Productivity Trends in

SELECTED INDUSTRIES

Indexes Through 1950

Bulletin No. 1046

UNITED STATES DEPARTMENT OF LABOR
Maurice J. Tobin — Secretary

BUREAU OF LABOR STATISTICS
Ewan Clague — Commissioner

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LETTER OF TRANSMITTAL

United States Department of Labor
Bureau of Labor Statistics
Washington, D. C., October 29, 1951.

The Secretary of Labor:

I have the honor to transmit a report on productivity trends in selected industries with indexes through 1950. The publication summarizes the statistics regularly presented in individual reports by the Branch of General Productivity Measurements of the Bureau's Division of Productivity and Technological Developments. The individual industry reports contain analyses of the factors causing changes in output per man-hour and unit man-hour requirements as well as more detailed statistics and information on the methods used in computing these indexes.

In addition to these indexes, the Division of Productivity and Technological Developments prepares reports on factory performance and on trends in man-hours per unit of output for selected manufacturing industries, based on material gathered directly from manufacturers.

This report was assembled by Mary L. Kelly under the general direction of Enzo A. Puglisi.

Ewan Clague, Commissioner.

Hon. Maurice J. Tobin,
Secretary of Labor.

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INTRODUCTION

Between 1949 and 1950 output per man-hour rose in 27 of 29 manufacturing and nonmanufacturing industries for which statistics are currently available. Output per man-hour was the highest on record in 19 of these industries.

In 11 of the industries, increases of 10 percent or more were noted between 1949 and 1950. The greatest gain was made in the beehive coke industry, which succeeded in raising man-hour output 22 percent. The rise, which accompanied an expansion of coking activity, represented a recovery from the low 1949 output per man-hour level. The 19-percent gain made by the rayon and other synthetic fibers industry, on the other hand, represents a continuation of a long-term trend of increasing production per man-hour which has characterized the industry throughout its history. Of all the industries included in this report, the rayon industry has made the greatest gain since 1939 -- 186 percent. Other large gains were made in the full-fashioned hosiery, and paper and pulp industries. Output per man-hour in the full-fashioned hosiery industry rose 12 percent between 1949 and 1950 and 63 percent during the years 1939-50. The paper and pulp industry experienced an 11-percent gain during 1950.

The indexes in this report cover the period 1939 to date for most of the 29 industries for which 1950 data are available for release at this time. The tables for the individual mining and public utility industries generally go back to the year 1935. The indexes for the mining group and for agriculture show the changes that have taken place over more than three decades. In addition to these 29 industries, data are presented for a few industries for which 1950 figures are not yet available. As soon as the information becomes available, 1950 figures will be released for these industries. The Bureau of Labor Statistics also plans to issue indexes of production, man-hours, and output per man-hour for several additional industries, the data for which are now being prepared.* These will be issued in the form of supplements to this report.

* Among industries now under study are: blast furnaces, steel works and rolling mills; newspaper printing and publishing; slaughtering and meatpacking; petroleum refining; agricultural machinery; automobiles; and tires and tubes.

The industries included in this report do not constitute a representative sample of the entire economy or of manufacturing. Important manufacturing industries such as automobiles, lumber and furniture products, tires and tubes, basic steel, transportation equipment, textile mill products, and petroleum are not included. For this reason, the Bureau cautions users of its indexes not to generalize on the basis of these figures for all manufacturing or for the total economy.

Productivity indexes constitute a "yardstick" of the long-run progress made by industry in reducing the amount of human effort needed to produce the various goods and services used in our society. The expansion of the American standard of living through greater output, higher real wages, and increasing leisure is ultimately dependent upon increases in output per man-hour. Productivity, or output per man-hour, is the measure of the relationship between output in physical units and labor time -- one of the input factors. It is not a measure, however, of the specific contribution of labor or of capital or of any other one factor of production. Changes in the ratio between output and man-hours of work show the effect of the operation of a large number of separate, though interrelated, influences such as technological improvements, the rate of operation, the relative contribution to output of plants at different levels of efficiency, the availability of supplies and the flow of materials and components, as well as the skill and effort of the work force, the efficiency of management, and the state of labor relations.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES
1939 = 100

Year	Production	Production workers	Man-hours	Output per --		Unit Labor Requirements	
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I. MANUFACTURING

1. Beet Sugar Industry 1/

a. Beet Sugar Produced

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	106.3	102.6	102.0	103.6	104.2	96.5	96.0
1941	90.6	95.3	91.3	95.1	99.2	105.2	100.8
1942	98.9	108.1	109.3	91.5	90.5	109.3	110.5
1943	57.6	84.9	78.9	67.8	73.0	147.4	137.0
1944	60.1	87.0	79.4	69.1	75.7	144.8	132.1
1945	73.3	96.3	92.1	76.1	79.6	131.4	125.6
1946	86.3	103.3	104.8	83.5	82.3	119.7	121.4
1947	106.4	113.6	114.3	93.7	93.1	106.8	107.4
1948	79.4	89.9	86.5	88.3	91.8	113.2	108.9
1949	90.1	87.9	86.2	102.5	104.5	97.6	95.7
1950	114.0	100.4	99.1	113.5	115.0	88.1	86.9

b. Sugar Beets Sliced

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	113.1	102.6	102.0	110.2	110.9	90.7	90.2
1941	95.6	95.3	91.3	100.3	104.7	99.7	95.5
1942	108.0	108.1	109.3	99.9	98.8	100.1	101.2
1943	59.8	84.9	78.9	70.4	75.8	142.0	131.9
1944	61.8	87.0	79.4	71.0	77.8	140.8	128.5
1945	78.7	96.3	92.1	81.7	85.5	122.4	117.0
1946	96.9	103.3	104.8	93.8	92.5	106.6	108.2
1947	113.9	113.6	114.3	100.3	99.7	99.7	100.4
1948	87.0	89.9	86.5	96.8	100.6	103.3	99.4
1949	94.4	87.9	86.2	107.4	109.5	93.1	91.3
1950	124.9	100.4	99.1	124.4	126.0	80.4	79.3

1/ The beet sugar industry indexes are on a fiscal year basis (March through February) in order to include a complete production cycle for each 12-month period.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per -- Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

I.   MANUFACTURING Cont'd.

2.   Canning and Preserving Industries Group

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	106.0	98.1	96.2	108.1	110.2	92.5	90.8
1941	128.5	114.8	118.2	111.9	108.7	89.3	92.0
1942	135.9	125.9	131.3	107.9	103.5	92.6	96.6
1943	129.5	120.1	126.3	107.8	102.5	92.7	97.5
1944	149.2	123.4	133.7	120.9	111.6	82.7	89.6
1945	158.5	129.0	139.1	122.9	113.9	81.4	87.8
1946	188.2	144.2	159.8	130.5	117.8	76.6	84.9
1947	159.8	134.0	143.8	119.3	111.1	83.9	90.0
1948	158.7	132.0	136.3	120.2	116.4	83.2	85.9
1949	163.5	122.2	128.1	133.8	127.6	74.7	78.3
1950	167.1	119.6	127.0	139.7	131.6	71.6	76.0

3.   Cement Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	na	100.0	na	100.0	na	100.0
1940	106.5	na	106.1	na	100.4	na	99.6
1941	134.3	na	124.0	na	108.3	na	92.3
1942	148.2	na	136.7	na	108.4	na	92.2
1943	108.4	na	114.5	na	94.7	na	105.6
1944	73.7	na	88.0	na	83.8	na	119.4
1945	83.3	na	92.5	na	90.1	na	111.0
1946	134.1	na	123.4	na	108.7	na	92.0
1947	151.7	na	136.1	na	111.5	na	89.7
1948	167.2	na	141.9	na	117.8	na	84.9
1949	170.2	na	141.4	na	120.4	na	83.1
1950	182.8	na	139.9	na	130.7	na	76.5

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per — Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

4. Clay Construction Products Industries Group

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	92.8	92.4	88.2	100.4	105.2	99.6	95.0
1941	104.3	101.4	100.5	102.9	103.8	97.2	96.4
1942	81.8-	85.7	84.3	95.4	97.0	104.8	103.1
1943	49.9	60.9	62.0	81.9	80.5	122.0	124.2
1944	46.4	53.1	55.4	87.4	83.8	114.4	119.4
1945	52.9	57.3	60.1	92.3	88.0	108.3	113.6
1946	101.7	91.6	96.5	111.0	105.4	90.1	94.9
1947	111.5	99.5	105.1	112.1	106.1	89.2	94.3
1948	126.1	104.0	109.7	121.3	114.9	82.5	87.0
1949	122.7	100.9	104.6	121.6	117.3	82.2	85.2
1950	134.7	102.6	108.9	131.3	123.7	76.2	80.8

a. Brick and Hollow Structural Tile Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	na	na	na	na	na	na	na
1941	na	na	na	na	na	na	na
1942	na	na	na	na	na	na	na
1943	na	na	na	na	na	na	na
1944	na	na	na	na	na	na	na
1945	na	na	na	na	na	na	na
1946	na	na	na	na	na	na	na
1947	107.2	92.9	99.6	115.4	107.6	86.7	92.9
1948	121.9	96.3	102.8	126.6	118.6	79.0	84.3
1949	118.5	93.6	98.3	126.6	120.5	79.0	83.0
1950	131.5	96.0	103.4	137.0	127.2	73.0	78.6

na - Not available

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INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per -- Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

4. Clay Construction Products Industries Group Cont'd.

b. Clay Sewer Pipe and Kindred Products Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	na	na	na	na	na	na	na
1941	na	na	na	na	na	na	na
1942	na	na	na	na	na	na	na
1943	na	na	na	na	na	na	na
1944	na	na	na	na	na	na	na
1945	na	na	na	na	na	na	na
1946	na	na	na	na	na	na	na
1947	129.6	129.6	130.2	100.0	99.5	100.0	100.5
1948	142.7	138.9	141.4	102.7	100.9	97.3	99.1
1949	139.5	134.2	133.9	103.9	104.2	96.2	96.0
1950	147.4	132.7	134.0	111.1	110.0	90.0	90.9

5. Coke Industries Group

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	128.0	123.4	122.6	103.7	104.4	96.4	95.8
1941	146.6	142.6	139.2	102.8	105.3	97.3	95.0
1942	158.3	153.2	149.1	103.3	106.2	96.8	94.2
1943	159.0	165.9	161.6	95.8	98.4	104.3	101.6
1944	164.1	161.6	159.1	101.5	103.1	98.5	97.0
1945	147.9	147.9	147.2	100.0	100.5	100.0	99.5
1946	128.0	135.3	131.9	94.6	97.0	105.7	103.0
1947	161.4	156.3	151.2	103.3	106.7	96.8	93.7
1948	164.8	165.8	160.1	99.4	102.9	100.6	97.1
1949	140.6	148.5	142.8	94.7	98.5	105.6	101.6
1950	158.3	155.5	156.0	101.8	101.5	98.2	98.5

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per -- Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

5. Coke Industries Group Cont'd.

a. Byproduct Coke Ovens Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	124.8	119.3	119.3	104.6	104.6	95.6	95.6
1941	134.7	128.7	127.8	104.7	105.4	95.5	94.9
1942	142.9	136.0	134.5	105.1	106.2	95.2	94.1
1943	145.8	151.9	148.5	96.0	98.2	104.2	101.9
1944	153.3	152.7	148.9	100.4	103.0	99.6	97.1
1945	140.8	143.1	140.5	98.4	100.2	101.6	99.8
1946	122.4	132.3	126.9	92.5	96.5	108.1	103.7
1947	151.8	149.9	142.8	101.3	106.3	98.7	94.1
1948	155.2	158.6	151.2	97.9	102.6	102.2	97.4
1949	137.2	146.8	139.4	93.5	98.4	107.0	101.6
1950	151.3	150.9	150.1	100.3	100.8	99.7	99.2

b. Beehive Coke Ovens Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	210.6	207.3	212.4	101.6	99.2	98.4	100.9
1941	460.9	429.8	451.8	107.2	102.0	93.3	98.0
1942	569.6	510.4	548.4	111.6	103.9	89.6	96.3
1943	546.1	457.0	520.9	119.5	104.8	83.7	95.4
1944	479.8	345.1	437.5	139.0	109.7	71.9	91.2
1945	358.7	248.3	329.9	144.5	108.7	69.2	92.0
1946	314.3	197.9	270.1	158.8	116.4	63.0	85.9
1947	460.9	289.7	379.4	159.1	121.5	63.0	82.3
1948	452.0	315.1	404.5	143.4	111.7	69.7	89.5
1949	235.1	183.9	235.2	127.8	100.0	78.2	100.0
1950	389.5	250.2	319.3	155.7	122.0	64.2	82.0

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per --		Unit Labor Requirements	
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

6. Condensed and Evaporated Milk Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	114.8	107.2	109.4	107.1	104.9	93.4	95.3
1941	141.6	133.0	139.3	106.5	101.7	93.9	98.4
1942	154.5	166.4	178.5	92.8	86.6	107.7	115.5
1943	142.0	166.1	182.7	85.5	77.7	117.0	128.7
1944	160.1	172.2	194.5	93.0	82.3	107.6	121.5
1945	179.3	165.3	188.9	108.5	94.9	92.2	105.4
1946	165.0	156.4	169.5	105.5	97.3	94.8	102.7
1947	162.2	158.8	167.4	102.1	96.9	97.9	103.2
1948	157.9	150.9	158.4	104.6	99.7	95.6	100.3
1949	148.4	148.6	152.6	99.9	97.2	100.1	102.8
1950	150.7	144.1	149.0	104.6	101.1	95.6	98.9

7. Confectionery Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	107.6	100.1	100.1	107.5	107.5	93.0	93.0
1941	121.7	105.3	107.5	115.6	113.2	86.5	88.3
1942	122.3	103.0	108.1	118.7	113.1	84.2	88.4
1943	126.9	106.8	116.1	118.8	109.3	84.2	91.5
1944	140.8	114.7	126.1	122.8	111.7	81.5	89.6
1945	133.7	110.8	119.2	120.7	112.2	82.9	89.2
1946	129.5	109.8	115.0	117.9	112.6	84.8	88.8
1947	152.7	130.4	136.6	117.1	111.8	85.4	89.5
1948	157.9	131.6	137.5	120.0	114.8	83.3	87.1
1949	154.4	126.4	132.7	122.2	116.4	81.9	85.9
1950	163.7	127.6	134.3	128.3	121.9	77.9	82.0

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per —		Unit Labor Requirements	
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

8. Flour and Other Grain-Mill Products Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	96.8	97.2	95.1	99.6	101.8	100.4	98.2
1941	98.2	95.6	96.7	102.7	101.6	97.4	98.5
1942	100.1	97.0	103.2	103.2	97.0	96.9	103.1
1943	114.3	110.9	127.9	103.1	89.4	97.0	111.9
1944	117.6	118.2	137.8	99.5	85.3	100.5	117.2
1945	128.8	121.7	142.4	105.8	90.4	94.5	110.6
1946	119.7	119.6	136.8	100.1	87.5	99.9	114.3
1947	134.0	126.6	146.7	105.8	91.3	94.5	109.5
1948	122.1	123.7	135.4	98.7	90.2	101.3	110.9
1949	103.7	118.3	125.0	87.7	83.0	114.1	120.5
1950	100.1	111.7	116.5	89.6	85.9	111.6	116.4

9. Glass Containers Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	106.4	106.2	107.3	100.2	99.2	99.8	100.8
1941	139.2	125.5	131.6	110.9	105.8	90.2	94.5
1942	155.8	134.8	144.9	115.6	107.5	86.5	93.0
1943	182.8	144.8	164.7	126.2	111.0	79.2	90.1
1944	198.7	143.7	164.2	138.3	121.0	72.3	82.6
1945	203.3	150.6	171.7	135.0	118.4	74.1	84.5
1946	224.5	168.9	185.7	132.9	120.9	75.2	82.7
1947	230.4	162.9	177.8	141.4	129.6	70.7	77.2
1948	200.4	149.3	159.3	134.2	125.8	74.5	79.5
1949	182.7	135.7	143.3	134.6	127.5	74.3	78.4
1950	213.1	148.9	159.2	143.1	133.9	69.9	74.7

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

10. Hosiery Industries Group

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	94.9	91.2	87.1	104.1	109.0	96.1	91.7
1941	101.1	91.2	92.0	110.9	109.9	90.2	91.0
1942	92.9	78.8	81.2	117.9	114.4	84.8	87.4
1943	96.2	72.6	78.9	132.5	121.9	75.5	82.0
1944	90.8	66.8	72.0	135.9	126.1	73.6	79.3
1945	87.0	62.9	66.2	138.3	131.4	72.3	76.1
1946	100.5	75.5	80.6	133.1	124.7	75.1	80.2
1947	95.5	79.5	83.1	120.1	114.9	83.3	87.0
1948	98.7	80.2	83.4	123.1	118.3	81.3	84.5
1949	98.0	75.0	77.0	130.7	127.3	76.5	78.6
1950	109.4	76.5	79.2	143.0	138.1	69.9	72.4

a. Full-Fashioned Hosiery Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	95.3	90.7	na	105.1	na	95.2	na
1941	95.1	87.5	na	108.7	na	92.0	na
1942	79.7	68.9	71.4	115.7	111.6	86.4	89.6
1943	86.1	61.3	68.4	140.5	125.9	71.2	79.4
1944	82.8	53.9	60.2	153.6	137.5	65.1	72.7
1945	78.5	50.6	54.6	155.1	143.8	64.5	69.6
1946	90.9	62.6	69.0	145.2	131.7	68.9	75.9
1947	87.5	65.5	70.9	133.6	123.4	74.9	81.0
1948	100.6	68.7	75.3	146.4	133.6	68.3	74.9
1949	101.8	66.1	70.0	154.0	145.4	64.9	68.8
1950	116.1	66.6	71.3	174.3	162.8	57.4	61.4

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers 2/ | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I.   MANUFACTURING Cont'd.

