

**UNITED STATES DEPARTMENT OF LABOR**

FRANCES PERKINS, *Secretary*

**BUREAU OF LABOR STATISTICS**

ISADOR LUBIN, *Commissioner*

BULLETIN OF THE UNITED STATES }  
BUREAU OF LABOR STATISTICS } . . . . . **No. 585**

PRODUCTIVITY OF LABOR SERIES

**LABOR PRODUCTIVITY IN THE  
AUTOMOBILE TIRE INDUSTRY**

By **BORIS STERN**



JULY 1933

UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1933

## Contents

	Page
<b>CHAPTER 1.—Labor productivity in manufacturing automobile tires.....</b>	1
Production of and demand for tires.....	1
Growth of tire industry.....	2
Object and scope of present survey and methods used.....	4
Measuring production.....	5
“Man-hours” defined.....	5
Productivity of labor in the industry.....	6
Productivity of labor in individual plants.....	10
<b>CHAPTER 2.—Technological displacement of labor in the tire industry.....</b>	15
Displacement of labor defined and measured.....	15
Causes of technological displacement of labor.....	24
Factors affecting reemployment of displaced workers.....	26
<b>CHAPTER 3.—Rates of wages and earnings of workers in the tire industry.....</b>	28
Average hourly rates of wages, by departments.....	28
Average actual monthly earnings, by departments.....	29
Seasonal fluctuations in the industry.....	31
<b>CHAPTER 4.—Manufacturing automobile tires: Preparation of crude rubber.....</b>	38
Cutting, washing, and breaking down crude rubber.....	38
Milling, compounding, and mixing rubber.....	40
Calender department.....	42
Technological changes and labor displacement in washing, milling, compounding, and calendering rubber.....	43
Labor productivity in washing, compounding, milling, and calendering rubber.....	44
<b>CHAPTER 5.—Manufacturing automobile tires: Stock preparation and carcass building.....</b>	48
Making tire plies.....	48
Making tire beads.....	49
Constructing the tread and side walls of a tire.....	49
Making chafers, cushions, breakers, etc.....	50
Building the body or carcass of the tire.....	50
Shaping drum-built tires.....	52
Technological labor displacement in the stock-preparation and carcass-building departments.....	53
Labor productivity in the stock-preparation and tire-building departments.....	54
<b>CHAPTER 6.—Manufacturing automobile tires: Curing, finishing, and inspecting tires.....</b>	58
Curing tires.....	58
Finishing and inspecting tires.....	60
Utilization of conveyors in the tire industry.....	61
Technological displacement of labor in curing, finishing, and inspecting tires.....	62
Labor productivity in curing, finishing, and inspecting tires.....	63
<b>CHAPTER 7.—Manufacture of inner tubes.....</b>	67
Changes in process of making inner tubes.....	67
Technological displacement of labor in manufacturing inner tubes and accessories.....	70
Labor productivity in manufacturing inner tubes.....	71