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ETHELBERT STEWART, Commissioner

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Contents

This Issue in Brief

Present practices regarding spray painting in American industry have recently been investigated by the Bureau of Labor Statistics. The investigation showed that spray painting hazards can be largely overcome by using nonpoisonous materials or by adhering to the best practices in the use of toxic materials. Whether or not the spray materials employed actually contain poisonous or toxic ingredients is unknown to the officials in a large percentage of the plants using the process. Most of the leading users of the process have installed the best equipment available and aim to take every precaution possible to protect the workers from any deleterious effects. Some small plants have taken no protective steps whatever. For most purposes nonpoisonous materials have been developed which make the use of toxic materials in many cases unnecessary. Page 1. Several States have adopted or have inaugurated definite movements to adopt special rules and regulations for the protection of workers employed in connection with spray painting. Such rules and regulations are usually based on the best practices found in industry. Page 30.

The productivity of labor in newspaper printing shows a very considerable increase in recent years, according to a study recently completed by the Bureau of Labor Statistics. The changes, however, were by no means uniform for the several processes, and there has been constantly in operation a factor which tends to check the cheapening of time and labor costs, namely, the emphasis placed by modern newspapers upon rapidity of issuing the completed papers. Page 44.

Average earnings in the motor-vehicle industry were 75 cents per hour in 1928, compared with 72.3 cents in 1925 and 65.7 cents in 1922. The average full-time earnings per week were $37.05 in 1928, $36.37 in 1925, and $32.92 in 1922. The figures are from a survey recently made by the Bureau of Labor Statistics. Page 179.

The entrance wage rate for common labor on January 1, 1929, averaged 45 cents per hour, according to the semiannual report of the Bureau of Labor Statistics. This report is based on returns from plants employing 139,644 common laborers. The highest average rate per hour for any industry was 55.9 cents in the automobile industry, and the lowest was 30.8 cents in the sawmill industry. Page 188.

The report on the causes and relief of unemployment made by the Senate Committee on Education and Labor urges, among other things, that private industry recognize its responsibility to stabilize employment, that the States and municipalities be responsible for the creation and maintenance of efficient employment exchanges, that the census of 1930 include inquiries on the subject of unemployment, that public works be planned as a reserve against unemployment, and that further consideration be given to the question of old-age pensions. Page 65.

The number of unemployed persons in Baltimore City was 13,177 in February–March, 1929, according to a report of the Maryland Commissioner of Labor and Statistics, based on a house-to-house canvass by the Police Department of Baltimore City. This number represented approximately 1.6 per cent of the total population of the city and approximately 3.4 per cent of the total number of persons who usually are gainfully employed. Page 59.

Age limits for new employees are set by 30 per cent of the plants covered in a recent survey by the National Association of Manufacturers, the most frequent limits being 45 years for unskilled and semiskilled workers and 50 years for skilled workers. The other 70 per cent of the plants covered reported that they set no age limits. Page 110.

In 1927 the loss of life per ton of coal mined in the United States was lower than in any other year except 1920, and the total number of men killed was smaller than in any other year since 1922, according to the annual report on coal-mine fatalities published by the United States Bureau of Mines. The estimated death rate per million tons of coal produced in 1927 was 3.70 as compared with a rate of 3.83 in 1926. The rate for bituminous mines, considered separately, decreased from 3.60 in 1926 to 3.34 (estimated) in 1927, but in anthracite mines it increased from 5.36 in 1926 to 6.06 (estimated) in 1927. Page 124.

The credit-union movement is increasing rapidly, 368 new unions having been established in 1928. Much of this growth is due to the activities of the Credit Union National Extension Bureau, the credit-union organization in the United States Post Office Department, and to the encouragement of some of the larger labor unions, such as the Brotherhood of Railway Clerks. Page 161.

The latest developments in workers' education were reported to the sixth national convention of the Workers' Education Bureau, held at Washington, D. C., April 5–7, 1929. Since the last convention over 30 week-end labor conferences have been held, 7 of them being called specifically for the discussion of unemployment. A brief summary of the proceedings of the convention, including an account of labor classes, institutes, forums, and summer schools, is given on page 162.