10.   Hosiery Industries Group Cont'd.

b.   Seamless Hosiery Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	94.4	91.9	na	102.7	na	97.4	na
1941	109.1	96.5	na	113.1	na	88.5	na
1942	112.5	92.9	95.0	121.1	118.4	82.6	84.4
1943	109.4	88.6	93.5	123.5	117.0	81.0	85.5
1944	99.9	85.1	88.6	117.4	112.8	85.2	88.7
1945	96.7	80.4	82.4	120.3	117.4	83.1	85.2
1946	112.3	93.8	96.9	119.7	115.9	83.5	86.3
1947	105.1	99.3	100.2	105.8	104.9	94.5	95.3
1948	96.7	96.5	94.7	100.2	102.1	99.8	97.9
1949	94.1	87.7	86.7	107.3	108.5	93.2	92.1
1950	102.9	90.6	90.3	113.6	114.0	88.0	87.8

11.   Ice Cream Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	102.6	102.2	100.7	100.4	101.9	99.6	98.1
1941	120.6	116.3	114.8	103.7	105.1	96.4	95.2
1942	143.5	128.9	128.6	111.3	111.6	89.8	89.6
1943	140.6	123.3	123.6	114.0	113.8	97.7	87.9
1944	148.8	121.8	122.6	122.2	121.4	81.9	82.4
1945	162.9	116.4	118.4	139.9	137.6	71.5	72.7
1946	222.2	131.6	134.4	168.8	165.3	59.2	60.5
1947	195.5	142.9	142.0	136.8	137.7	73.1	72.6
1948	178.8	133.0	129.0	134.4	138.6	74.4	72.1
1949	173.1	128.7	125.1	134.5	138.4	74.4	72.3
1950	168.6	123.2	117.6	136.9	143.4	73.1	69.8

na - Not available

2/   For the Ice Cream Industry, represents BLS production worker index adjusted to Census of Manufactures data for "All Employees" rather than "Production Workers" only.   See "Technical Notes."

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS FOR SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers 3/	Man-hours	Output per -- Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

12. Malt Liquors Industry

Year	Production	Production workers 3/	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	98.4	96.3	96.3	102.2	102.2	97.9	97.9
1941	113.0	100.4	106.4	112.5	106.2	88.8	94.2
1942	128.6	107.7	115.9	119.4	111.0	83.7	90.1
1943	143.6	115.7	135.0	124.1	106.4	80.6	94.0
1944	163.5	121.9	146.4	134.1	111.7	74.6	89.5
1945	169.4	120.6	143.6	140.5	118.0	71.2	84.8
1946	161.3	121.3	134.0	133.0	120.4	75.2	83.1
1947	178.0	134.9	152.2	131.9	117.0	75.8	85.5
1948	172.1	135.5	148.6	127.0	115.8	78.7	86.3
1949	174.1	129.4	138.9	134.5	125.3	74.3	79.8
1950	174.6	129.2	137.6	135.1	126.9	74.0	78.8

13. Paper and Pulp Industry

Year	Production	Production workers 3/	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	112.8	106.6	107.1	105.8	105.3	94.5	94.9
1941	133.0	118.2	125.2	112.5	106.2	88.9	94.1
1942	129.6	121.6	129.7	106.6	99.9	93.8	100.1
1943	124.1	120.1	138.0	103.3	89.9	96.8	111.2
1944	124.2	119.8	142.7	103.7	87.0	96.5	114.9
1945	126.8	121.5	144.7	104.4	87.6	95.8	114.1
1946	141.1	143.0	157.2	98.7	89.8	101.3	111.4
1947	155.3	154.5	169.5	100.5	91.6	99.5	109.1
1948	162.6	157.4	171.9	103.3	94.6	96.8	105.7
1949	153.8	147.5	155.2	104.3	99.1	95.9	100.9
1950	183.0	153.1	166.8	119.5	109.7	83.7	91.1

3/ For the Malt Liquors Industry, represents BLS production worker index adjusted to Census of Manufactures data for "All Employees" rather than "Production Workers" only. See "Technical Notes."

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per — Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

14. Primary Smelting and Refining of Non-Ferrous Metals Group (Copper, Lead and Zinc)

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	119.7	113.6	115.4	105.4	103.7	94.9	96.4
1941	129.3	127.6	131.3	101.3	98.5	98.7	101.5
1942	130.0	125.6	134.8	103.5	96.4	96.6	103.7
1943	129.4	121.0	139.7	106.9	92.6	93.5	108.0
1944	118.5	108.3	129.0	109.4	91.9	91.4	108.9
1945	106.2	99.1	118.6	107.2	89.5	93.3	111.7
1946	88.8	96.2	102.7	92.3	86.5	108.3	115.7
1947	119.1	117.0	126.5	101.8	94.2	98.2	106.2
1948	114.7	114.1	123.4	100.5	92.9	99.5	107.6
1949	107.3	105.4	111.7	101.8	96.1	98.2	104.1
1950	123.3	107.9	116.7	114.3	105.7	87.5	94.6

15. Rayon and Other Synthetic Fibers Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	123.0	105.4	108.5	116.7	113.4	85.7	88.2
1941	153.4	110.9	114.7	138.3	133.7	72.3	74.8
1942	170.7	108.5	113.4	157.3	150.5	63.6	66.4
1943	179.1	108.8	120.3	164.6	148.9	60.7	67.2
1944	195.7	109.0	123.4	179.5	158.6	55.7	63.1
1945	212.3	112.3	124.7	189.0	170.2	52.9	58.7
1946	227.9	119.6	123.4	190.6	184.7	52.5	54.1
1947	258.2	119.7	124.8	215.7	206.9	46.4	48.3
1948	304.3	123.9	129.2	245.6	235.5	40.7	42.5
1949	280.7	114.8	117.0	244.5	239.9	40.9	41.7
1950	353.0	119.0	123.4	296.6	286.1	33.7	35.0

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INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

16. Tobacco Products Industries Group

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	101.5	98.7	100.9	102.8	100.6	97.2	99.4
1941	109.3	101.0	105.4	108.2	103.7	92.4	96.4
1942	115.7	102.0	111.2	113.4	104.0	88.2	96.1
1943	114.2	97.2	111.9	117.5	102.1	85.1	98.0
1944	114.3	90.6	106.7	126.2	107.1	79.3	93.4
1945	117.7	86.7	101.7	135.8	115.7	73.7	86.4
1946	115.8	91.1	101.2	127.1	114.4	78.7	87.4
1947	114.5	91.2	98.9	125.5	115.8	79.7	86.4
1948	118.6	90.0	96.2	131.8	123.3	75.9	81.1
1949	116.6	85.1	88.9	137.0	131.2	73.0	76.2
1950	116.5	80.0	85.0	145.6	137.1	68.7	73.0

a. Cigars Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	100.5	98.4	101.8	102.1	98.7	97.9	101.3
1941	107.7	104.0	109.4	103.6	98.4	96.6	101.6
1942	111.8	102.3	112.6	109.3	99.3	91.5	100.7
1943	102.5	88.6	103.7	115.7	98.8	86.4	101.2
1944	99.2	75.9	92.5	130.7	107.2	76.5	93.2
1945	100.2	71.5	84.9	140.1	118.0	71.4	84.7
1946	107.0	84.6	95.1	126.5	112.5	79.1	88.9
1947	104.2	87.5	95.3	119.1	109.3	84.0	91.5
1948	107.5	85.6	93.0	125.6	115.6	79.6	86.5
1949	104.1	78.6	83.3	132.4	125.0	75.5	80.0
1950	102.2	72.5	77.3	141.0	132.2	70.9	75.6

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

I. MANUFACTURING Cont'd.

16. Tobacco Products Industries Group Cont'd.

b. Cigarettes Industry, and Chewing and Smoking Tobacco and Snuff Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	103.0	99.1	99.7	103.9	103.3	96.2	96.8
1941	111.8	96.4	100.0	116.0	111.8	86.2	89.4
1942	121.5	101.5	109.4	119.7	111.1	83.5	90.0
1943	130.9	109.1	122.9	120.0	106.5	83.3	93.9
1944	134.3	108.3	125.6	124.0	106.9	80.6	93.5
1945	139.8	107.7	124.0	129.8	112.7	77.0	88.7
1946	128.0	100.2	109.2	127.7	117.2	78.3	85.3
1947	130.1	96.3	103.7	135.1	125.5	74.0	79.7
1948	135.9	96.2	100.4	141.3	135.4	70.8	73.9
1949	135.3	94.1	96.3	143.8	140.5	69.5	71.2
1950	137.2	90.4	95.2	151.8	144.1	65.9	69.4

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit
1915	89.2	na	183.9	na	48.5	na	206.2
1916	98.0	na	203.6	na	48.1	na	207.8
1917	103.1	na	212.6	na	48.5	na	206.2
1918	103.0	na	208.6	na	49.4	na	202.5
1919	87.5	na	176.4	na	49.6	na	201.6
1920	100.4	na	194.2	na	51.7	na	193.4
1921	79.8	na	147.4	na	54.1	na	184.7
1922	83.4	na	145.0	na	57.5	na	173.9
1923	113.8	na	192.9	na	59.0	na	169.5
1924	106.3	na	175.2	na	60.7	na	164.8
1925	108.2	na	172.9	na	62.6	na	159.8
1926	119.4	na	188.2	na	63.4	na	157.6
1927	115.8	na	177.4	na	65.3	na	153.2
1928	113.8	na	167.5	na	67.9	na	147.2
1929	121.7	na	174.3	na	69.8	na	143.2
1930	106.7	na	146.4	na	72.9	na	137.2
1931	87.9	na	114.0	na	77.1	na	129.7
1932	69.6	na	89.8	na	77.5	na	129.0
1933	75.6	na	96.0	na	78.8	na	127.0
1934	83.4	na	102.5	na	81.4	na	122.9

II. MINING

1. The Mining Industries Group 4/

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

II. MINING Cont'd.

1. The Mining Industries Group Cont'd.

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1935	88.0	na	103.7	na	84.9	na	117.8
1936	101.9	na	117.6	na	86.6	na	115.4
1937	108.9	na	123.7	na	88.0	na	113.6
1938	88.5	na	98.2	na	90.1	na	111.0
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	113.0	109.6	110.7	103.1	102.1	97.0	98.0
1941	123.9	110.0	119.3	112.6	103.9	88.8	96.3
1942	136.0	113.9	130.8	119.4	104.0	83.8	96.2
1943	139.6	106.8	137.5	130.7	101.5	76.5	98.5
1944	145.8	103.4	139.3	141.0	104.7	70.9	95.5
1945	136.5	96.1	128.7	142.0	106.1	70.4	94.3
1946	129.8	98.8	121.1	131.4	107.2	76.1	93.3
1947	147.7	107.1	133.0	137.9	111.1	72.5	90.0
1948	147.4	111.6	132.9	132.1	110.9	75.7	90.2
1949	119.3	104.5	109.9	114.2	108.6	87.6	92.1
1950	134.5	101.6	114.6	132.4	117.4	75.5	85.2

4/ The indexes for 1915-34 are based on material published by the WPA National Research Project and cover almost all mining industries.   The BLS indexes beginning with 1935 cover six of the principal mining industries: bituminous coal; anthracite; copper; iron; lead and zinc; and crude petroleum, natural gas, and natural gasoline. The indexes for 5 of the 6 individual mining industries are presented in the following pages. Pending further review, the series for crude petroleum, natural gas, and natural gasoline were not considered sufficiently reliable for publication separately, although satisfactory for inclusion in the combined indexes.

