming methods kept himself and the rest of society from food shortage, the system was an adequate one. For the rich landowner, on the other hand, the open-field system was a wasteful one. Throughout Britain the wealthy landed gentry began to realise that by using the improved, scientific, agricultural methods invented by such men as Jethro Tull, Lord Townshend and Thomas Coke, they could make their land much more profitable. But this improved agriculture could be carried out only at the expense of the open field system – and, at the expense of the farm labourer's livelihood.

By a series of Acts of Parliament land all over Britain was divided into enclosures which radically changed the face of the whole countryside. The pretty patchwork of fields enclosed by hedges and trees which make up the English landscape that we know today meant hardship and poverty to the farm labourer, and high profits to the already wealthy landowner. For the enclosure system meant that a good deal of common land from which most people derived their livelihood was taken away. The combination of the Enclosure Acts and the improved methods in agriculture which we call the Agrarian Revolution had the effect of making the rich richer and the poor poorer.

The consequences of the agrarian revolution were to have a startling effect on the entire social system of Britain. The yeoman had become a landless labourer, drifting to the towns for employment in the new factories to save himself from starvation. To many of these men the 'dark satanic mills' were preferable to hunger and misery in 'England's green and pleasant land'. But when they arrived at the new towns they must have thought that they had only exchanged one evil for another. Having escaped from the awful consequences of one revolution, they found themselves facing another revolution – the most remarkable one of all time.

Seed Drill



Since earliest times seeds had always been sown by hand. People who worked on the land would walk over the fields randomly scattering handfuls of grain. Jethro Tull invented a machine which greatly helped to increase the harvest yield by planting seeds in straight lines.

Jethro Tull was born in Basildon, Berkshire in 1674. He did not start out as an agricultural engineer. He studied law and graduated from Oxford University in 1699. Although he was admitted to the bar in the same year, he never practised law. Tull was far more interested in the farming methods employed on his land, which he called Prosperous Farm.

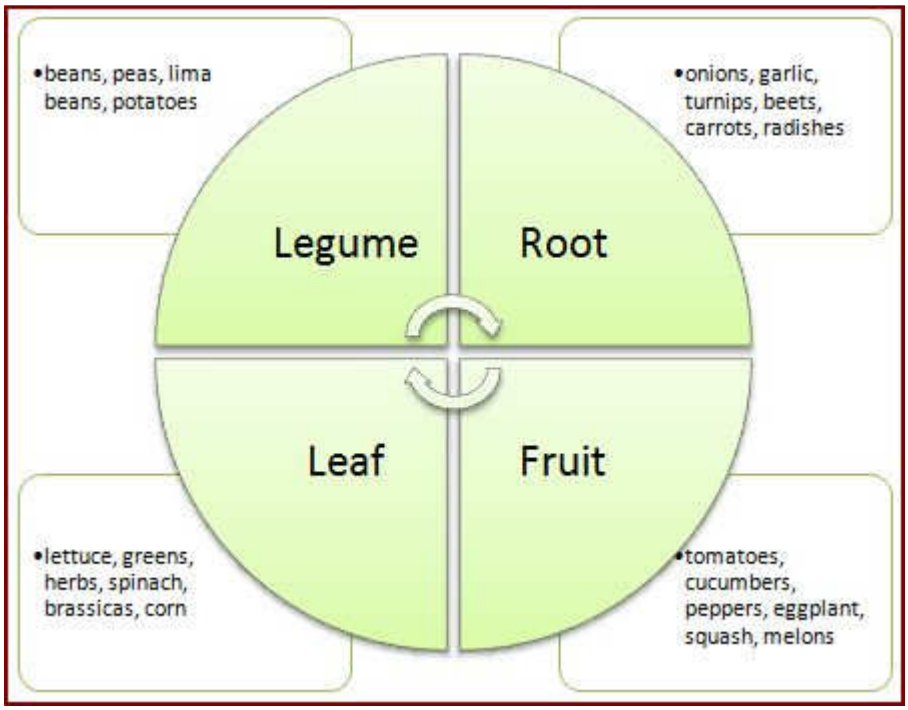
Tull travelled throughout Europe to study new farming techniques. On his return to Prosperous Farm in 1701, he developed a horse-drawn mechanical Seed Drill. The Seed Drill not only planted seeds at regular intervals but also planted them at the right depth and covered them with earth. Because the seed drill planted seeds in straight lines, a mechanical horse-drawn hoe, which Tull also invented, could be used to remove weeds from between the lines of crop plants.