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Spray-Painting Practices and Hazards

IN 1915 the hazards to the health of persons engaged in the process of spray painting first attracted attention, and, with the adoption of the process in nearly every industry since that time, the hazards have become all the more evident.

In 1925 the State of Pennsylvania, recognizing the possible results of the use of improper equipment or of lack of understanding of the dangers among those using the spray-painting process, instituted an investigation to obtain more definite data than was then available on the health hazards, and particularly on the risk of benzol poisoning, from the spraying of lacquers. Following the Pennsylvania study the National Safety Council made a supplementary study, both these studies being executed by a staff of medical and technical authorities.

The results of the two studies demonstrated the following: (1) That relatively small amounts of benzol in lacquers may give rise to benzol concentrations in the air breathed by the spray operator well above the danger limit (set at 100 parts per million for continuous exposure by the benzol committee of the National Safety Council); (2) That so many variable and uncontrollable conditions obtain in the spraying of materials containing various lead compounds that exhaust ventilation can not always be depended upon properly to protect the operator or other workers in the vicinity of the operation; (3) That the hazard from spraying siliceous materials can be largely overcome by exhaust ventilation of from 150 to 200 feet per minute past the spray operator; and (4) That workers employed to spray-coat objects within buildings, booths, rooms, or any inclosed space with either paints or lacquers containing benzol or lead compounds or siliceous materials, as vitreous enamels or similar materials, regardless of the type of ventilation or the use or nonuse of respirators or masks, should be examined, both before beginning the work and periodically thereafter, for the early detection of any symptoms of poisoning or effects of breathing silica.

Purpose and Result of Present Report

THE PRESENT report is the result of an investigation made by the Bureau of Labor Statistics in 71 manufacturing and mercantile establishments and 8 Government posts to determine (1) what has been

done to overcome the hazards of the process during its further development, and (2) what can be done further to protect the worker or to eliminate the inherent dangers of the process

The results of the investigation indicate that: (1) The best practices largely overcome the hazards of the process; (2) Most large and some small plants have installed high-grade equipment, while some small plants have taken no steps whatever toward protection; (3) The development of nonpoisonous substitutes for lead and benzol has for most purposes reached a point where it is not necessary to spray materials containing harmful ingredients; (4) Where materials containing benzol or lead compounds are used, stringent regulation should be maintained; and (5) Several States have already adopted, or have inaugurated a definite movement to adopt, special regulations or have worked out a definite means of controlling the process and protecting the spray operators.

The data in the study were secured from establishment records, hospital records, physicians, spray operators, and various employees and officials of the establishments visited. The bureau employed no medical adviser nor technical aid, as it was assumed that previous studies had covered the scientific aspects of the problem rather thoroughly and that there was no further need of proof that a definite and serious hazard exists wherever materials containing benzol, silica, or lead compounds are applied by the spray process.

In the course of the survey 39 cases of poisoning were found in which the disability appeared to have resulted from practices or conditions connected with the process. Each was thoroughly investigated to determine whether the occupation of spray painting was responsible, and whether there had been any previous exposure which might have contributed to the disability. (See Table 2 for general facts in each case.) The majority of these cases were found to have been caused by the absorption of lead, only two cases being diagnosed as benzol poisoning, while one case was called "turpentine poisoning" by the doctor in attendance.

Extent of Establishment Information

THE DATA secured concerning spray equipment and materials in the establishments covered represent only such information as the manufacturer or employer could give, and indicate in many cases that the employer is poorly informed as to the possible hazards in his organization. Only 20 of the 71 establishments were aware of the velocity of exhaust air maintained at the work places by their equipment. The other plants relied on the manufacturer of the booths or equipment, or on the local engineers who had supplied and installed the equipment, to provide such equipment as, in their best judgment, would meet the particular problem. Usually, no steps were taken, to check up on the equipment after the installation to determine if it was of sufficient capacity or was efficiently removing the fumes and spray cloud from the workroom or booth.