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Production workers	Man-hours	Output per -- Production worker	Man-hour	Unit Labor Requirements Production workers per unit	Man-hours per unit

II. MINING Cont'd.

2. Anthracite Industry

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1935	101.3	111.6	127.7	90.8	79.3	110.2	126.1
1936	106.0	110.6	123.0	95.8	86.2	104.3	116.0
1937	100.7	110.8	115.2	90.9	87.4	110.0	114.4
1938	89.5	100.1	91.4	89.4	97.9	111.8	102.1
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	100.0	103.4	101.5	96.7	98.5	103.4	101.5
1941	105.8	103.8	105.3	101.9	100.5	98.1	99.5
1942	112.1	100.0	121.7	112.1	92.1	89.2	108.6
1943	115.3	93.7	131.8	123.1	87.5	81.3	114.3
1944	122.7	90.8	133.4	135.1	92.0	74.0	108.7
1945	106.2	81.6	119.1	130.1	89.2	76.8	112.1
1946	116.8	92.0	124.9	127.0	93.5	78.8	106.9
1947	109.9	89.2	121.4	123.2	90.5	81.2	110.5
1948	109.9	90.7	121.5	121.2	90.5	82.5	110.6
1949	82.1	87.1	90.6	94.3	90.6	106.1	110.4
1950	85.3	84.4	97.8	101.1	87.2	98.9	114.7

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production | Production workers | Man-hours | Output per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit	Man-hours per unit

II. MINING Cont'd.

3. Bituminous Coal and Lignite Industries

Year	Production	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit	Man-hours per unit
1935	94.3	117.5	114.5	80.3	82.4	124.6	121.4
1936	111.2	121.3	128.9	91.7	86.3	109.1	115.9
1937	112.8	124.4	128.1	90.7	88.1	110.3	113.6
1938	88.3	109.6	95.0	80.6	92.9	124.1	107.6
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	116.7	112.0	112.2	104.2	104.0	96.0	96.1
1941	130.2	111.1	124.7	117.2	104.4	85.3	95.8
1942	147.6	122.3	143.5	120.7	102.9	82.9	97.2
1943	149.4	112.6	151.3	132.7	98.7	75.4	101.3
1944	156.9	108.0	153.0	145.3	102.5	68.8	97.5
1945	146.3	98.6	138.4	148.4	105.7	67.4	94.6
1946	135.2	95.5	123.2	141.6	109.7	70.6	91.1
1947	159.7	108.2	142.4	147.6	112.1	67.8	89.2
1948	151.8	111.1	135.9	136.6	111.7	73.2	89.5
1949	110.8	100.5	100.8	110.2	109.9	90.7	91.0
1950	129.6	94.4	105.1	137.3	123.3	72.8	81.1

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production of ore | Production workers | Man-hours | Ore Mined per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per ton of ore	Man-hours per ton of ore

II. MINING Cont'd

4. Copper Ores Mining Industry

a. Based on Ore Mined

Year	Production of ore	Production workers	Man-hours	Production worker	Man-hour	Production workers per ton of ore	Man-hours per ton of ore
1935	34.6	na	53.0	na	65.3	na	153.2
1936	69.7	na	82.9	na	84.1	na	118.9
1937	111.4	na	123.5	na	90.2	na	110.9
1938	68.4	na	82.3	na	83.1	na	120.3
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	125.4	117.6	117.0	106.6	107.2	93.8	93.3
1941	142.0	131.4	132.7	108.1	107.0	92.5	93.5
1942	167.1	136.0	146.7	122.9	113.9	81.4	87.8
1943	178.9	133.2	145.6	134.3	122.9	74.5	81.4
1944	166.2	109.8	118.4	151.4	140.4	66.1	71.2
1945	140.3	87.1	92.9	161.1	151.0	62.1	66.2
1946	112.7	82.1	83.9	137.3	134.3	72.8	74.4
1947	159.1	98.4	105.2	161.7	151.2	61.8	66.1
1948	153.4	100.0	107.9	153.4	142.2	65.2	70.3
1949	137.6	97.2	98.1	141.6	140.3	70.6	71.3
1950	171.2	99.2	106.5	172.6	160.8	57.9	62.2

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production of recoverable metal | Production workers | Man-hours | Recoverable Metal per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit of recoverable metal	Man-hours per unit of recoverable metal

II. MINING Cont'd.

4. Copper Ores Mining Industry Cont'd.

b. Based on Mine Production of Recoverable Metal

Year	Production of recoverable metal	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit of recoverable metal	Man-hours per unit of recoverable metal
1935	51.7	na	53.0	na	97.5	na	102.5
1936	84.3	na	82.9	na	101.7	na	98.3
1937	116.1	na	123.5	na	94.0	na	106.4
1938	76.5	na	82.3	na	93.0	na	107.6
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	120.8	117.6	117.0	102.7	103.2	97.4	96.9
1941	131.8	131.4	132.7	100.3	99.3	99.7	100.7
1942	149.1	136.0	146.7	109.6	101.6	91.2	98.4
1943	150.8	133.2	145.6	113.2	103.6	88.3	96.6
1944	133.9	109.8	118.4	121.9	113.1	82.0	88.4
1945	106.0	87.1	92.9	121.7	114.1	82.2	87.6
1946	83.4	82.1	83.9	101.6	99.4	98.4	100.6
1947	116.6	98.4	105.2	118.5	110.8	84.4	90.2
1948	114.6	100.0	107.9	114.6	106.2	87.3	94.2
1949	102.4	97.2	98.1	105.3	104.4	94.9	95.8
1950	124.1	99.2	106.5	125.1	116.5	79.9	85.8

na - Not available

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INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production of crude ore	Production workers	Man-hours	Crude Ore Mined per -- Production worker	Man-hour	Unit Labor Requirements Production workers per ton of crude ore	Man-hours per ton of crude ore

II. MINING Cont'd.

5. Iron Ores Mining Industry

a. Based on Crude Ore Mined

Year	Production of crude ore	Production workers	Man-hours	Production worker	Man-hour	Production workers per ton of crude ore	Man-hours per ton of crude ore
1935	61.7	na	67.3	na	91.7	na	109.1
1936	95.6	na	95.4	na	100.2	na	99.8
1937	141.1	na	131.6	na	107.2	na	93.3
1938	55.3	na	78.4	na	70.5	na	141.8
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	145.4	112.6	121.4	129.1	119.8	77.4	83.5
1941	187.8	133.8	152.2	140.4	123.4	71.2	81.0
1942	220.6	159.5	188.1	138.3	117.3	72.3	85.3
1943	208.7	167.4	200.7	124.7	104.0	80.2	96.2
1944	193.6	149.6	181.4	129.4	106.7	77.3	93.7
1945	185.4	125.5	153.6	147.7	120.7	67.7	82.8
1946	146.8	122.7	129.6	119.6	113.3	83.6	88.3
1947	198.7	149.8	168.7	132.6	117.8	75.4	84.9
1948	220.1	159.2	184.2	138.3	119.5	72.3	83.7
1949	182.8	144.1	160.6	126.9	113.8	78.8	87.9
1950	217.2	151.2	173.2	143.7	125.4	69.6	79.7

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production of useable ore	Production workers	Man-hours	Useable Ore per -- Production worker	Man-hour	Unit Labor Requirements Production workers per ton of useable ore	Man-hours per ton of useable ore

II. MINING Cont'd.

5. Iron Ores Mining Industry Cont'd.

b. Based on Useable Ore Produced

Year	Production of useable ore	Production workers	Man-hours	Useable Ore per Production worker	Man-hour	Production workers per ton of useable ore	Man-hours per ton of useable ore
1935	59.0	na	67.3	na	87.7	na	114.1
1936	94.3	na	95.4	na	98.8	na	101.2
1937	139.4	na	131.6	na	105.9	na	94.4
1938	55.0	na	78.4	na	70.2	na	142.5
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	142.5	112.6	121.4	126.6	117.4	79.0	85.2
1941	178.6	133.8	152.2	133.5	117.3	74.9	85.2
1942	202.7	159.5	188.1	127.1	107.8	78.7	92.8
1943	194.5	167.4	200.7	116.2	96.9	86.1	103.2
1944	180.8	149.6	181.4	120.9	99.7	82.7	100.3
1945	169.8	125.5	153.6	135.3	110.5	73.9	90.5
1946	136.0	122.7	129.6	110.8	104.9	90.2	95.3
1947	178.9	149.8	168.7	119.4	106.0	83.7	94.3
1948	194.3	159.2	184.2	122.0	105.5	81.9	94.8
1949	163.2	144.1	160.2	113.3	101.9	88.3	98.2
1950	188.5	151.2	173.2	124.7	108.8	80.2	91.9

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production of ore | Production workers | Man-hours | Ore Mined per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per ton of ore mined	Man-hours per ton of ore mined

II. MINING Cont'd.

6. Lead and Zinc Ores Mining Industries

a. Based on Ore Mined

Year	Production of ore	Production workers	Man-hours	Production worker	Man-hour	Production workers per ton	Man-hours per ton
1935	76.9	na	86.7	na	88.7	na	112.7
1936	97.5	na	102.7	na	94.9	na	105.3
1937	118.1	na	122.5	na	96.4	na	103.7
1938	85.3	na	91.4	na	93.3	na	107.2
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	116.3	114.8	116.9	101.3	99.5	98.7	100.5
1941	133.7	120.1	124.1	111.3	107.7	89.8	92.8
1942	144.3	126.0	141.0	114.5	102.3	87.3	97.7
1943	152.5	141.1	160.4	108.1	95.1	92.5	105.2
1944	158.0	127.6	145.7	123.8	108.4	80.8	92.2
1945	144.3	111.7	127.9	129.2	112.8	77.4	88.6
1946	135.0	119.6	128.9	112.9	104.7	88.6	95.5
1947	118.2	127.0	135.5	93.1	87.2	107.4	114.6
1948	96.8	117.8	125.7	82.2	77.0	121.7	129.9
1949	102.2	111.0	118.7	92.1	86.1	108.6	116.1

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production of recoverable metal | Production workers | Man-hours | Recoverable Metal per -- | | Unit Labor Requirements | |
				Production worker	Man-hour	Production workers per unit of recoverable metal	Man-hours per unit of recoverable metal

II. MINING Cont'd.

6. Lead and Zinc Ores Mining Industries Cont'd.

b. Based on Mine Production of Recoverable Metal

Year	Production of recoverable metal	Production workers	Man-hours	Production worker	Man-hour	Production workers per unit of recoverable metal	Man-hours per unit of recoverable metal
1935	86.3	na	86.7	na	99.5	na	100.5
1936	96.2	na	102.7	na	93.7	na	106.8
1937	110.4	na	122.5	na	90.1	na	111.0
1938	89.2	na	91.4	na	97.6	na	102.5
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	112.7	114.8	116.9	98.2	96.4	101.9	103.7
1941	122.0	120.1	124.1	101.6	98.3	98.4	101.7
1942	127.4	126.0	141.0	101.1	90.4	98.9	110.7
1943	120.8	141.1	160.4	85.6	75.3	116.8	132.8
1944	114.8	127.6	145.7	90.0	78.8	111.1	126.9
1945	100.6	111.7	127.9	90.1	78.7	111.0	127.1
1946	90.9	119.6	128.9	76.0	70.5	131.6	141.8
1947	103.7	127.0	135.5	81.7	76.5	122.5	130.7
1948	103.4	117.8	125.7	87.8	82.3	113.9	121.6
1949	101.2	111.0	118.7	91.2	85.3	109.7	117.3
1950	107.4	105.5	113.4	101.8	94.7	98.2	105.6

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production (energy distributed)	Employees	Man-hours	Output per — Employee	Man-hour	Unit Labor Requirements Employees per unit	Man-hours per unit

III. PUBLIC UTILITIES

1. Electric Light and Power Industry

Year	Production (energy distributed)	Employees	Man-hours	Employee	Man-hour	Employees per unit	Man-hours per unit
1917	19.7	38.9	45.7	50.6	43.1	197.5	232.0
1918	na	na	na	na	na	na	na
1919	na	na	na	na	na	na	na
1920	27.2	na	na	na	na	na	na
1921	25.6	na	na	na	na	na	na
1922	30.0	56.1	65.2	53.5	46.0	187.0	217.3
1923	36.4	61.9	71.4	58.8	51.0	170.1	196.2
1924	40.0	70.5	81.5	56.7	49.1	176.3	203.8
1925	46.1	79.1	91.5	58.3	50.4	171.6	198.5
1926	52.9	88.1	99.7	60.0	53.1	166.5	188.5
1927	58.8	96.7	111.6	60.8	52.7	164.5	189.8
1928	64.5	na	na	na	na	na	na
1929	71.9	112.3	133.0	64.0	54.1	156.2	185.0
1930	70.4	117.9	140.5	59.7	50.1	167.5	199.6
1931	67.2	108.3	129.4	62.0	51.9	161.2	192.6
1932	60.3	93.1	103.4	64.8	58.3	154.4	171.5
1933	62.8	86.9	92.2	72.3	68.1	138.4	146.8
1934	68.0	89.6	87.8	75.9	77.4	131.8	129.1

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production (energy distributed) | Employees | Man-hours | Output per -- | | Unit Labor Requirements | |
				Employee	Man-hour	Employees per unit	Man-hours per unit

III.   PUBLIC UTILITIES Cont'd.

1.   Electric Light and Power Industry   Cont'd.

Year	Production (energy distributed)	Employees	Man-hours	Employee	Man-hour	Employees per unit	Man-hours per unit
1935	74.8	91.4	90.7	81.8	82.5	122.2	121.3
1936	86.6	97.4	98.6	88.9	87.8	112.5	113.9
1937	94.6	103.8	105.6	91.1	89.6	109.7	111.6
1938	90.2	100.5	101.3	89.8	89.0	111.4	112.3
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	111.4	102.3	102.6	108.9	108.6	91.8	92.1
1941	129.0	104.2	104.7	123.8	123.2	80.8	81.2
1942	143.5	97.2	98.4	147.6	145.8	67.7	68.6
1943	165.7	86.3	90.7	192.0	182.7	52.1	54.7
1944	172.4	82.9	90.2	208.0	191.1	48.1	52.3
1945	168.8	84.2	92.5	200.5	182.5	49.9	54.8
1946	167.8	99.4	104.4	168.8	160.7	59.2	62.2
1947	189.9	107.2	113.7	177.1	167.0	56.5	59.9
1948	205.2	113.7	120.0	180.5	171.0	55.4	58.5

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Revenue traffic (Freight and passenger)	All hourly basis employees	Man-hours	Revenue Traffic per -- Employee	Revenue Traffic per -- Man-hour	Unit Labor Requirements Employees per unit of revenue traffic	Unit Labor Requirements Man-hours per unit of revenue traffic

III. PUBLIC UTILITIES Cont'd.

2. Line-Haul Operating Railroads Industry 5/

a. All Hourly Basis Employees

(1) Based on revenue traffic (freight and passenger)

Year	Revenue traffic	All hourly basis employees	Man-hours	Employee	Man-hour	Employees per unit	Man-hours per unit
1935	84.2	100.4	96.1	83.9	87.6	119.2	114.1
1936	101.4	108.3	108.4	93.6	93.5	106.8	106.9
1937	108.2	113.5	113.6	95.3	95.2	104.9	105.0
1938	88.0	94.6	92.9	93.0	94.7	107.5	105.6
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	111.1	104.3	105.6	106.5	105.2	93.9	95.0
1941	141.0	116.5	122.1	121.0	115.5	82.6	86.6
1942	196.5	130.6	140.8	150.5	139.6	66.5	71.7
1943	237.4	139.5	157.3	170.2	150.9	58.8	66.3
1944	244.0	145.7	164.7	167.5	148.1	59.7	67.5
1945	227.0	146.3	162.7	155.2	139.5	64.4	71.7
1946	189.8	139.5	147.0	136.1	129.1	73.5	77.4
1947	197.1	138.8	146.0	142.0	135.0	70.4	74.1
1948	190.2	136.0	142.8	139.9	133.2	71.5	75.1
1949	157.5	121.2	119.8	130.0	131.5	77.0	76.1
1950	172.4	124.5	115.0	138.5	149.9	72.2	66.7

5/ Formerly called "Steam Railroad Transportation"

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Car-miles (Freight and passenger)	All hourly basis employees	Man-hours	Car-miles per -- Employee	Man-hour	Unit Labor Requirements Employees per car-mile	Man-hours per car-mile

III. PUBLIC UTILITIES Cont'd.

2. Line-Haul Operating Railroads Industry Cont'd.

a. All Hourly Basis Employees Cont'd.