Tull advocated the importance of pulverising (crumbling) the soil so that air and moisture could reach the roots of the crop plants. His horse-drawn hoe was able to do this. He also emphasised the importance of manure and of tilling the soil during the growing season.

At the time, Tull's ideas came under attack, mainly because they were new. His Seed Drill was not immediately popular in England, although it was quickly adopted by the New England colonists across the Atlantic.

In 1731, Tull wrote a book called "Horse-houghing (hoeing) Husbandry" which he revised in 1733. Although his Seed Drill was improved in 1782 by adding gears to the distribution mechanism, the rotary mechanism of the drill provided the foundation for all future sowing technology.

Crop Rotation

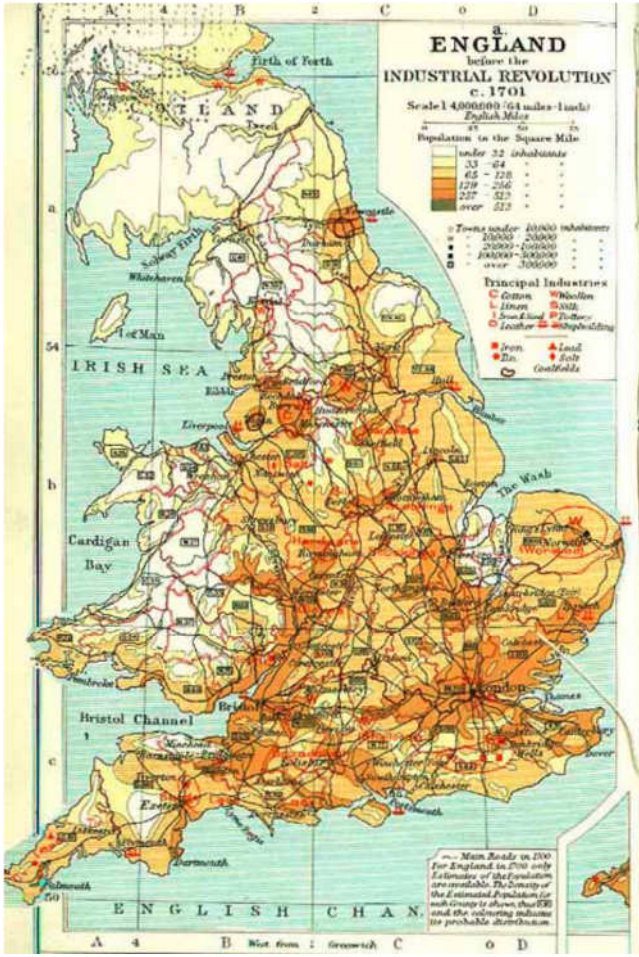


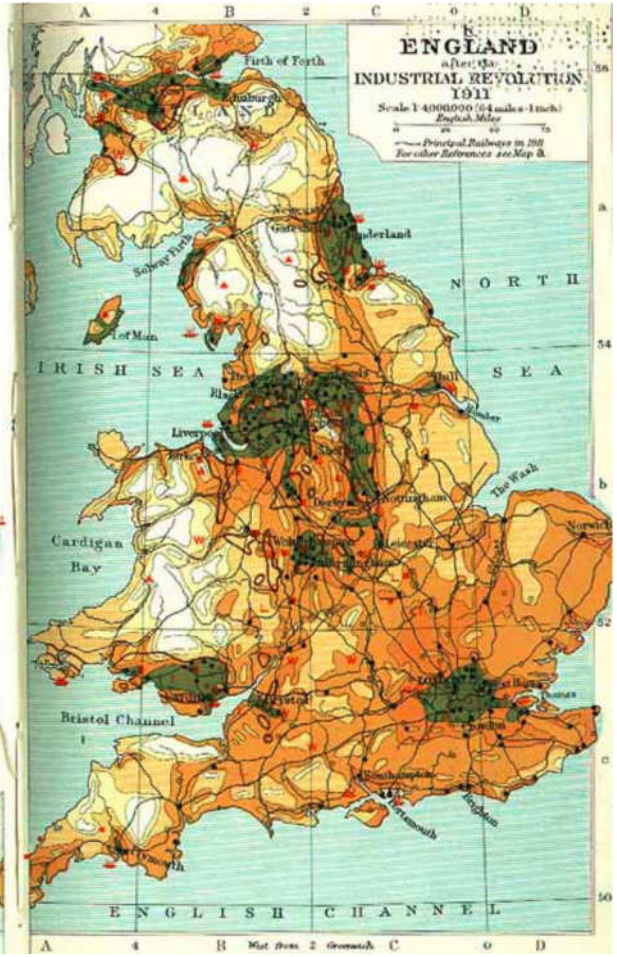
During that period of discovery and innovation in Britain known as the Agricultural Revolution, there were many men of learning who emerged to champion scientific methods of farming, but none with a nickname so evocative as "Turnip" Townshend.

