

the LEDGER

economic education newsletter

Movin' Right Along

The purpose of the following article is to acquaint students with several basic economic factors affecting employment in our country. The article follows the development of the automobile industry from its infancy to the present day to illustrate how new discoveries and changes in production techniques affect the types and numbers of jobs available. Follow-up questions are suggested at the close of the article; refer to the "Innovative Classroom" section of the newsletter for related class activity.



When George B. Seldon invented the "horseless carriage" in the late 1800s, he set into motion an industry that would provide millions of jobs during the 20th century. So popular was his invention that today the automobile industry (including the rubber, steel and parts industries that supply it) is considered the nation's largest employer.

Before the automobile the main mode of road travel was by horse. As we rely on the automobile today, our great-grandparents relied on the horse and carriage to haul goods, visit relatives and friends and travel to work or school. Even today we are familiar with scenes

of the ice wagon, the buckboard filled with produce and the horse-drawn sleigh.

Not only was the horse the major method of transportation, for many it was the basis of their livelihoods. Blacksmiths, stablehands, harness and saddle makers were just a few of the professions that existed to meet the transportation needs of the people. In fact, in 1880 approximately 295,000 people were engaged in occupations directly related to horse travel (see chart).

Craftsmanship was an integral characteristic of the trades associated with horse travel. To make harnesses, for instance, one had to go through an apprenticeship and then years of hard work in order to master the trade. The harness maker's profession was more than a means of financial support; it was a form of artistic expression.

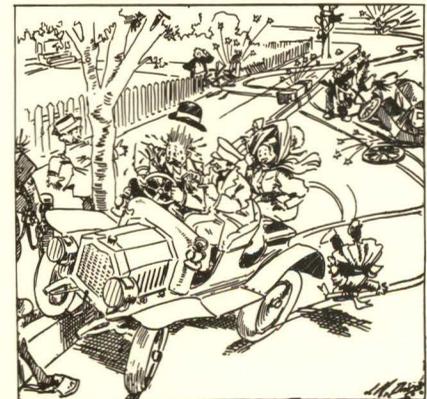
While many people in the 1880s were engaged in professions servicing horse travel, a new form of transportation, the automobile, began to attract workers. Primarily engineers, mechanics and inventors, the early automotive workers operated small scale factories where they experimented with and painstakingly assembled their autos. (Early cars were actually a combination of carriage and bicycle parts.) Due to the ineffective production methods and technical problems, early cars were relatively expensive and of low quality.

During these formative years the automobile quickly became a

novelty for the rich, but on the whole there was very limited demand for the carriage-like vehicles. In fact, by 1899 there were only 50 gasoline engine autos in the country.

For the few engaged in the automotive industry, under 5,000 in 1880, the future of their enterprise was far from stable. Although car manufacturing continued, many thought that the automobile would never replace the horse.

In 1901, however, a man named Ransom E. Olds was able to manufacture 425 cars at less than \$400 each. Preaching the idea of a cheap car for the masses, Olds was the first to apply mass production techniques to the automobile industry.



HIS FIRST LESSON

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But it was Henry Ford that carried mass production to its ultimate form. By 1913, mass production was a standard practice in Ford factories.

The same auto that once took artisans days to build rolled off the Ford assembly line in 93 minutes.

Because mass production made it easier for manufacturers to produce more cars during a shorter time period, construction costs were significantly lowered. As a result, cars became more affordable to the general public. Lower prices and improvements in the automobile itself have been cited by some historical researchers as two key factors responsible for expansion of the auto industry.

As the demand for cars increased, more employees were needed to produce cars. Gradually auto manufacturers began hiring more people to fill various jobs along their long assembly lines. By 1930 over 307,000 people were employed in automotive factories, over 303,000 more workers than in 1880.

But the impact of the automobile on this country's employment was much greater than providing factory jobs. Workers were also needed in automobile repair shops, gas stations and on road construction and improvement crews. In addition, the auto brought job-creating commerce into areas of the country which normally would not have been reached by the railroad. Back river towns suddenly became key market areas when major roads crossed their boundaries.

While the automotive industry was enjoying success, the demand for horse-drawn transportation was beginning to dwindle and professions such as harness making began to wane. By 1930 fewer than 143,000 people were employed in professions servicing horse travel, over 151,000 people fewer than in 1880.

As the automobile industry matured, so did its production techniques. Seeking efficient production, the Ford Motor Company after World War II began replacing its old methods of manufacturing with new automated devices. Today automation has expanded to such an extent that automobile factories use automated devices to inspect products and to count, fill orders and maintain inventories.