(2) Based on car-miles (freight and passenger)

Year	Car-miles	Employees	Man-hours	Employee	Man-hour	Emp/car-mile	MH/car-mile
1935	89.1	100.4	96.1	88.7	92.7	112.7	107.9
1936	101.2	108.3	108.4	93.4	93.4	107.0	107.1
1937	106.2	113.5	113.6	93.6	93.5	106.9	107.0
1938	91.6	94.6	92.9	96.8	98.6	103.3	101.4
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	108.2	104.3	105.6	103.7	102.5	96.4	97.6
1941	127.2	116.5	122.1	109.2	104.2	91.6	96.0
1942	153.0	130.6	140.8	117.2	108.7	85.4	92.0
1943	163.5	139.5	157.3	117.2	103.9	85.3	96.2
1944	166.6	145.7	164.7	114.3	101.2	87.5	98.9
1945	155.0	146.3	162.7	105.9	95.3	94.4	105.0
1946	139.4	139.5	147.0	99.9	94.8	100.1	105.5
1947	145.4	138.8	146.0	104.8	99.6	95.5	100.4
1948	142.2	136.0	142.8	104.6	99.6	95.6	100.4
1949	127.3	121.2	119.8	105.0	106.3	95.2	94.1
1950	133.9	124.5	115.0	107.6	116.4	93.0	85.9

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Revenue ton-miles of freight	Road freight employees	Man-hours	Revenue Ton-miles of Freight per --		Unit Labor Requirements	
				Employee	Man-hour	Employees per revenue ton-mile of freight	Man-hours per revenue ton-mile of freight

III. PUBLIC UTILITIFS Cont'd.

2. Line-Haul Operating Railroads Industry Cont'd.

b. Road Freight Employees

(1) Based on revenue ton-miles of freight 6/

Year	Revenue ton-miles of freight	Road freight employees	Man-hours	Employee	Man-hour	Employees per revenue ton-mile	Man-hours per revenue ton-mile
1935	84.6	100.0	97.1	84.6	87.1	118.2	114.8
1936	101.7	109.9	113.5	92.5	89.6	108.1	111.6
1937	108.2	114.5	115.7	94.5	93.5	105.8	106.9
1938	87.0	96.6	93.2	90.1	93.3	111.0	107.1
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	111.9	105.1	108.2	106.5	103.4	93.9	96.7
1941	142.5	119.3	131.4	119.4	108.4	83.7	92.2
1942	191.4	139.4	166.3	137.3	115.1	72.8	86.9
1943	218.0	148.3	181.6	147.0	120.0	68.0	83.3
1944	221.2	148.0	183.6	149.5	120.5	66.9	83.0
1945	204.1	144.5	174.5	141.2	117.0	70.8	85.5
1946	177.5	136.0	154.0	130.5	115.3	76.6	86.8
1947	196.3	138.2	160.3	142.0	122.5	70.4	81.7
1948	191.3	133.2	151.9	143.6	125.9	69.6	79.4
1949	157.9	114.3	123.7	138.1	127.8	72.4	78.3
1950	176.5	114.8	130.3	153.7	135.5	65.0	73.8

6/ A ton-mile represents the transportation of one ton of freight for the distance of one mile. Revenue ton-miles of freight represents the total of the products derived by multiplying the weight of individual shipments and the distance the respective shipments are carried: /i.e. ≤ (tons x miles)_7

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Freight-train car-miles	Road freight employees	Man-hours	Freight-train Car-miles per -- Employee	Man-hour	Unit Labor Requirements Employees per freight-train car-mile	Man-hours per freight-train car-mile

III. PUBLIC UTILTIES Cont'd.

2. Line-Haul Operating Railroads Industry Cont'd.

b. Road Freight Employees Cont'd.

(2) Based on freight-train car-miles 7/

Year							
1935	88.8	100.0	97.1	88.8	91.5	112.6	109.3
1936	101.6	109.9	113.5	92.4	89.5	108.2	111.7
1937	106.6	114.5	115.7	93.1	92.1	107.4	108.5
1938	90.7	96.6	93.2	93.9	97.3	106.5	102.8
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	109.1	105.1	108.2	103.8	100.8	96.3	99.2
1941	129.8	119.3	131.4	108.8	98.8	91.9	101.2
1942	156.6	139.4	166.3	112.3	94.2	89.0	106.2
1943	165.6	148.3	181.6	111.7	91.2	89.6	109.7
1944	168.0	148.0	183.6	113.5	91.5	88.1	109.3
1945	154.4	144.5	174.5	106.9	88.5	93.6	113.0
1946	138.6	136.0	154.0	101.9	90.0	98.1	111.1
1947	147.7	138.2	160.3	106.9	92.1	93.6	108.5
1948	144.2	133.2	151.9	108.3	94.9	92.4	105.3
1949	128.3	114.3	123.7	112.2	103.8	89.1	96.4
1950	136.3	114.8	130.3	118.7	104.6	84.2	95.6

7/ A freight-train car-mile represents the movement of one freight car one mile. Freight-train car-miles represents the total of the distances traveled by the individual freight cars, loaded and empty.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Revenue passenger miles	Road passenger employees	Man-hours	Revenue Passenger Miles per -- Employee	Man-hour	Unit Labor Requirements Employees per revenue passenger mile	Man-hours per revenue passenger mile

III. PUBLIC UTILITIES Cont'd.

2. Line-Haul Operating Railroads Industry Cont'd.

c. Road Passenger Employees

(1) Based on revenue passenger miles 8/

Year	Revenue passenger miles	Road passenger employees	Man-hours	Employee	Man-hour	Employees per revenue passenger mile	Man-hours per revenue passenger mile
1935	81.6	100.2	101.3	81.4	80.6	122.8	124.1
1936	98.9	104.0	107.2	95.1	92.3	105.2	108.4
1937	108.8	107.5	109.7	101.2	99.2	98.8	100.8
1938	95.5	101.3	102.1	94.3	93.5	106.1	106.9
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	104.9	100.1	99.7	104.8	105.2	95.4	95.0
1941	129.6	101.7	103.5	127.4	125.2	78.5	79.9
1942	236.9	108.0	119.7	219.4	197.9	45.6	50.5
1943	387.7	117.4	138.5	330.2	279.9	30.3	35.7
1944	421.8	121.7	148.6	346.6	283.8	28.9	35.2
1945	404.9	123.6	152.1	327.6	266.2	30.5	37.6
1946	285.6	121.3	137.2	235.4	208.2	42.5	48.0
1947	202.7	114.0	123.7	177.8	163.9	56.2	61.0
1948	181.8	111.4	121.7	163.2	149.4	61.3	66.9
1949	154.9	104.5	113.9	148.2	136.0	67.5	73.5
1950	140.2	99.1	108.8	141.5	128.9	70.7	77.6

8/ A passenger mile represents the transportation of one passenger for one mile. Revenue passenger-miles represents the total of the distances respective passengers were carried.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Passenger-train car-miles	Road passenger employees	Man-hours	Passenger-train Car-miles per --		Unit Labor Requirements	
				Employee	Man-hour	Employees per passenger-train car-mile	Man-hours per passenger-train car-mile

III. PUBLIC UTILITIES Cont'd.

2. Line-Haul Operating Railroads Industry Cont'd.

c. Road Passenger Employees Cont'd.

(2) Based on passenger-train car-miles 9/

Year	Passenger-train car-miles	Road passenger employees	Man-hours	Employee	Man-hour	Employees per passenger-train car-mile	Man-hours per passenger-train car-mile
1935	91.1	100.2	101.3	90.9	89.9	110.0	111.2
1936	98.1	104.0	107.2	94.3	91.5	106.0	109.3
1937	103.5	107.5	109.7	96.3	94.3	103.9	106.0
1938	98.2	101.3	102.1	96.9	96.2	103.2	104.0
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	101.2	100.1	99.7	101.1	101.5	98.9	98.5
1941	108.3	101.7	103.5	106.5	104.6	93.9	95.6
1942	126.0	108.0	119.7	116.7	105.3	85.7	95.0
1943	148.0	117.4	138.5	126.1	106.9	79.3	93.6
1944	156.6	121.7	148.6	128.7	105.4	77.7	94.9
1945	159.6	123.6	152.1	129.1	104.9	77.4	95.3
1946	145.0	121.3	137.2	119.5	105.7	83.7	94.6
1947	128.2	114.0	123.7	112.5	103.6	88.9	96.5
1948	127.1	111.4	121.7	114.1	104.4	87.6	95.8
1949	119.9	104.5	113.9	114.7	105.3	87.2	95.0
1950	115.8	99.1	108.8	116.9	106.4	85.6	94.0

9/ A passenger-train car-mile represents the movement of one passenger car one mile. Passenger-train car-miles represents the total of the distances traveled by the individual passenger cars.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production (Service rendered in message units)	Total employees	Man-hours	Service Rendered per --		Unit Labor Requirements	
				Employee	Man-hour	Employees per unit of service rendered	Man-hours per unit of service rendered

III.   PUBLIC UTILITIES Cont'd.

3.   Telegraph Industry

Year	Production	Total employees	Man-hours	Employee	Man-hour	Employees per unit	Man-hours per unit
1935	92.2	106.7	na	86.4	na	115.7	na
1936	100.6	114.7	na	87.7	na	114.0	na
1937	106.9	114.9	na	93.0	na	107.5	na
1938	98.9	102.5	na	96.5	na	103.6	na
1939	100.0	100.0	na	100.0	na	100.0	na
1940	98.3	106.3	na	92.5	na	108.1	na
1941	106.4	114.5	na	92.9	na	107.6	na
1942	112.5	110.9	na	101.4	na	98.6	na
1943	119.1	110.4	na	107.9	na	92.7	na
1944	119.9	107.7	na	111.3	na	89.8	na
1945	125.7	108.0	na	116.4	na	85.9	na
1946	116.2	106.0	na	109.6	na	91.2	na
1947	119.1	98.4	na	121.0	na	82.6	na
1948	107.4	91.8	na	117.0	na	85.5	na
1949	99.3	81.4	na	122.0	na	82.0	na
1950	98.8	73.3	na	134.8	na	74.2	na

na - Not available

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

| Year | Production (Service rendered in message units) | Total employees | Man-hours | Service Rendered per -- | | Unit Labor Requirements | |
				Employee	Man-hour	Employees per unit of service rendered	Man-hours per unit of service rendered

III. PUBLIC UTILITIES Cont'd.
4. Telephone Industry

Year	Production	Total employees	Man-hours	Employee	Man-hour	Employees	Man-hours
1935	82.6	93.0	93.7	88.8	88.2	112.6	113.4
1936	89.8	96.5	98.5	93.1	91.2	107.5	109.7
1937	94.0	103.6	105.8	90.7	88.8	110.2	112.6
1938	95.0	100.7	102.9	94.3	92.3	106.0	108.3
1939	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1940	107.3	103.3	104.2	103.9	103.0	96.3	97.1
1941	118.4	115.9	119.0	102.2	99.5	97.9	100.5
1942	126.4	124.3	128.7	101.7	98.2	98.3	101.8
1943	133.7	127.6	136.5	104.8	97.9	95.4	102.1
1944	138.0	128.1	138.5	107.7	99.6	92.8	100.4
1945	148.6	134.5	150.4	110.5	98.8	90.5	101.2
1946	174.2	172.6	183.7	100.9	94.8	99.1	105.5
1947	187.7	192.0	199.7	97.8	94.0	102.3	106.4
1948	200.3	202.6	214.6	98.9	93.3	101.1	107.1
1949	205.6	199.4	207.4	103.1	99.1	97.0	100.9
1950	213.8	194.7	204.6	109.8	104.5	91.1	95.7

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
IV. AGRICULTURE				
1. United States as a Whole				
1909	75.5	113.7	66.4	150.6
1910	79.3	113.1	70.1	142.6
1911	82.1	112.1	73.2	136.5
1912	86.8	112.1	77.4	129.1
1913	81.2	112.0	72.5	137.9
1914	88.7	111.7	79.4	125.9
1915	85.9	111.6	77.0	129.9
1916	82.1	111.9	73.4	136.3
1917	85.9	109.8	78.2	127.8
1918	85.9	105.7	81.3	123.1
1919	84.0	103.4	81.2	123.1
1920	91.5	105.8	86.5	115.6
1921	78.3	106.3	73.7	135.8
1922	84.9	106.5	79.7	125.4
1923	86.8	106.0	81.9	122.1
1924	88.7	105.8	83.8	119.3
1925	94.4	106.6	88.6	112.9
1926	98.1	107.4	91.3	109.5
1927	92.5	104.7	88.3	113.2
1928	97.2	105.9	91.8	109.0
1929	96.3	105.1	91.6	109.1

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

1. United States as a Whole Cont'd.

Year	Production	Employment	Output per worker	Workers per unit
1930	93.4	104.0	89.8	111.3
1931	102.9	103.9	99.0	101.0
1932	96.3	103.1	93.4	107.1
1933	91.5	102.6	89.2	112.1
1934	77.4	101.0	76.6	130.5
1935	90.6	103.6	87.5	114.3
1936	84.0	102.9	81.6	122.5
1937	106.8	101.4	105.3	94.9
1938	98.3	100.5	97.8	102.2
1939	100.0	100.0	100.0	100.0
1940	102.1	99.6	102.5	97.6
1941	103.7	97.4	106.5	93.9
1942	115.1	97.7	117.8	84.9
1943	111.6	96.6	115.5	86.6
1944	115.6	94.3	122.6	81.6
1945	110.7	92.2	120.1	83.3
1946	113.7	94.6	120.2	83.2
1947	110.3	95.2	115.9	86.3
1948	122.9	94.5	130.1	76.9
1949	122.9	91.8	133.9	74.7
1950	115.7	88.3	131.0	76.3

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INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV.   AGRICULTURE Cont'd.

2.   Agriculture by Areas

a. Corn Area 10/

Year	Production	Employment	Output per worker	Workers per unit
1935	88.6	103.2	85.9	116.5
1936	77.0	101.6	75.8	131.9
1937	97.6	101.0	96.6	103.5
1938	95.8	101.6	94.3	106.1
1939	100.0	100.0	100.0	100.0
1940	98.6	102.0	96.7	103.4
1941	105.1	99.9	105.2	95.1
1942	113.7	100.6	113.0	88.5
1943	112.2	98.8	113.6	88.1
1944	109.7	97.1	113.0	88.5
1945	111.6	96.7	115.4	86.6
1946	116.9	98.4	118.8	84.2
1947	100.5	99.1	101.4	98.6
1948	120.1	98.7	121.7	82.2
1949	117.4	94.8	123.8	80.7
1950	113.4	91.9	123.4	81.0

10/   Corn area includes the following States: Illinois, Indiana, Iowa, and Ohio.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
		IV. AGRICULTURE Cont'd.		
		2. Agriculture by Areas Cont'd.		
		b. Eastern Dairy Area 11/		
1935	97.0	97.0	100.0	100.0
1936	92.7	96.5	96.1	104.1
1937	100.6	96.6	104.1	96.0
1938	99.4	98.4	101.0	99.0
1939	100.0	100.0	100.0	100.0
1940	101.7	99.5	102.2	97.8
1941	103.1	97.3	106.0	94.4
1942	109.9	98.6	111.5	89.7
1943	103.6	97.9	105.8	94.5
1944	108.7	95.6	113.7	87.9
1945	108.0	95.4	113.2	88.3
1946	112.9	96.2	117.4	85.2
1947	110.0	96.2	114.3	87.5
1948	113.4	94.8	119.6	83.6
1949	116.9	94.1	124.2	80.5
1950	121.1	92.7	130.6	76.5

11/ Eastern Dairy Area includes the following States: Connecticut, Massachusetts, New Hampshire, New York, Pennsylvania, and Vermont.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS, PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

c. Western Dairy Area 12/

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
1935	90.7	105.5	86.0	116.3
1936	79.9	105.6	75.7	132.2
1937	93.1	102.6	90.7	110.2
1938	95.8	102.2	93.7	106.7
1939	100.0	100.0	100.0	100.0
1940	104.1	100.8	103.3	96.8
1941	104.7	99.4	105.3	94.9
1942	114.6	99.2	115.5	86.6
1943	111.5	98.3	113.4	88.2
1944	112.5	96.8	116.2	86.0
1945	116.6	94.2	123.8	80.8
1946	116.7	96.8	120.6	82.9
1947	110.3	96.4	114.4	87.4
1948	115.6	95.9	120.5	83.0
1949	119.9	93.6	128.1	78.1
1950	117.0	90.6	129.1	77.4

12/ Western Dairy Area includes the following States: Michigan, Minnesota, and Wisconsin.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
IV. AGRICULTURE Cont'd.				
2. Agriculture by Areas Cont'd.				
d. Eastern Cotton Area 13/				
1935	105.4	106.7	98.8	101.2
1936	104.8	105.1	99.7	100.3
1937	129.0	102.4	126.0	79.4
1938	107.2	99.2	108.1	92.5
1939	100.0	100.0	100.0	100.0
1940	105.9	97.9	108.2	92.4
1941	90.9	94.6	96.1	104.1
1942	103.7	96.7	107.2	93.2
1943	108.6	95.2	114.1	87.7
1944	111.2	92.3	120.5	83.0
1945	108.4	89.8	120.7	82.8
1946	103.8	90.6	114.6	87.3
1947	107.7	92.1	116.9	85.5
1948	118.3	91.2	129.7	77.1
1949	107.6	88.9	121.0	82.6
1950	101.5	83.2	122.0	82.0