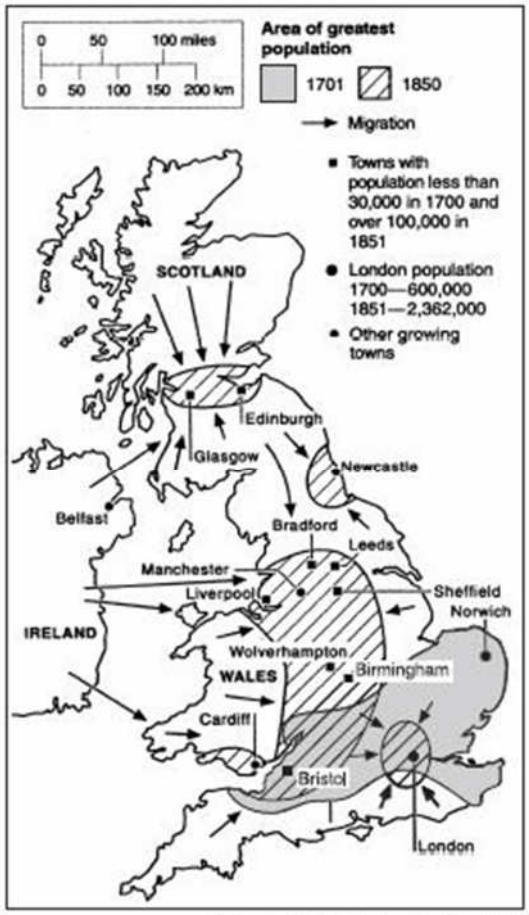
"Turnip" was actually born Charles Townshend in 1674. At the age of twelve he succeeded to the family title and became 2 nd Viscount Townshend. He had an illustrious career as a Whig politician under George I, becoming Secretary of State, and for a while, directing Britain's foreign policy along with Robert Walpole, his brother-in-law.

When Townshend was forced out of politics because a difference of opinion with Walpole, he retired to his estate, Raynham, in West Norfolk. There, Townshend began experimenting with new agricultural techniques, most importantly crop rotation. If the same crop is grown over and over again on the same plot of land-as had been the practice for millennia in Britain -the land eventually looses fertility and harvests decline. The only way to prevent this was to let the land lie fallow for a season or two.

Townshend discovered-or merely popularized, there is some debate-that if crops were grown in rotation, the land could be kept in production with no loss of fertility. To do this, the land was divided into four fields and in each was grown in succession: wheat, clover, barley and turnips. The clover and turnips renewed the soil when grown after wheat or barley. Indeed, we now know that clover is a nitrogen fixing plant-one of several crops that puts nitrogen back into the soil. Turnips and clover were also fodder crops. When the animals were let into the field to graze, their droppings fertilized the land.







Source: *World History on File*, 1999

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Context: What was the situation in England with the open field system?

Before the industrial revolution, 80% of Britain lived on the land. Farmers simply tried to survive and have little extra to sell at the market. They depended on common land for their survival.

Problem		***Solution***
How do you maximize the land around you?	→	Wealthy landowners felt the open land was wasteful and through a series of Parliamentary act took it. These Enclosure Acts increased the land of the wealthy that they experimented with new methods. Poor farmers could no longer survive though.
How do you increase your crops on the land?	→	Inventor: Jethro Tull Invention: Seed Drill was a machine that planted seed in straight lines at regular intervals. Purpose: It made seeding more efficient and weeding easier.
How do you keep the soil fertile and prevent the depletion of its nutrients?	→	Inventor: Charles Townsend Invention: Crop Rotation divided land into four areas and rotated wheat clover, barley and turnips. Clover and turnips renewed the soil while also providing food for livestock. Purpose: You had greater food production without depleating the soils nutrients.
Where do farmers go after being displaced by the enclosure movement and better farming techniques?	→	Less farming labor was needed with the changes in agriculture. Therefore many people were without land and work, which led to a mass migration of people into cities in search of work.