Eighteen of the 71 plants furnished definite information as to harmful content in the materials that were being used in spray coating. Of the 18 plants, 3 had been definitely informed that the materials used contained no harmful ingredients, while 13 furnished

the exact percentage of the ingredients of the materials which were known to be harmful; in the other 2 plants, the exact percentage of harmful elements had been learned only by analysis as a result of the occurrence of one or more cases of poisoning in the plants.

Thirty-five plants could give no information whatever as to whether or not the materials used in spray coating contained any toxic ingredients, while in the remaining 18 plants the coating materials were known to contain either lead or benzol, but the per cent or amount was not available.

Experience of the 71 plants in the use of spray apparatus ranged from 2 months to 20 years. As far as could be determined from the records or the officials of the plants visited, in each of 36 plants visited one case of poisoning had occurred during the experience of the particular plants with the process. In 6 establishments there had been 2 cases; in 2 plants, 3 cases; in 2 plants, 5 cases; and in 1 plant, 6 cases; while in the other 24 plants no trouble had been experienced with the process during the entire period of use in each respective plant.

In Table 1 are shown not only the various materials used in each plant, but also the number of operators working with each of the materials reported and the amount or content of any harmful ingredient in such materials. For example, there were 11 operators employed by Plant No. 9. The material used included a stain which consisted of 40 per cent benzol. However, only 1 of the 11 operators was actually exposed to the possible effects of the benzol, since only about one gallon of stain per week was used on an average and that by the same operator.

The nozzle distance shown in the table is an approximation obtained from observing the operators when actually spraying. The velocity of the exhaust air at the working surface was obtained in two ways—first, from the records of the plant engineers indicating what velocity the equipment maintained; and second, in a few plants the plant engineer measured the flow of air by the use of a vane anemometer. In most cases, however, the plants visited did not have instruments for measuring air velocity.

Twenty-four of the 71 plants did not furnish any sort of a respirator to the spray operators. Two plants reported that respirators were issued for any work that was considered hazardous, while four plants supplied respirators on certain kinds of work. All of the other 41 establishments supplied the operators with respirators. In 15 of these plants the operators always wore the devices during spray operations, while in 3 plants the operators on certain work always did so; in 17 plants, although respirators were supplied, the operators made a practice of not wearing them; in 1 plant, respirators were worn most of the time and in 3, part of the time; and in the other 2 plants they were regularly worn by some operators, while others made a practice of spraying without respirators.