13/ Eastern Cotton Area includes the following States: Alabama, Georgia, and South Carolina.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

e. Delta Cotton Area 14/

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
1935	79.6	104.2	76.4	130.9
1936	98.6	103.6	95.2	105.1
1937	130.0	104.7	124.2	80.5
1938	103.3	101.5	101.8	98.3
1939	100.0	100.0	100.0	100.0
1940	92.3	100.5	91.8	108.9
1941	95.8	98.1	97.7	102.4
1942	109.4	95.1	115.0	86.9
1943	99.5	94.3	105.5	94.8
1944	103.2	90.2	114.4	87.4
1945	92.5	86.3	107.2	93.3
1946	82.5	89.8	91.9	108.8
1947	90.0	87.4	103.0	97.1
1948	122.2	87.2	140.1	71.4
1949	101.0	85.9	117.6	85.0
1950	93.9	83.9	111.9	89.4

14/ Delta Cotton Area includes the following States: Arkansas, Louisiana, and Mississippi.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

f. Western Cotton Area 15/

Year	Production	Employment	Output per worker	Workers per unit
1935	98.0	101.2	96.8	103.3
1936	87.4	101.4	86.2	116.0
1937	126.2	99.9	126.3	79.2
1938	105.1	98.9	106.3	94.1
1939	100.0	100.0	100.0	100.0
1940	115.1	95.8	120.1	83.2
1941	107.0	93.9	114.0	87.8
1942	116.4	95.2	122.3	81.8
1943	107.8	92.5	116.5	85.8
1944	114.3	89.2	128.1	78.0
1945	93.8	87.1	107.7	92.9
1946	91.7	89.6	102.3	97.7
1947	110.0	90.7	121.3	82.5
1948	103.5	90.5	114.4	87.4
1949	142.0	86.2	164.7	60.7
1950	106.2	81.3	130.6	76.6

15/ Western Cotton Area includes the following States: Oklahoma and Texas.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

g. Small Grain Area 16/

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
1935	103.2	105.7	97.6	102.4
1936	73.3	103.8	70.6	141.6
1937	89.1	98.9	90.1	111.0
1938	104.0	99.0	105.1	95.2
1939	100.0	100.0	100.0	100.0
1940	113.0	101.2	111.7	89.6
1941	133.4	102.1	130.7	76.5
1942	159.3	102.5	155.4	64.3
1943	153.3	101.6	150.9	66.3
1944	161.5	100.1	161.3	62.0
1945	153.2	98.3	155.8	64.2
1946	146.1	101.9	143.4	69.7
1947	138.5	104.2	132.9	75.2
1948	153.0	102.0	150.0	66.7
1949	133.0	96.3	138.1	72.4
1950	149.8	93.3	160.6	62.3

16/ Small Grain Area includes the following States: Kansas, Montana, Nebraska,
North Dakota, and South Dakota.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

h. Middle Eastern Area 17/

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
1935	89.2	107.0	83.4	120.0
1936	82.7	105.5	78.4	127.6
1937	102.8	103.6	99.2	100.8
1938	92.1	102.9	89.5	111.7
1939	100.0	100.0	100.0	100.0
1940	98.0	100.3	97.7	102.3
1941	95.5	95.7	99.8	100.2
1942	105.4	95.3	110.6	90.4
1943	99.6	95.0	104.8	95.4
1944	111.2	93.2	119.3	83.8
1945	108.9	90.5	120.3	83.1
1946	119.0	93.7	127.0	78.7
1947	114.9	94.1	122.1	81.9
1948	120.7	93.3	129.4	77.3
1949	118.1	91.2	129.5	77.2
1950	114.6	87.2	131.4	76.1

17/ Middle Eastern Area includes the following States: Kentucky, Maryland, North Carolina, Tennessee, Virginia, and West Virginia.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

i. Range Area 18/

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
1935	91.1	106.7	85.4	117.1
1936	96.1	109.2	88.0	113.6
1937	105.1	106.0	99.2	100.9
1938	105.1	101.4	103.6	96.5
1939	100.0	100.0	100.0	100.0
1940	107.8	95.7	112.6	88.8
1941	119.9	99.6	120.4	83.1
1942	122.8	99.3	123.7	80.9
1943	122.1	98.9	123.5	81.0
1944	121.3	96.4	125.8	79.5
1945	120.5	95.0	126.8	78.8
1946	119.2	95.0	125.5	79.7
1947	128.5	97.5	131.8	75.9
1948	130.4	97.5	133.7	74.8
1949	142.6	97.1	146.9	68.1
1950	129.4	93.9	137.8	72.6

18/ Range Area includes the following States: Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

j. Northwestern Area 19/

Year	Production	Employment	Output per worker	Workers per unit
1935	95.0	94.8	100.2	99.8
1936	95.0	96.4	98.5	101.5
1937	98.8	93.8	105.3	94.9
1938	100.9	95.8	105.3	94.9
1939	100.0	100.0	100.0	100.0
1940	103.5	98.4	105.2	95.1
1941	109.8	97.8	112.3	89.1
1942	112.0	99.1	113.0	88.5
1943	112.0	98.1	114.2	87.6
1944	115.3	98.4	117.2	85.3
1945	113.7	96.9	117.3	85.2
1946	116.6	98.7	118.1	84.6
1947	112.8	100.3	112.5	88.9
1948	112.8	98.4	114.6	87.2
1949	112.9	93.1	121.3	82.5
1950	114.7	90.3	127.0	78.7

19/ Northwestern Area includes the following States: Idaho, Oregon, and Washington.

INDEXES OF PRODUCTION, EMPLOYMENT, MAN-HOURS,
PRODUCTIVITY, AND UNIT LABOR REQUIREMENTS IN SELECTED INDUSTRIES Cont'd.
1939 = 100

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit

IV. AGRICULTURE Cont'd.

2. Agriculture by Areas Cont'd.

k. California

Year	Production	Employment	Output per worker	Unit Labor Requirements Workers per unit
1935	85.9	94.9	90.5	110.5
1936	88.0	95.2	92.4	108.2
1937	103.7	99.7	104.0	96.1
1938	97.2	99.4	97.8	102.3
1939	100.0	100.0	100.0	100.0
1940	101.9	97.0	105.1	95.2
1941	102.6	100.3	102.3	97.8
1942	103.9	103.7	100.2	99.8
1943	108.2	105.0	103.0	97.0
1944	113.8	105.4	108.0	92.6
1945	115.6	105.4	109.7	91.2
1946	125.3	105.7	118.5	84.4
1947	126.5	109.0	116.1	86.2
1948	126.1	110.0	114.6	87.2
1949	135.1	109.4	123.5	81.0
1950	132.7	104.7	126.7	78.9

T E C H N I C A L   N O T E S

GENERAL

The material in this publication is a summary of the statistics in the individual reports issued regularly by the Bureau's Branch of General Productivity Measurements of the Division of Productivity and Technological Developments. For more detailed statistics and information on the methods of computing these indexes, as well as for analyses of the factors causing the changes in productivity, see the individual industry reports.

In general the following procedures were used in compiling these series: The production indexes were computed by the Bureau of Labor Statistics from data furnished by other government and private agencies mentioned below. The production worker employment indexes are based on series compiled by the Division of Manpower and Employment Statistics of the Bureau of Labor Statistics. These production worker indexes are derived from a sample showing the percent change for identical establishments in overlapping two-month periods. They generally cover only production and related workers and exclude salaried officers, superintendents, other supervisory employees, and professional and technical employees. The man-hour indexes were computed from the employment indexes and the corresponding BLS series on average weekly hours. The production and employment indexes for the manufacturing industries have for the most part been adjusted to the levels indicated by the 1939 and 1947 Census of Manufactures. Any deviations from the above procedures are noted in the technical note for the respective industry.

The indexes of man-hours per unit and production workers per unit were obtained by dividing the indexes of man-hours and employment, respectively, by the appropriate production measure. Unless a statement to the contrary is made below, the data used to compute the indexes of man-hours and unit man-hour requirements include man-hours paid for but not worked -- vacations, call-ins, etc. It is not possible to eliminate from these indexes the effect of changes in the proportion such man-hours bear to total man-hours, but it is probable that the necessary adjustment would be small.

It is inappropriate to combine the indexes for the various manufacturing industries to obtain a series for "all manufacturing," since data for a number of basic industries are not now available.

Beet Sugar Industry (S.I.C. Industry No. 2063)

The indexes for the beet sugar industry are on a fiscal-year basis (March through February) in order to include a complete production cycle for each 12-month period.

Production

The sugar production index is compiled from data for the aggregate output of beet sugar, raw value, obtained from the monthly "Sugar Statistics" releases compiled by the Production and Marketing Administration of the United States Department of Agriculture from reports received from sugar beet processors. Molasses and beet pulp are excluded from the index. Their omission from the index is probably of little significance, since the production of beet sugar and of sugar byproducts is essentially a joint operation and the additional labor needed to process the byproducts is relatively small. The beets sliced index is based on a special series representing total tonnage sliced in each fiscal year. The series is derived from Production and Marketing Administration crop year data which have been adjusted to coincide with the sugar production series by transferring the crop from the Imperial Valley of California from the year in which it is planted to the year in which it is harvested.

Canning and Preserving Industries Group (S.I.C. Industry Nos. 2031, 2032, 2033 (Including canned poultry products from S.I.C. 2015), 2034, 2035, and 2037)

Production

For the production index the products of the various canning and preserving industries have been combined into two major components: (a) canned, preserved, and frozen fruits and vegetables and (b) canned and cured fish. The production index is an arithmetic mean, with 1939 man-hour weights, of the production indexes for the two components.

The index for canned, preserved, and frozen fruits and vegetables for 1939-50 is a weighted arithmetic mean of indexes for: (1) canned and dried fruits and vegetables; (2) preserves, jams, jellies, and fruit butters; (3) salad dressing; and (4) quick frozen fruits and vegetables. Weights used to combine the four series are 1939 employment as reported in the 1939 Census.

The production index for canned and dried fruits and vegetables for 1939-45 is based on the output of 36 canned fruits and vegetables, soups, and 6 dried fruits; for 1945-49 on 33 canned fruits and vegetables and 6 dried fruits. The 1950 figure is based on preliminary data for 32 canned fruits and vegetables and 6 dried fruits. The output of fruits and vegetables is measured in cases; production of dried fruits is measured in pounds. These quantities are weighted by estimates of 1939 unit values added by manufacture derived from the 1939 Census of Manufactures. Annual data were obtained from the United States Department of Agriculture, United States Department of Commerce, and the National Canners Association.

The production index for preserves, jams, and jellies is based on unweighted production data, measured in millions of cases, as reported in Western Canner and Packer magazine. The production index for salad dressing is an unweighted measure based on statistics on the number of gallons produced. The statistics were obtained from the United States Department of Commerce for the years 1939-49 and from Western Canner and Packer for 1950.

The index for quick frozen foods is based on the commercial pack of 23 products combined with 1944 unit-value-added weights. Production data (expressed in pounds) are from Western Canner and Packer and from figures published by the National Association of Frozen Food Packers.

For canned and cured fish the production index for the period 1939-49 was derived from production statistics of the Fish and Wildlife Service of the United States Department of Interior, for 8 canned seafood products (measured in standard cases) weighted with 1944 unit labor costs. For 1950, 7 products were used.

Cement Industry (S.I.C. Industry No. 3241)

Production

The production index for 1939-49 is based on four series, three representing successive stages in the production and shipment of portland cement -- production of portland cement clinker, production of finished portland cement, and shipment of portland cement -- and a fourth series for the output of finished masonry, natural and puzzolan cement. The 1950 production figure was estimated from data for portland

cement only. The three portland cement series were weighted by the estimated proportion of total labor consumed in the operation associated with each series -- production of clinker, including quarrying; clinker grinding; and bagging and loading cement.

Man-hours

The index of man-hours for 1939-49 is based on a series of Employment and Injuries in Mineral Industries published in the Minerals Yearbook. The Bureau of Mines preliminary estimate was used for 1950.

Adjustment to the 1947 Census

Statistics on production have not been adjusted to the levels shown in the 1939 and 1947 Census of Manufactures because the Bureau of the Census did not collect commodity statistics on cement in 1939. No adjustment was made in the labor data because the Census and Bureau of Mines series are not comparable. The Hydraulic Cement Industry, as defined in the Census, excludes quarries connected with cement mills, whereas the Bureau of Mines data, on which the BLS series is based, includes labor employed in quarries connected with cement plants.

Clay Construction Products Industries Group (S.I.C. Industry Nos. 3251 and 3254)

Production

The production index for the group is a harmonic mean of separate production indexes for the Brick and Hollow Structural Tile Industry and the Clay Sewer Pipe and Kindred Products Industry, weighted with current year man-hours. The index for the brick and hollow tile segment for 1939-46 is based on quantity statistics for 6 product classes, weighted with 1939 unit values. The product classes are unglazed brick, glazed brick, glazed hollow facing tile, unglazed hollow facing tile and vitrified paving brick, measured in thousands of units; and unglazed structural tile, measured in short tons. The index for 1947-50 excludes vitrified paving brick, for which data were not available, and glazed brick, production of which was virtually discontinued. Except for February 1941 — September 1942, the index was constructed from production data published by the Bureau of the Census in the Census of Manufactures, 1939; the Annual Census: 1940, Clay Products (Including Pottery and Porcelain Ware), Nonclay Refractories,

and Sand Fire Brick; and the monthly Facts for Industry
series, Clay Construction Products. For February 1941 -
September 1942, production was estimated from data on
monthly shipments and stocks published in the Current
Statistical Service by the Bureau of the Census for a
sample of identical plants in overlapping 2-month
intervals.

The index for the sewer pipe component is based
on unweighted production data for tonnage of sewer pipe
produced. The sources of data for sewer pipe for 1939,
1940, and 1943 through 1948 are the same as those for the
brick industry. The index for 1941 and 1942 was completed
by means of estimates furnished by the Department of
Commerce and the Civilian Production Administration.

Employment and Man-Hours

The indexes of employment and man-hours for the
group for years prior to 1947 are based on totals derived
from unpublished BLS series for the brick and the sewer
pipe industries. Adequate employment series for the
individual industries for the years between 1939 and 1947
are not available. Beginning with 1947, the employment
series for the group and for the two industries are the
regularly published BLS series.

Coke Industries Group (S.I.C. Industry Nos. 2931 and 2932)

Production

The production index for the coke group is a
harmonic mean, with changing man-hour weights, of the
production indexes for the Beehive Coke Ovens Industry
and the Byproduct Coke Ovens Industry.

The production measure for beehive coke for
1939-49 was derived from aggregates for the quantities
of coke produced and the coke equivalent of recovered
breeze. The production index for byproduct coke was
derived from aggregates for the quantities of coke
produced and the coke equivalents of recovered coke-oven
gas, tar, and light oil.

The man-hour weights and the production
statistics are based on data published by the Bureau of
Mines in its annual report on Coke-Oven Accidents in the

United States and in the Minerals Yearbook. Data for
1950 are preliminary estimates of the Bureau of Mines.

No adjustment to the Census of Manufactures
has been made for the product data, because commodity
statistics on coke were not collected by the Bureau of
Census for 1939.

Employment and Man-Hours

The employment indexes for the years 1939-49
for each industry and for the two industries combined
are based on data for man shifts published by the Bureau
of Mines. Data for 1950 are preliminary estimates of the
Bureau of Mines.