Automation is an important factor affecting the kind and number

of jobs available. Within the automotive industry, automation replaced hundreds of jobs that previously had been done manually. Before the advent of automation, for example, many auto workers were needed to transfer parts and machinery from one part of the assembly line to another. Today automated transfer machines have replaced these workers, saving time and reducing manufacturing costs.

Although automation eliminated many manual jobs in the factory, it also created many technical jobs. Workers had to be retrained in order to operate the complicated automated machines. Consequently, many workers in today's automotive factories are more technically skilled than their earlier counterparts.

The invention of the automobile, mass production and automation

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**TOTAL GAINFUL WORKERS 10 YEARS OLD AND OVER,
BY OCCUPATION, FOR THE UNITED STATES: 1880 AND 1930**

Occupation, 1930 classification	1880 (persons employed)	1930 (persons employed)
HORSE TRAVEL		
Blacksmiths	172,726	124,373
Operatives, harness and saddle factories		7,164
	39,960 ¹	
Laborers, harness and saddle factories		501
Hostlers and stable hands	31,697	6,654
Operatives, wagon and carriage factories		2,766
	49,881 ²	
Laborers, wagon and carriage factories		1,419
TOTAL	294,264	142,877
AUTOMOTIVE TRANSPORTATION		
Operatives, automobile factories		161,957
	4,708 ³	
Laborers, automobile factories		123,717
Operatives, automobile repair shops	none listed	9,452
Laborers, automobile repair shops	none listed	12,653
TOTAL	4,708	307,779

¹This figure includes both operatives and laborers in harness and saddle factories.

²This figure, taken from the 1880 Census, relates to the number of carriage and wagon makers.

³This figure, taken from the 1880 Census, relates to the number of carmakers.

Figures derived from *Comparative Occupation Statistics for the United States, 1870-1940* and from the *1880 Compendium of the Tenth Census of the United States*.

Innovative Classroom

What happened to the carriage maker when the Model T took over? What was it like to work on the first trolley system? Answers to these questions can be found in the Museum of Transportation's new school group program called "Working." Based on work patterns of the Boston area from the late 1800s to present, the program explores changes in career requirements, skills and working environments resulting from the evolution of transportation systems.

A display of tools used to repair a Model T illustrates what it was like to work on an earlier form of transportation. Other exhibits include the first form of mass transportation, the omni bus; the horse-drawn streetcar; the electric trolley and Boston's early subway train.

In addition to the program's discussion of past transportation systems, an emphasis is placed on exposing students to present jobs in mass transportation. A discussion of Boston's present transit system (MBTA), for example, gives stu-



Museum tour guide Thomas Beale shows how conductors operated early trolley cars.
Photo by Debbie Ippolito

dents an idea of the various jobs needed to keep Boston's public transportation system running.

The Museum, located on Museum Wharf in Boston, provides a number of programs dealing with transportation. Other educational programs currently being offered focus on: exploration of the energy used in moving people from one place to another

Movin' Right Along, *Continued from Page 2*

created and nurtured an industry, and helped shape employment patterns in our country. Similarly, future technical advancements in all industries will influence the country's job situation.

The automobile industry, as one segment of our nation's complex economy, serves as an example of the impact that invention and technology have on our entire enterprise system.

FOLLOW-UP QUESTIONS

- Tremendous advances in technology have occurred over the past century. What products exist today that were not available 25 years ago, e.g. electronic calculators? What jobs have been phased out because of the products?
- What economic factors other than new discoveries and changes in production tech-

niques affect the type and number of jobs available, e.g. consumer preference? Give examples of how these factors affect the job market.

- What changes are affecting the automobile industry today? What impact, if any, will these changes have on the type and number of jobs available in the auto industry now and in the future? Will these changes influence jobs available in other industries, businesses, etc.?
- What role does education play in the ever changing job market? What can you, as individuals, do to ensure a place in the job market?
- Comparing present census figures with those in 1880 and 1930, identify changes in the number and types of jobs available. What factors were responsible for these occupational changes?

("More Power To You") and the social impact and growth of the automobile ("Life In the Fast Lane"). All the above programs take place in the Museum's main exhibit area called "Boston/A City in Transit" which shows how the city and its people changed because of transportation concerns.

Groups participating in the programs are scheduled for one-hour education programs, Monday thru Friday beginning at 9:30 a.m. Group rates are \$1.80 per student with accompanying teachers and required chaperones admitted free. (One teacher or chaperone for every 10 students is required.) After the tour, groups may spend an extra hour touring the Museum on their own and may visit Crossroads, a hands-on, participatory center.