TABLE 1.—SUMMARY OF DATA RELATING TO USE OF SPRAY GUN IN 71 ESTABLISHMENTS

Establishment No.	Product	Years process was in use	Cases of poisoning during use	Hours per week spray gun was used	Number of operators	Materials used: Quantity per operator in 1 week	Materials used: Kind	Materials used: Harmful content	Where operation is performed	Kind of ventilation	Average nozzle distance (inches)	Air pressure (lbs. per sq. in.): In paint container[1]	Air pressure (lbs. per sq. in.): On gun	Velocity of air at working surface (ft. per min.)	Respirators: Furnished	Respirators: Worn
1	Machinery	7	1	27	8	17½ gals	Paint Varnish Lacquer	(2) (2) (2)	Booths	Exhaust fan	12	(2)	60–70	(2)	Yes	No.
2	Auto bodies	7	2	32	5	55 gals.[3]	Lacquer Filler	25% lead	do	do	12	15–20	60	(2)	Yes	Seldom.
3	Stoves, refrigerators, tables.	14	0	34	4	1,650 lbs	Vitreous enamel	66% silica	do	do	20–24		90	60	No	No.
4	Baby carriages	20	5	38	7 3	138 gals 50 gals	Paint Baking enamel Lacquer	(2) (2) (2)	do	do	8–10		65	(2)	No	No.
5	Patent leather	2	1	24	1	60–72 gals	do	(2)	do	do	10–12		60	(2)	No	No.
6	Buildings	8	1	25	1	35 gals	Paint	Lead	Rooms and open air.	Natural	10	15–35	40–75	(2)	Yes	Yes.
7	Do	⅙	1	33	1	25 gals	do	Turpentine.	Rooms	do	10–16	65	65	(2)	Yes	Yes.
8	Stoves	9	2	33	7	600 lbs	Vitreous enamel	(2)	Booths	Exhaust fan	10–18		85	130	No	No.
9	Furniture	10	1	38	10 1	75 gals 1 gal	Varnish Lacquer Shellac Sub. shellac Stain	(2) (2) (2) (2) 40% benzol.	do	do	15		60–70	40	Yes	By some.
10	Stoves	10	1	49½	9	1,200–1,500 lbs	Vitreous enamel	(2)	do	do	12–20		55–60	150	Yes	No.
11	Railroad cars	5	1	38	3 3	50–75 gals Varies	Lacquer Paint	(2) Lead	Rooms	do	10–12	7–8	40–50	60	On lead-work.: Yes	
12	Window cases, sash, cabinets.	12	0	[4] 44	2 1 2	50–110 gals do do	do Lacquer Baking enamel	do (2) Lead	Booths do do	do do do	16 12 16	15 10 15	60 40 60	(2)	Yes	Usually.
13	Air compressors	6	0	12	1	2–4 gals 12–15 gals	Paint Lacquer	do (2)	Booths and platform.[5]	do	12	40	30	80–175	Yes	Yes.
14	Radio cabinets	½	0	45	3	80 gals	Varnish	(2)	Booths	do	6	2–5	85			
				45	2	100 gals	Lacquer	(2)	do	do	12		85	(2)	Yes	Part time.
				25	1	20 gals	Varnish	(2)	Platform	do	6	2–5	85			

15	Auto bodies	1½	0	27	2	50 gals.[3]	Lacquer Filler	(2) (2)	Rooms	do	(2)		75	(2)	No	No.
16	Do	3½	0	27	4	Varies 12 gals.[3] Varies	Paint Lacquer Filler Shellac	(2) (2) (2) (2)	do	do	7–9		50–60	(2)	No	No.
17	Furniture	15	1	[6] 33	4	160–170 gals.	Lacquer Oil primer	(2) (2)	Booths	do	6		45	(2)	No	No.
18	Do	20	0	31	5 3 1	50 gals. 275 gals. 30 gals.	Lacquer Shellac Stain	(2) (2) (2)	do do do	do do do	17 17 8	 15	80 80 20	(2)	Yes	Seldom.
19	Lamp shades	3¼	0	33–38	2	15 gals. 75 gals.	Lacquer Shellac	(2) 1% benzol.	do	do	8–10		40	(2)	No	No.
20	Cabinets and speakers.	(2)	0	40 47	101 50	60 gals.[3]	Varnish Lacquer	(1) (2)	do do	do do	6–8 6–8	 	85 75	(2)	Yes No	No. No.
21	Electrical instruments.	4	0	35	2	Varies	do	(2)	do	do	8		75	(2)	No	No.
22	Electric equipment	14	1	38	1 1	10–50 gals. 50 gals.	do Baking enamel	(2) (2)	do	do	6 8–10	 	40 60	(2)	Yes	Yes.
23	Elevators	3⅔	2	44	50	20 gals.[3]	Lacquer Filler	(2) (2)	do	Induced	6	(2)	40–60	125	Yes	No.
24	Guns, flashlights, etc.	3	0	38 55	5 3	do 30 gals.	Lacquer Vitreous enamel	(2) Silica	do	Exhaust fan	6–18		50–60	100	On enamel work.	Yes.
25	Airplane engines	3	0	50	6	25 gals. do	Baking enamel Paint	(2) (2)	do	do	6–18	(2)	60	100	No	No.
26	Typewriters	[7] 18	[8] 1	38	11	12 gals. 15 gals.	Lacquer Baking enamel	(2) (2)	do do	do do	18 18	 	40 70	(2)	No	No.
27	Clock cases	⅔	0	50	25	90 gals. do	Varnish Lacquer	(2) (2)	do	do	8	(2)	30	100	No	No.
28	Buildings	¾	1	17	4	24 gals.	Paint	Lead	Rooms and open air.	Natural	12	(2)	40–60	(2)	Yes	No.
29	Book covers	11½12	1	48	1	10 gals.[3]	Lacquer Moorish paste Bronze	(2) 6% lead (2)	Booths	Exhaust fan	8	(2)	40	(2)	No	No.
30	Metal depositories	4	1	32	1	10 gals. do	Varnish Lacquer	(2) (2)	do	do	8–10	15	45	(2)	Yes	Yes.
31	Buildings	16	1	25		48 gals.	Paint	(2)	Rooms	Natural	18–24	20	60	(2)	Yes	Seldom.
32	Cold storage rooms	16	1	33	1	120 gals.	Clay and asphalt	None	do	None	12	25	60	(2)	Yes	Seldom.
33	Buildings	16	0	35–40	1	60–180 gals.	Cold-water paint	do	do	Natural	12–24	(2)	80–100	(2)	(9)	(9)
34	Garages	16	0	30–40	1	do	do	do	do	do	12–24	(2)	80–120	(2)	(9)	(9)
35	Auto bodies	5	1	32	4	30 gals.	Lacquer	(2)	do	Exhaust fan	8–12		50–60	60–80	Yes	No.