Condensed and Evaporated Milk Industry (S.I.C. Industry
No. 2023) 1/

Production

The production index 1939-50 is based on statis-
tics compiled by the Bureau of Agricultural Economics and
made available in the annual publication Production of
Manufactured Dairy Products. Unweighted indexes for the
aggregate poundage of 2 major groups of products -- liquid
products and dry products -- were combined with 1939 total
value weights derived from the Census of Manufactures.
These 2 categories encompass 16 classes of products shown
separately by BAE for 1939-42. Dry ice cream mix, a new
product first produced in significant quantities in 1943,
was added to the dry-products group beginning with 1943.

The annual production series for the condensed
and evaporated milk industry was adjusted to levels in-
dicated by the Census of Manufactures for 1939 and 1947.
The levels were based on indexes of quantities "made in
the industry" (i.e. Census Industry No. 2023 and Census
Industry No. 4023 less fluid milk distribution) of three

1/   The industry has been interpreted as including the milk concen-
trating departments of establishments engaged in the distribution of fluid
milk and cream, as well as establishments primarily engaged in manufactur-
ing concentrated milk products but not engaged in the distribution of
fluid milk and cream. The BLS industry, therefore, is similar to the 1939
Census industry rather than the 1947 Census industry.

groups of products -- (1) liquid products: canned and
bulk evaporated and condensed milk, (2) dried products
and (3) ice cream mix and ice milk mix -- each weighted
with 1939 total values. (Because a considerable amount
of condensed and evaporated milk is made in establish-
ments classified in other industries, in order to insure
greater comparability between the production, production
worker and man-hour series, only the quantity "made in
the industry" was used.)

     For the 1947 Census adjustment, the quantity
"made in the industry" was estimated as follows: (1)
For each of the three product groups, the percentage of
the value of product "made in the industry" to the
total "wherever made" was computed from published Census
figures. (2) These percentages were applied to the
group totals for quantity "wherever made." The "where-
ever made" quantity figures are those published in the
1947 Census of Manufactures with the exception of the
bulk products of the liquid group. For the bulk
products, Bureau of Agricultural Economics quantity
figures were used because the Census quantity data
contain duplication.

     For each of the three groups in 1939, produc-
tion in the industry was derived from data published in
the 1939 Census of Manufactures volume with the exception
of figures for the following constituent products which
were estimated from unpublished data furnished by the
Bureau of the Census: sweetened condensed milk case
goods, condensed and evaporated buttermilk, and concen-
trated skim milk for animal feed. Because data were not
available on the quantity of dried and powdered cream
"made in the industry," the "wherever made" figures were
used. Dry ice cream mix data for 1939 are available
only in terms of value. This product was classified in
the Special Dairy Products Industry in 1939; whereas in
1947, the product was reported in gallons and included
with liquid ice cream mix. An estimate of the 1939
production of dry ice cream mix (liquid equivalent) was
made by dividing the value of dry ice cream mix by the
1939 unit value per pound of liquid ice cream mix "made
in the industry" and applying a conversion factor of
9.1 pounds per gallon.

Employment

     The employment series is that regularly published
by the Bureau of Labor Statistics. The series was adjusted

to levels indicated by the 1939 and 1947 <u>Census of Manufactures</u> after adjusting the 1947 Census employment figures to make them comparable to those of the 1939 Census industry. The Condensed and Evaporated Milk Industry as published in the 1939 <u>Census of Manufactures</u>, included both condenseries which did not engage in the distribution of fluid milk and the condensery departments of establishments which engage in both the fluid milk and milk concentrating business. For the year 1947 the Census Bureau published employment figures for two concentrated milk industries -- Industry 2023, establishments primarily engaged in manufacturing concentrated milk products but not engaged in house-to-house distribution of fluid milk and cream; and Industry 4023, condenseries which engaged in house-to-house distribution in addition to manufacturing. The 1947 production worker estimate is based on the assumption that value per employee would be the same in condenseries which did not engage in fluid milk distribution (Census Industry 2023) and in concentrating departments of establishments which engaged in both the concentrated milk and fluid milk businesses (part of Census Industry 4023). To obtain a 1947 estimate for production workers comparable to the figure for the 1939 industry, the 1947 Census figure for value added by manufacture for establishments primarily engaged in manufacturing concentrated milk products, but not engaged in fluid milk distribution, plus the value added figure for the condensery departments of fluid milk distributors was divided by value added per employee for Census Industry 2023.

Confectionery Industry (S.I.C. Industry No. 2071)

Production

The annual production indexes are based on data published in the Bureau of Foreign and Domestic Commerce's annual report, <u>Confectionery Sales and Distribution</u>, on pounds of candy sold by groups of identical establishments in overlapping 2-year periods. The annual data were adjusted to exclude package goods, bar goods, etc., made by establishments classified as chocolate and cocoa products manufacturers. The sample,

however, does include solid chocolate bars and similar items (generally considered products of the Chocolate and Cocoa Products Industry) provided they are made by confectionery manufacturers. The products were grouped into 8 product classes, weighted with their respective average unit sales values (dollar per pound) in 1939, and combined into an aggregative chain index of the physical volume of sales. The product classes are: plain and fancy package goods; solid chocolate and chocolate covered bulk confectionery; other bulk confectionery; molded chocolate candy bars; chocolate covered candy bars; other candy bars; 5- and 10-cent packages; and penny goods. The index for 1950 is based on unweighted figures for total pounds of candy sold and is preliminary.

The annual production series was adjusted to levels indicated by the 1939 and 1947 Census of Manufactures for the above product classes, excluding solid chocolate bulk and bar goods. The product classes were weighted by their respective 1939 unit sales values. These classifications agree with those published in the 1947 Census of Manufactures. The product breakdown in the 1939 Census, however, was not comparable and it was necessary to distribute the total poundage reported to the Census in 1939 on the basis of the ratios shown in the annual report, Confectionery Sales and Distribution.

Flour and Other Grain-Mill Products Industry (S.I.C. Industry No. 2041)

Production

The production index is based on an unweighted series representing total consumption of wheat ground for regular flour and for granular flour.

Data are from the Bureau of the Census Facts for Industry series M16A, Flour Milling Products. The reported figures on wheat ground for regular flour have been adjusted to represent complete coverage by the Bureau of the Census in cooperation with the Department of Agriculture. Data on wheat ground for granular flour cover only the reporting mills, but since most granular flour has been produced in the larger mills which report to the Census regularly, the data may be

accepted as complete. Granular flour was made in sig-
nificant quantities only during the years 1943 through
1945. Although the production measure does not include
grains other than wheat, the proportion of wheat to all
grains has been extremely stable in the past. Therefore,
it can be assumed that the trend of wheat millings ade-
quately represents the trend for all millings.

Glass Containers Industry (S.I.C. Industry No. 3221)

Production

The production index for containers is based
upon the following 9 classes of products, combined with
1939 unit-value weights: narrow neck, food; wide mouth,
food; pressed food ware (includes packers' tumblers and
domestic fruit jars and jelly glasses); beverage bottles
(nonalcoholic pressure and nonpressure ware); beer
bottles (returnable and nonreturnable); liquors (includes
wines and cordials); medicinal and toiletry containers;
general purpose containers (chemical, household, and
industrial); and milk bottles. The production data for
containers for 1939-45 are from unpublished records
available at the Department of Commerce. Beginning with
1945, the data are from the Census Bureau Facts for
Industry series, Glass Containers. For the period 1944-
49, production data for 4 classes of products (narrow
neck, food; wide mouth, food; medicinal and toiletry; and
general purpose) were estimated from the total production
for the major classes "narrow neck, general use" and
"wide mouth, general use" and the distribution of shipments
among the classes of products included in these categories.
Beginning with 1950, the production data for 2 classes of
products (wide mouth, food; and pressed food ware) were
combined.

Employment and Man-Hours

The labor series were derived for 1939 and
1941-47 from a special tabulation of data available in
the Bureau of Labor Statistics and interpolated for 1940
by the use of the published series for the glass products
group which includes the tableware component. The labor
data for 1947-50 is that regularly published by BLS.

Hosiery Industries Group (S.I.C. Industry Nos. 2251 and 2252)

Production

The production index for total hosiery is a harmonic mean of production measures for full-fashioned and seamless hosiery weighted with current year man-hours in each industry. The production series for each of the two branches of the hosiery industry were adjusted to levels indicated by the Census of Manufactures, 1939 and 1947.

The production index for full-fashioned hosiery is based on the unweighted aggregate output of women's full-fashioned hose. No account was taken of, nor was adjustment made for, changes in the materials used or changes in the construction of full-fashioned hosiery, such as variations in the weight of yarns used or the number of threads per inch.

The index of production for the seamless industry was derived from production data for four product groups weighted with estimates of labor cost per unit in 1944. The four product groups included in the production measure are: women's seamless (including misses' ribbed hose); cotton and woolen bundle goods; men's socks (including men's seamless half-hose, slack socks, crew socks, and athletic socks); anklets, and children's and infants' socks, and hose (including men's, women's, children's, infants' anklets; women's slack and crew socks; boys', misses', and children's seamless hose, slack socks and crew socks; and infants' seamless hose and anklets). The weights were obtained from unpublished data of the Office of Price Administration on total labor cost (direct and indirect) per pair in a sample of companies manufacturing cotton seamless hosiery.

Production data for both full-fashioned and seamless hosiery were obtained for the years 1939-50 from annual reports compiled and published by the National Association of Hosiery Manufactures. The Association statistics are based on reports received from mills representing approximately 80 percent of the industry; the data for the remainder are estimated by the Association.

Employment and Man-Hours

The production worker employment index for total hosiery is based on the currently published series of the Bureau of Labor Statistics adjusted to levels indicated by the Census of Manufactures in 1939 and 1947.

Production worker employment for full-fashioned hosiery and seamless hosiery was estimated from the Bureau's adjusted employment total for both industries and the percentage of employment in each branch as shown by statistics of the National Association of Hosiery Manufacturers in Condensed Hosiery Statistics.

The man-hour indexes were computed from the employment series and the BLS figures on average weekly hours. Average weekly hours data are available for total hosiery in all years, but for individual industries these data are not available for the years 1940 and 1941.

Ice Cream Industry 2/

Production

The production index for 1939-50 is an un-weighted measure based on total gallons of ice cream and sherbet produced at wholesale. The index for 1950 is a preliminary estimate. The production data are compiled by the Bureau of Agricultural Economics and published annually in Manufactured Dairy Products. For wholesale and retail ice cream production BAE publishes data separately, but shows only the total for sherbet production. Sherbet produced at wholesale was estimated on the assumption that the proportion so produced was the same as for ice cream.

2/ The ice cream industry as defined here conforms with the 1939 Census of Manufactures definition for the ice cream industry which included establishments primarily engaged in the manufacture of ice cream, ices, and other frozen desserts including the ice cream manufacturing facilities of establishments engaged in the distribution of fluid milk and cream. (The 1939 Census industry did not include employees assigned by these establishments to the distribution of fluid milk.) In contrast the definition used in the 1947 Census and SIC Industry Number 2024 excludes the ice cream made by establishments engaged in fluid milk and cream distribution and the employees assigned by these establishments to the manufacture of ice cream.

The annual production series was adjusted to
levels indicated, by the 1939 and 1947 Census of Manu-
factures, for ice cream "made in the industry." The
quantity "made in the industry" in 1947 was estimated
by dividing the total value of ice cream made by
establishments which were primarily ice cream producers,
but were not engaged in fluid milk distribution (i.e.
Industry 2024), and the value of ice cream made by
fluid milk distributors (Census Industry 4024) by the
average unit value (per gallon) of ice cream made in all
industries.

Employment

The production worker index regularly published
by the Bureau of Labor Statistics is used as an indicator
of year-to-year trends in employment. The BLS production
worker indexes are usually adjusted to the levels of pro-
duction worker employment indicated by the 1939 and 1947
Census of Manufactures. The production worker figures in
the two Censuses, however, are not entirely comparable
for the Ice Cream Industry due to some differences in the
reporting of distribution workers to the Census. For
ice cream, therefore, it was necessary to use Census
figures for total employees in order to adjust the BLS
production worker index for trend between 1939 and 1947.
The use of Census total employee figures to adjust the
BLS production worker trend from 1939 to 1947 has the
effect of assuming that the ratio of production workers
to all other employees did not change between 1939 and
1947.

The Census Bureau did not publish comparable
figures for total employees in 1939 and 1947 because of
changes in the industry definition caused by the reclassi-
fication of establishments engaged in both the production
of ice cream and the distribution of fluid milk and cream.
The "total employee" figures, therefore, had to be
estimated from the Census data as follows: The 1939
employment level is based on the figure published in the
1939 Census of Manufactures volume less 306 employees.
This adjustment was made to exclude 268 production workers
and an estimated 38 nonproduction workers employed by
establishments that were primarily retail ice cream stores.
The 1947 "total employee" estimate is based on the assump-
tion that value added per employee would be the same in
both establishments primarily engaged in ice cream

production, but not in fluid milk distribution (S.I.C. Industry 2024), and in the ice cream manufacturing departments of fluid milk distributors. The published Census figure for value added by manufacturer for establishments primarily engaged in manufacturing ice cream but not engaged in milk distribution plus the value-added figure for the ice cream departments of fluid milk distributors was divided by value added per employee for Industry 2024 to arrive at the 1947 estimate of total employees.

Malt Liquors Industry (S.I.C. Industry No. 2082)

Production

The production index is based on the production (measured in barrels) of two types of fermented malt liquor packs -- case goods, and barrels and kegs -- combined with 1947 unit value weights derived from the Census of Manufactures. The data are taken from Annual Reports of the Commissioner of Internal Revenue. The Bureau of Internal Revenue publishes only a total figure for production but gives separate figures for "tax paid withdrawals" of malt liquors in bottles and cans and in barrels and kegs. The production total is prorated on the assumption that the ratio of each class to the total is the same for total production as for tax paid withdrawals. For the years 1939-49, tax paid withdrawals covered between 93 and 96 percent of total production.

Employment

The production worker index regularly published by the Bureau of Labor Statistics is used as an indicator for year-to-year trends in employment. The BLS production worker indexes are usually adjusted to the levels of production worker employment as indicated in the 1939 and 1947 Census of Manufactures. The production worker figures in the two censuses, however, are not entirely comparable due to differences in the method of reporting distribution workers to the Census. For malt liquors, therefore, it was necessary to use Census figures for total employees to adjust the BLS production worker index for trend between 1939 and

and 1947. The use of Census total employee figures to adjust the BLS production worker series has the effect of assuming that the ratio of production workers to all other employees did not change between 1939 and 1947. To the extent that the proportion of production to nonproduction workers has increased (for example as a result of the transfer of some of the distribution functions from the breweries to distributors), the trend of output per employee is overstated.

Paper and Pulp Industry (S.I.C. Industry Nos. 2611, 2612, and 2613)

Production

The production index is an arithmetic mean of the indexes for 2 components -- (a) pulp and (b) paper and paperboard -- weighted with 1939 relative man-hours for each industry. The indexes are based on data published in the Census Bureau Facts for Industry series and the Census of Manufactures.

The pulp production index is composed of 6 classes of wood pulp -- mechanical, unbleached sulfite; bleached sulfite; unbleached sulfate; bleached sulfate; and soda -- weighted with relative man-hours per ton in 1935. The weights were computed by the National Research Project of the Works Progress Administration.

The paper and paperboard production index includes 6 classes of paper -- book paper, writing paper, newsprint and similar papers, tissue, wrapping paper, and paperboard -- weighted with relative man-hours per ton. Labor requirements for book paper, writing paper, newsprint and tissue paper, for unspecified dates in the early 1930's, were presented by J. P. Hagenauer in "Labor Cost of Production in the Paper and Pulp Industry," Paper Trade Journal, April 25, 1935, page 36. The requirement for wrapping paper is an average, weighted by 1929 production, of figures for Southern States from Hagenauer and for Northern States from C. W. Boyce, "Labor Costs and Value of Paper Produced," Paper Mill and Wood Pulp News, February 23, 1935, page 45. The requirement for paperboard is the average of monthly figures for 1935 supplied by the National Paperboard Association.