For reservations or information, teachers may write to Dorothy Morrissey, Education Department, Museum of Transportation, Museum Wharf, 300 Congress Street, Boston, MA 02210; or call (617) 426-6633, Ext. 294. Reservations should be made at least two weeks in advance.

Fed Update

□ An exhibition of nine major works of art assembled by Boston's Museum of Fine Arts will open on November 1 at the Boston Fed. Among the prominent artists whose work will be represented are Morris Louis, Helen Frankenthaler, Jules Olitski and Larry Poons. The exhibition will be open to the public, at no charge, from 10:00 a.m. to 4:00 p.m. on each business day from November 2 through January 15.

□ A series of four pamphlets on the structure of the Federal Reserve System is now available from the Boston Fed. Published by the Board of Governors, the pamphlet series concisely explains structural aspects of the Board of Governors, the Federal Open Market Committee, the Federal Reserve Banks and the Federal Reserve Bank Boards of Directors. Copies of the pamphlets are available at no cost by writing to the Bank and Public Information Center, Federal Reserve Bank of Boston, Boston, MA 02106.

Multi-media

Understanding Taxes, published by the Internal Revenue Service.

This text teaches students about the important features of our Federal tax system and their responsibilities as taxpayers. The course includes a brief history of U.S. taxation, a summary of the latest available Federal budget, sample tax forms and problems, general tax rules and instructions and a comprehensive teachers' guide. Published once a year, the *Understanding Taxes* unit must be ordered by November 1 in order to receive the materials in January of the following year. Free copies are available by writing to the Understanding Taxes Coordinator, P.O. Box 9088, Boston, MA 02203; or by calling (617) 223-3418.

Money, Banking and the Federal Reserve System, published by the Federal Reserve Bank of Minneapolis.

This packet of instructional materials is designed to help students comprehend the role of money, banking and the Federal Reserve System in our economy. The unit consists of six sections dealing with the following topics: money, bank services and functions, the Federal Reserve System, check clearing, money creation and monetary and fiscal policies. Each section contains a brief introduction of the economic concept being taught, followed by activities to help students apply the concept to real-life situations. A limited supply of the packets is available at no cost by writing to the Bank and Public Information Center, Federal Reserve Bank of Boston, Boston, MA 02106.

Correction

In the September 1979 issue of the *Ledger* we announced that the newsletter, *Economics for Social Studies Teachers* was available free of charge. We stand corrected in that the only free subscriptions are those mailed to Councils and Centers of Economic Education on a reciprocal basis. Others desiring the publication can obtain it for \$3.00 a year. We apologize to the New York City Council on Economic Education and to our readers for the mistake.

You are the American Economic System, published by the Advertising Council.



This booklet helps students understand their role in the American economic system. Colorful illustrations and short explanations describe how our decisions as consumers, producers and voters affect employment, inflation, growth, regulations, taxes and productivity. For a free copy, write to the American Economic System, Advertising Council, 825 Third Avenue, New York, NY 10022.

New England Update

CONNECTICUT

This fall, the **Center for Economic Education at Southern Connecticut State College** is arranging a meeting of business and industry representatives from the New Haven area to acquaint them with the economic education programs being carried out in area schools.

The **Center for Economic Education at Connecticut State College in Storrs** has prepared a new Center Media Catalogue which lists films, kits and simulations available on loan. For more information, write to the Center for Economic Education, U-55, University of Connecticut, Storrs, CT 06268; or call (203) 486-2327.

MAINE

On December 1, the **Maine Council on Economic Education** will hold a follow-up workshop at the University of Maine in Orono for all teachers who participated in the Council's 1979 summer workshops. For more information, write to Robert Mitchell, 22 Coburn Hall, University of Maine, Orono, ME 04473; or call (207) 581-7069.

MASSACHUSETTS

Dr. Nancy Harris, chairperson of the early childhood elementary education department at Worcester State College, is the new director of the College's **Center for Economic Education**.

The **Center for Economic Education in Springfield**, in conjunction with the Pittsfield School System, will hold two one-day teacher

workshops on November 28 and December 11 and a ten-session economic education course starting January 9. Both workshops and the in-service course are open to elementary and secondary school teachers. For more information, write to Gordon Morrill, School of Education, American International College, Springfield, MA 01109; or call (413) 737-5331, Ext. 337.

RHODE ISLAND

Dr. Catherine Tisinger, previously a special assistant to Minnesota Governor Albert Quie, is the new director of the **Center for Economic Education at Rhode Island College**. Ms. Tisinger worked for Governor Quie while on leave from the Minnesota State University System.

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