The production indexes for each component were
adjusted separately to levels indicated by the 1939 and
1947 Census of Manufactures. The Census adjustment for
pulp was based on Census data for 8 classes of pulp (the
6 given above plus 2 miscellaneous classes) weighted
with relative man-hour weights. The Census adjustment
for paper was based on the 7 classes of paper (the 6
given above and building paper) weighted with the relative
man-hour weights mentioned above.

Primary Smelting and Refining of Nonferrous Metals Group (Copper, Lead, and Zinc) (S.I.C. Industry Nos. 3331, 3332, and 3333)

Production

The production index for 1939-50 is based
on Bureau of Mines output statistics combined with
1939 unit-value-added weights. The weights were
derived from the Census of Mineral Industries and
Bureau of Mines data by subtracting estimates of before-
processing value per unit from the respective final
average price per unit. For the years 1939-49, the index
is based on production at copper, lead, and zinc
primary smelters and refineries, of the following
product classes: primary copper (smelter and
refinery production are treated separately), secondary
refined primary lead, antimonial lead, secondary lead,
primary zinc, redistilled secondary zinc, nickel, gold
from ore, gold from concentrates, silver from ore,
silver from concentrates, sulfuric acid from blend,
sulfuric acid from sulfur, sulfuric acid from copper
smelters, copper sulfate, and cadmium. The 1950 index
is based on preliminary figures for primary refined
copper, secondary copper, refined primary lead,
antimonial lead, primary zinc, and secondary redistilled
zinc. The production index was not adjusted to the
levels of the 1939 and 1947 Census of Manufactures,
since the Census did not compile detailed production
data in 1939.

Employment and Man-Hours

The employment and man-hours series are based
on unpublished Bureau of Labor Statistics data for
primary smelting and refining of copper, lead, and zinc,

for the years prior to 1947. The data for 1947-50 are
those regularly published by BLS.

Rayon and Other Synthetic Fibers Industry (S.I.C. Industry No. 2825)

Production

The production index comprises two segments.
The 1939-40 segment reflects the trend for rayon
output alone, the 1940-50 segment is a harmonic mean of
separate production indexes for rayon and nylon, weighted
with estimates of total man-hours required for each
product class in each year. The index for the rayon
component was constructed from production data for 5
denier groups of acetate yarn (87 denier and less, 88-112
denier, 113-137 denier, 138-162 denier, 163 denier and
over); for 7 denier groups of viscose and cuprammonium
(the first 4 denier groups listed for the acetate yarns
plus yarns of 163-374 denier, 375-999 denier, and 1000
denier and over); and rayon staple fiber. Each group
was weighted with 1939 values. The production data for
rayon are compiled by the Textile Economics Bureau Inc.
and published in Rayon Organon. The nylon production
index is prepared from confidential data for total
nylon yarn and staple fiber production.

Tobacco Products Industries Group (S.I.C. Industry Nos. 2111, 2121, and 2131)

Production

The production index for the group is a
harmonic mean of separate production indexes for the
three major products -- (1) cigars, (2) cigarettes,
and (3) chewing and smoking tobacco and snuff. The
separate indexes were weighted with estimates of
current year man-hours devoted to the manufacture of
each product.

The three component production indexes are
based on unweighted series for the aggregate output of the
following types of production (1) large cigars, including
large cigars made in bonded warehouses; (2) large and

small cigarettes; and (3) chewing tobacco, smoking tobacco, and snuff. The production data were obtained for the years 1939-49 from the annual reports of the Commissioner of Internal Revenue. Preliminary data for 1950 were obtained from the Bureau of Internal Revenue.

The current-year man-hour weights used in combining the three production indexes were derived as follows: man-hours for establishments classified in each of the three industries were obtained from the BLS series for employment and average weekly hours. The man-hour series for the Cigars Industry was used as weights for the cigar production index, since cigars account for virtually the entire output of establishments classified in the Cigars Industry. The man-hours figure for the Cigarettes Industry had to be redistributed between "cigarettes" and "chewing and smoking tobacco and snuff," since a considerable quantity of chewing and smoking tobacco is made in the Cigarettes Industry. To estimate total man-hours involved in the manufacture of chewing and smoking tobacco and snuff, it was assumed that the value of chewing and smoking tobacco and snuff produced per man-hour was the same for that part of the output made in the Cigarettes Industry as for the output made in the home industry. On the basis of 1939 and 1947 Census of Manufactures data, the ratio of the value of chewing tobacco, etc., made in the Cigarettes Industry to that made in the Chewing and Smoking Tobacco and Snuff Industry was computed for the two Census years. The ratios were applied to the respective BLS aggregates for man-hours in the Cigarettes Industry to derive an estimate of man-hours devoted by the Cigarettes Industry to the manufacture of chewing and smoking tobacco and snuff. These estimates were subtracted from the BLS aggregates for man-hours in the Cigarettes Industry and added to the BLS aggregates for man-hours in the Chewing and Smoking Tobacco and Snuff Industry. For other years, no information was available on either the quantity or the value of chewing and smoking tobacco and snuff made in the Cigarettes Industry. Ratios for intercensal years were arrived at by interpolating the differences between the 1939 and 1947 ratios. For years after 1947, it was assumed that the proportion of chewing tobacco (in terms of value) made in the Cigarettes

Industry remained the same as 1947, and thus that the
man-hours devoted to chewing tobacco production in the
Cigarettes Industry remained a constant proportion of
total man-hours expended in the manufacture of chewing
and smoking tobacco and snuff. The estimates of man-
hours devoted to each product are considered adequate
for use as weights, but may not be sufficiently
reliable for the derivation of separate measures of
output per man-hour for cigarettes and for chewing and
smoking tobacco and snuff.

MINING

Mining Industries Group

The indexes beginning with 1935 cover the
activities of 6 of the Nation's principal mining
activities, which together employ between 85 and 90
percent of all production workers in the mining group
of industries. The activities included cover the
mining of: bituminous coal; anthracite; copper; iron;
lead and zinc; and the extraction of crude petroleum,
natural gas, and natural gasoline. Indexes for 5 of
the 6 activities are shown separately. The series for
crude petroleum, natural gas, and natural gasoline
were not considered suitable for separate publication.
The production index for this series was prepared from
production data of the Bureau of Mines for annual out-
put of crude petroleum, natural gas, and natural
gasoline, liquefied petroleum gases, and other products
(condensate kerosine, "special naptha," distillate fuel
oil, etc.), weighted with estimated unit man-hour re-
quirements in 1939.

The series for 1915-35 represent almost all
mining industries. They are based on an index prepared
by the National Research Project of the Works Progress
Administration. 3/ The NRP indexes, computed on the
base 1929 = 100, have been linked to the BLS series.

3/   Production, Employment and Productivity in the Mineral Extractive
Industries, 1880-1938, Vivian G. Spencer, National Research Project of
the Works Progress Administration, June 1940.

Production

The production index for the mining group for 1935 to date, is a harmonic mean of the production indexes for the 6 component segments weighted with current-year man-hours. The index of usable ore was used to represent iron mining. The recoverable metal indexes, rather than those based on ore, were used for the nonferrous mines in constructing the group index.

Employment

The employment index for the years 1939 to date is based on totals for the 6 component activities. The 5 series for coal and ore mining were obtained from BLS data. The totals for the crude petroleum, natural gas, and natural gasoline series are based on data from the Census of Mineral Industries for 1939, Bureau of Mines for 1940-41, and BLS for 1942 to date. The 1939 figure for regular producers and contractors was adjusted for undercoverage and the figures for other years for regular producers were adjusted to include estimates for workers employed by contractors performing oil and gas field services.

Man-Hours

The man-hours index for the years 1935 to date is based on totals for the 6 component activities. For a description of the methods used in the construction of the 5 series for coal and ore mining see the technical notes for the individual industries. The series for crude petroleum, natural gas, and gasoline covers both regular producers and contractors performing gas and oil field services. The man-hour figures for 1939 were obtained by adjusting for undercoverage the Census of Mineral Industries data for both regular producers and contractors. Man-hours data for regular producers for 1935 are based on an estimate of average annual hours and employment figures from the 1935 Census of Business; for 1936-38 and 1940-41, from Bureau of Mines data; and for 1942 to date, from BLS employment and BLS average weekly hours. The man-hours for contract workers for 1935 are a NRP estimate; for 1936-38, estimates of man-hours per well drilled were obtained by interpolation from 1935 and 1939 data, and these estimates were applied to Bureau of Mines annual data on number of wells drilled; for 1942

to date, 1939 man-hours per well drilled were applied
to Bureau of Mines annual data on number of wells.

Anthracite Industry (S.I.C. Industry No. 1111)

The anthracite mining industry includes the
mining of all nonbituminous coal in Pennsylvania, and
coverage conforms to the Census of Mineral Industries
definition. Following the general practice, the
mining of semianthracite in Sullivan County is grouped
with anthracite mining. Operations include mining
and such further preparation (sizing, washing, screen-
ing, etc.) as is necessary to produce a marketable
product. Included under mining are underground and
strip operations, working of culm banks, and dredging
of river coal.

Production

The production index is based on Bureau of
Mines data for the number of tons of marketable coal
produced, adjusted for 1941-50 to exclude "bootleg"
coal sold to legitimate operators under an arrange-
ment made early in 1941. "Bootleg" coal, except
that sold to legitimate producers, has been excluded
from the annual production figures published by the
Bureau of Mines and is excluded from the production
index. Total production of "bootleg" coal ranged
from 6,300,000 tons in 1941 to 1,026,000 tons in 1945.
Small tonnages of "slush" -- i.e., settlings from water
used in cleaning anthracite -- have also been excluded
by the Bureau of Mines from the production of market-
able coal.

Anthracite constituted 99.9 percent of the
total value of products of the industry in 1939,
according to the Census of Mineral Industries. Pro-
duction reported by the Bureau of Mines fell short of
the Census of Mineral Industries total by about 0.7
percent.

Employment

The employment index is composed of two
segments linked in 1939. The indexes for 1935-39 are

the BLS series adjusted to levels indicated by reports
of the Bureau of the Census for 1935 and 1939. The
indexes for the years 1939-50 are the regularly pub-
lished BLS series, based on a sample showing the per-
cent change for identical establishments in overlapping
2-month periods.

The employment definition adopted -- average
number of production workers employed during the 12
months of the year, including inactive periods -- is
that used by the United States Bureau of the Census.
Since anthracite mining ordinarily is characterized
by intermittent operation, other employment concepts
such as the average number of workers employed on
active days are also significant.

Man-Hours

The index of man-hours is derived from the
employment series and the BLS series for average weekly
hours. The index, based on operations for the first
2-week period in each month, has been adjusted to
represent more adequately the entire year in 1943, 1945,
1946, and 1949, when major strikes occurred. The man-
hour index for months in which strikes occurred has been
adjusted by the ratio of production for the entire month
to estimated production for the month at the rate
attained during the first 2 weeks.

Bituminous Coal and Lignite Industries (S.I.C. Industry Nos. 1211 and 1212)

The two industries, bituminous coal and
lignite, as reported in the 1939 Census of Mineral
Industries, are included. The combination covers the
mining of bituminous coal and lignite, and of semi-
anthracite and anthracite outside of Pennsylvania.
Operations performed in the two industries include the
mining of the coal, and the cleaning, washing, and
sizing necessary to produce a marketable product.

Production

The production index is based on total tonnages
of bituminous coal and lignite, and of semianthracite

and anthracite mined outside of Pennsylvania. Production data have been taken from the reports of the Bureau of Mines on the number of short tons of marketable coal produced by mines having an annual output of 1,000 tons or more. Included in the production total is coal loaded at the mine for shipment by rail or water, shipped by truck or wagon, taken by locomotive tenders at the tipple, shipped by conveyor to point of consumption, used by mine employees, used at the mine for power and heat, and made into beehive coke at the mine. Data for Alaska are excluded.

Products included in the index represented 99.6 percent of the total value of products of the industry as reported by the Census of Mineral Industries for 1939. Production reported by the Bureau of Mines for 1939 exceeded that reported by the Census of Mineral Industries by less than 0.04 percent.

Employment

The employment index is made up of two segments -- 1935-39 and 1939-50. For 1935-39 the index compiled by the BLS has been adjusted to the levels indicated by reports of the Bureau of the Census for 1935 and 1939. The index series for 1939-50 is that regularly published by the BLS and is based on a sample showing the percent change for identical establishments in overlapping 2-month periods. The series covers only production and related workers and excludes salaried officers, superintendents, other supervisory employees, and professional and technical employees. The employment definition adopted by BLS -- average number of production workers employed during the 12 months of the year, including inactive periods -- is that used by the United States Bureau of the Census in the 1939 Census of Mineral Industries.

The BLS employment series for bituminous coal will not necessarily fluctuate in close accord with employment series compiled by the Bureau of Mines. Employment reported by the Bureau of Mines relates to the number of production workers, plus some supervisory and technical personnel, employed on active days. Employment totals reported by the Accident Statistics Division of the Bureau of Mines are annual averages derived essentially from total

man-hours reported, average hours per shift, and the number of active days reported. Employment reported by the Coal Economics Division of the Bureau of Mines is the average number of workers reported for active days during the year. Since bituminous coal mining is ordinarily intermittent, the employment concept used by the U. S. Bureau of Mines of average number of workers employed on active days is also useful for some purposes.

Man-Hours

The index of man-hours is derived from the BLS employment series and the BLS reports of average weekly hours. The weekly hours figures reported for December 1943 and for 1944-49 have been adjusted to exclude travel time, which is paid for under wage agreements (beginning with the agreement reached in November 1943). The data reported to the BLS for employment, and average weekly hours in coal mining are generally based on operations during the first 2 weeks of each month and ordinarily are typical of the entire month's activities. When major shutdowns occur, however, the 2-week statistics do not adequately represent the labor time for the entire month. Therefore, adjustments have been made in the reported figures for months in which major work stoppages occurred, for 1939 and later years. Man-hour data for individual months were adjusted by the ratio of reported production for the month to estimated production at the rate attained during the first 2 weeks.

The BLS index of man-hours may diverge somewhat from indexes derived from Bureau of Mines data, in part, because of differences in the employment series and, in part, because of differences in method of derivation. Man-hours reported by the Accident Statistics Division of the Bureau of Mines are totals reported for the year by individual mines. Man-hours may be derived from statistics of the Coal Economics Division of the Bureau of Mines by multiplying average employment on active days by the number of days the mines and tipples were active to obtain total man-days worked, and multiplying the man-days total by the number of hours in the weighted average established work shift. The results are necessarily approximate,

but have been used for some purposes. Some variations
in man-hour totals may arise because of differences in
adjustment for travel time in the BLS series and in the
Bureau of Mines data.

Copper Ores Mining Industry (S.I.C. Industry No. 1021)

The copper mining industry includes the mining
of ores containing 2.5 percent or more copper and the
mining of ores with lower copper content, if valued
chiefly for copper. Operations include the mining and
milling of ores, milling of old tailings, leaching of
copper ores, and recovery of copper in mine water
precipitates. The Bureau of Labor Statistics' industry
definition corresponds with the copper ore industry
reported by the Census of Mineral Industries for 1939,
which included "mines and mills in the United States
producing ores and concentrates valued chiefly for
their copper content."

Production

Two production indexes are shown. The first
series, for recoverable metal, is based on Bureau of
Mines data for copper recovered from "ore, old tailings,
etc., sold or treated" and from mine water precipitates.
The second production index is based on the total
tonnage of ore mined (including old tailings), sold, or
treated.

Employment

The employment index, which is available only
for the years since 1939, is that regularly published
by the BLS.

Man-Hours

The index of man-hours includes two segments.
The first, for 1935-39, was derived from data published
by the Bureau of Mines in its accident bulletins; the
second, for 1939-50, has been computed from the employ-
ment index and BLS figures for average weekly hours.
The Bureau of Mines figures exclude, and the BLS figures

include, labor in ore preparation plants.

Iron Ores Mining Industry (S.I.C. Industry No. 1011)

The iron mining industry is defined to
include both open-pit and underground extraction of
all iron ore, with the exception of ore containing
5 percent or more manganese. This industry defini-
tion corresponds to the iron ore industry reported
by the Census of Mineral Industries, except that
the Census industry includes the mining of iron ore
containing 5 percent or more manganese. Operations
performed in the industry relate to the mining of
crude ore and the beneficiation necessary to
produce a marketable product.

Production

Two production indexes are presented. They
are based, respectively, on total tonnages of usable
iron ore and tonnages of crude ore, containing less
than 5 percent manganese, produced in each calendar
year. Production data have been taken from Bureau
of Mines reports on the number of gross tons of ore
produced by all iron mines and include all known
production. The usable ore is produced with the
desired iron content (by selective mining, mixture
of ores, washing, jigging, concentrating, sintering,
etc.) at or near the mine as a part of the mining
process. An index based on iron recovered would
follow substantially the same trend as the usable
ore indexes. Products included in the indexes
represented 99.9 percent of the total value of
products reported by the Census of Mineral Industries
for 1939. Usable iron ore produced in 1939, as
reported by the Bureau of Mines, exceeded the Census
tonnage by less than 1.7 percent.

Employment

The employment index, available only for
1939 and later years, is the series regularly pub-
lished by the BLS.

Man-Hours

The index of man-hours includes two segments. The first, for 1935-39, has been derived from data collected by the Bureau of Mines; the second, for 1939-50, has been derived from the employment index and BLS figures for average weekly hours. Although the production data exclude the output of iron ore containing 5 percent or more manganese, the labor used to produce this ore is included in the employment and man-hour data. Inclusion of manganiferous ore in the production index would change the output per man-hour index less than one-half of one percent.

Lead and Zinc Ores Mining Industries (S.I.C. Industry Nos. 1032, 1033 and 1034)

The Bureau of Labor Statistics' lead and zinc mining industry classification includes the mining of ores valued chiefly for their lead and zinc content and corresponds with the lead and zinc ores industry as reported by the Census of Mineral Industries for 1939. Operations performed in the industry include the mining and milling of lead and zinc ores, and also the recovery of lead and zinc concentrates from old tailings in the Tri-State region.

Production

Two production indexes are shown. The series for recoverable metal (representing the output of the end product of the industry) is based on the aggregate output of recoverable lead and zinc (including lead made into pigments and zinc recovered as zinc pigments and salts directly from ore). These production statistics include the recoverable metal content of ores in all sections of the country and of old tailings concentrated in the Central States. Metal recovered incidentally, other than lead and zinc, (which is of some importance in the Western States) is excluded in order to make the production measure comparable with the labor figures. The quantities of lead and zinc recovered from ores processed by the industry are

weighted with average prices in 1939, the base year.

The second production index is based on the total tonnage of ore mined and old tailings concentrated in the Central States. All production data are based on statistics collected by the Bureau of Mines.

Employment

The employment index is that regularly published by the BLS.

Man-Hours

The index of man-hours comprises three segments. The first, for 1935-36, was obtained from data published by the W.P.A. National Research Project; these data are based on a special tabulation of Bureau of Mines figures. The second, for 1936-39, was derived from a similar but less comprehensive tabulation of statistics of the Bureau of Mines, and from published figures of the Bureau of Mines for man-hours in the Central States. The last segment, for 1939-50, was obtained from the employment index and BLS figures for average weekly hours. The Bureau of Mines figures exclude, and the BLS figures include, labor in ore preparation plants.

PUBLIC UTILITIES

Electric Light and Power Industry (S.I.C. Industry No. 4911 and the electricity generation and distribution part of 4931)

Production

The production index represents kilowatt-hour sales by the private utilities to ultimate consumers. The source of production statistics for 1917, 1922, 1927, 1932, and 1937 was the quinquennial Census of Electrical Industries. Minor adjustments were made in census data to account for changes in classification

and reporting. For the intervening years, 1917 to
1937, interpolations were made by means of statistics
on electricity generated by privately owned utilities,
as reported by the Federal Power Commission. The
index was continued after 1937 by use of data for
energy sold by class A and B utilities to all customers
except electric utilities, as published by the Federal
Power Commission. The class A and B utilities make
up all but a very small proportion of the electric
utility industry.

Employment

The employment index for the years 1917, 1922,
and 1927 is based on statistics from the Census of
Electrical Industries. Interpolations for some of the
intercensal years in this period were made by use of
a series on employment in private electric companies
published by the Edison Electric Institute. For some
years, no adequate basis of estimation was available.
For the period since 1929, employment is represented
by the BLS index for the electric light and power
industry, which is essentially comparable with the
Census figures. All wage and salary employees are
included except main executives and the employees of
appliance sales departments. Construction workers
are included when their wages are paid out of regular
company payrolls. The BLS index is based on a sample
which gives high coverage (approximately 90 percent
in recent years) of the privately owned electric
industry. The inclusion of some employees of gas-
manufacturing or distributing departments of companies
deriving most of their revenue from sales of electri-
city was necessary where separate reports were un-
obtainable, but probably does not affect the index
materially.

Man-Hours

The index of man-hours was derived from the
employment index and a series representing average
weekly hours of wage earners. For the period since
1932, the BLS series on average weekly hours in the
electric light and power industry was used. Data on
average weekly hours for the years 1917-31 were
obtained from a study published by the W.P.A. National

Research Project. This series is based on data obtained for one
or two months in each year by the National Industrial Conference
Board, with adjustments and interpolations made to place the
series on an annual basis and provide figures for missing years.
The series was linked in 1932 to the BLS hours series for the
later years.

Line-Haul Operating Railroads Industry (S.I.C. Industry No. 4011)

All the indexes are based on data published by the
Interstate Commerce Commission for railroads classified by the
ICC as Class I steam line-haul railroads. (The term "steam
railroad" covers railroads using diesel-electric and electric
locomotives as well as those using steam. "Line-haul railroads"
do not include switching and terminal companies.) During the
period covered, these railroads accounted for at least 98 percent
of the freight and passenger traffic and at least 94 percent of
the total employment of all steam railroads, including switching
and terminal companies.

The indexes on pages 28 and 29 (All Hourly Basis
Employees) refer to total traffic and all hourly basis employees.
The index of total revenue traffic represents aggregate passenger-
miles and freight ton-miles, each category being weighted by
respective average unit revenues in the base year 1939. The
index of car-miles is derived from unweighted aggregate car-miles,
both freight and passenger. The index of employment refers to
all hourly basis employees and thus excludes executive, pro-
fessional, and main supervisory employees. The man-hour index
is comparable in scope with the employment index and represents
the total of straight time actually worked, all overtime paid
for, and constructive-allowance hours of train and engine employees.

On pages 30 and 31 (Road Freight Employees), the indexes
of employment and man-hours represent engineers, motormen, firemen
and helpers, conductors, brakemen, and flagmen attached to road
freight service. On pages 32 and 33 (Road Passenger Employees),
the corresponding passenger service groups are represented, and,
in addition, ticket collectors and baggagemen. Since the employ-
ment and man-hour indexes are restricted to the occupations most
directly associated with each type of service, the two tables
permit a comparison of the trends for freight and passenger
service. In both tables, the man-hour indexes include all
straight time actually worked, all overtime paid for, and construc-
tive-allowance hours of the respective groups of employees.

Telegraph Industry (S.I.C. Industry No. 4821)

The indexes presented for the telegraph industry refer to the operations of the principal wire-telegraph and ocean cable carriers. The companies accounted for 97 percent of the total number of messages reported for land and ocean telegraph systems in the Census of Electrical Industries in 1937. The indexes for 1935-41 were derived from statistics for those carriers which filed annual reports with the Federal Communications Commission in 1941, and for 1942-50 from statistics for those carriers which filed annual reports with FCC in the respective years. The data were obtained from the annual FCC report, Statistics of the Communications Industry in the United States.

Production

The production index is based on FCC series for: (1) number of domestic messages, land-line companies; (2) number of foreign messages, land-line companies; (3) number of domestic messages, ocean-cable companies; and (4) number of foreign messages, ocean-cable. Each series was weighted by the corresponding unit revenue in 1939.

Employment

The employment index is based on FCC data on number of employees, of all classes, in service at the end of selected months (for 1935-43, average of June and December; for 1944 and 1945 average of June and October; for 1946 to 1950, October), adjusted to represent annual averages by the use of ratios derived from BLS employment data. The adjustment ratios for 1947-50 are not strictly comparable with those for prior years because they reflect the inclusion of a small number of radio-telegraph employees but exclude employees compensated on a commission basis, divisional headquarters personnel, trainees in schools, and messengers.

Telephone Industry (S.I.C. Industry No. 4811)

The indexes for the telephone industry refer to Class A telephone carriers. These companies accounted for 90 percent of the total number of calls reported in the Census of Electrical Industries for 1937. The indexes were derived for 1935-41 from statistics for those carriers which filed annual reports with FCC in 1941 and for 1942-50 from statistics for those carriers which filed reports with the FCC in the respective years. The

statistics were obtained from the annual FCC report, Statistics
of the Communications Industry in the United States. The
indexes for 1949 and 1950 are based on unpublished FCC data.

Production

The production index is based on the weighted aggregate
of the average number of local and toll calls originated per
month. The weights represent average revenue per local call and
per toll call in 1939. In 1947 most of the companies filed
reports with the FCC covering only 10 months (the months of April
and May were omitted owing to a work stoppage) and the 1947
averages, therefore, are on a 10-month basis.

Employment

The employment index is based on FCC data for all
classes of employees. Averages of the number of employees in
service at the end of selected months in each year (for 1935-42,
June and December; for 1943 and 1945-48, June and October; for
1944 and 1949, April and October; and for 1950 October) were
adjusted to represent annual averages by the use of ratios
derived from BLS employment data. For 1947-50 these ratios
reflect a small number of radio-telephone employees included in
the BLS employment data and are not strictly comparable with
prior years. In adjusting the 1947 monthly average, BLS data
for only 10 months were used, data for April and May being
omitted to make the employment indexes more nearly comparable
with the production index.

Man-Hours

The index of man-hours was derived from the employment
measure and a series for average weekly hours. The weekly hours
series was obtained from BLS data for the telephone and telegraph
industries combined for 1935-39, for the telephone industry
alone for 1939-46, and the telephone industry including radio-
telephone employees for 1947-50. The man-hour index for 1947
was revised on a 10-month basis, April and May excluded, to
make it more nearly comparable with the production series. For
the period 1945 through June 1949, the hours data reflect
mainly the hours worked by employees subject to the Fair Labor
Standards Act; beginning with July 1949, the hours are that of
nonsupervisory employees.

AGRICULTURE

Production

The BLS national production index beginning with 1935 is based on statistics for 73 products -- 8 types of livestock products and 65 crops -- which in 1939 accounted for about 95 percent of total cash farm income. Because a number of products were represented by more than 1 series, 90 separate production series were incorporated into the index. The production figures beginning with 1935 were obtained from releases and unpublished records of the Bureau of Agricultural Economics of the United States Department of Agriculture. The statistics for 1950 are preliminary.

The production statistics for livestock and their products refer to calendar years. The production of meat animals is estimated by the Bureau of Agricultural Economics "by deducting the weights of animals shipped into each State from the weight of animals sold off of and slaughtered on farms in each State and by adding or subtracting changes in inventory weights between the beginning and end of the year. The sum of the net production figures for the several States gives a net production total for the United States." 4/

The production figures for crops refer to crop years, but, in most cases, the crop year and the calendar year coincide. The statistics for citrus fruit production represent the crop from the bloom of the designated year. The figures for truck crops include the output of late varieties harvested in the previous year. For several crops -- cotton, peanuts, tobacco, and rice -- the production data represent the crop year beginning in the designated year.

The BAE figures for a few crops include quantities not harvested or not available for market because of economic conditions, marketing agreement allotments, shortages of harvest labor, or damage after harvest by weather conditions. The statistics for fruits and nuts also include quantities harvested but not utilized because of excessive cullage, and quantities donated to charity unharvested.

4/ Meat Animals -- Farm Production and Income, 1935-41, U. S. Department of Agriculture (April 30, 1942)

Because the index of production was computed for use in the derivation of an index of productivity, series for gross farm output were combined with the weights representing the estimated labor requirements per unit of gross output. Gross farm output includes total production, whatever its ultimate disposition. By the use of appropriate man-hour weights, the weighted production aggregate contains little or no duplication. Thus, the man-hour weight for hogs does not include the labor requirement for growing the corn fed to hogs.

Man-Hours per Unit of Output (weights for production indexes)

The estimates of man-hours per unit of output which were used for weighting purposes were computed from data for individual States published by the Bureau of Agricultural Economics. 5/ Statistics for the individual States were combined by use of State production data to derive estimates for the 11 areas and for the United States. The unit-labor-requirement estimates for crops generally apply to 1939 practices and average yields per acre in recent years, in most cases the average yield for the 10-year period 1930-39. The estimates for the livestock products were based on data reflecting farm practices of recent years.

The figures for livestock "include direct labor only for such operations as feeding, caring for, and disposing of the animals and their products. Labor for growing feed and repairing buildings, fences and equipment is not included." 6/ The State figures for labor requirements in livestock production were combined into weighted averages for each of the 11 areas and for the United States as a whole; 1941 production figures were used as weights.

The labor-requirements estimates for crops represent man-hours per acre, in the "pre-harvest" and "harvest" periods separately. These estimates include the "hours for hauling manure, plowing and fitting the land, planting and cultivating, spraying, dusting, pruning, etc., and for harvesting and hauling the crop to storage, local market, or processing plant." Figures for man-hours per unit of product were derived for each State from the totals for "pre-harvest" and "harvest" man-hours per acre and data on average yields per acre. Averages of the State

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5/ Labor Requirements for Crops and Livestock, by M. R. Cooper, W. C. Holley, H. W. Hawthorne, and R. S. Washburn, U. S. Department of Agriculture, Bulletin F. M. 40 (1943)

6/ Ibid

figures were prepared for the 11 areas and for the entire United States by use of weights on average production in each of the States.

Employment

The employment figures for years prior to 1939 include all persons engaged in farm work for two or more days a week, regardless of age: proprietors, family workers, and hired workers. For the period 1939-50, employment figures are based on a new definition which agrees more closely with that used by the Bureau of the Census in its Monthly Report on Labor Force. The revised BAE figures for 1939-50 include: (a) all farm operators who spend 1 hour or more during the survey week at farm work, chores, or in the transacting of farm business; (b) hired workers or members of the operator's family doing 1 hour or more of farm work or chores for pay; and (c) members of the operator's family or household doing unpaid farm work or chores, if they work 15 hours or more during the survey week. When revisions are completed by BAE for the period 1935-38, the index of output per worker for these years will be recomputed to conform with the new employment definition. The estimates of farm employment developed by the National Research Project and continued since 1935 by the Bureau of Agricultural Economics are based on decennial Census data for the number of persons gainfully occupied in agriculture. 7/ Interpolations for intercensal years were made by BAE by means of crop-reporter estimates of the number of wage workers and the number of unpaid family workers employed for 100 farms, adjusted to corresponding Census levels, and a computed seasonal index.

The production and employment indexes for 1909-35 were constructed by the National Research Project of the Works Progress Administration in the course of its studies of changing techniques and employment in agriculture. The NRP indexes, computed on the base 1924-29 = 100, have been linked to the Bureau indexes. The methods used in deriving the two series are similar.

7/ Farm Labor, U. S. Department of Agriculture (published monthly). Data for California are from unpublished records.