[1] In this column the use of leaders indicates that the gravity system or cup guns were used.
[2] Data not reported.
[3] Proportion not reported.
[4] One man spraying baking enamel uses gun only 22 hours per week.
[5] Five-sixths of time in spray booth, one-sixth on platform.
[6] One man uses spray gun only 18 hours per week.
[7] Spraying lacquer 3 years.
[8] Shown as case No. 8 in Table 2.
[9] Company has masks which are issued on request for hazardous jobs.

TABLE 1.—SUMMARY OF DATA RELATING TO USE OF SPRAY GUN IN 71 ESTABLISHMENTS—Continued

Establishment No.	Product	Years process was in use	Cases of poisoning during use	Hours per week spray gun was used	Number of operators	Materials used: Quantity per operator in 1 week	Materials used: Kind	Materials used: Harmful content	Where operation is performed	Kind of ventilation	Average nozzle distance (inches)	Air pressure (lbs. per sq. in.): In paint container	Air pressure (lbs. per sq. in.): On gun	Velocity of air at working surface (ft. per min.)	Respirators: Furnished	Respirators: Worn
36	Radiators	4	1	44	1	50 gals	Paint	Lead	Platform	None	10–12	30	80	(2)	On lead work.	No.
37	Cameras	(2)	0	35	6	5½ gals	Lacquer	(2)	Booths	Exhaust fan	6		60	400	Yes	No.
					39	do	Japan	(2)								
38	Auto bodies	1⅙	1	15	1	5 gals	Lacquer	0.025% lead.	Rooms	None	6–8		70	(2)	No	No.
							Enamel	(2)								
							Filler	(2)								
39	Machine parts	⅔	0	50	5	90 gals	Lacquer	(2)	Booths	Exhaust fan	12	(2)	60	100	No	No.
40	Lighting fixtures	10	1	28–34	1	24–36 gals	do	(2)	do	do	14		30–40	(2)	Yes	No.
41	Novelties	4	0	32	1	27 gals	do	(2)	do	do	6–8		110	(2)	No	No.
42	Glassware	18	6	50	8	60 lbs	Paint	1–40% lead	do	do	12	12–15	12–40	(2)	No	No.
					6	27 gals	Lacquer	(2)								
43	Auto generators	4	1	30	1	12 gals	do	(2)	do	do	12	12–15	50	(2)	No	No.
							Filler	(2)								
44	Buildings	(10)	1	17	1	137 gals	Paint	(2)	Rooms	Natural	12	12–15	15–30	(2)	Yes	Yes.
45	Stoves	9	1	42	5	1,200 gals	Vitreous enamel	60% silica	Booths	Exhaust fan	9		55	100	Yes	Yes.
					1	6 gals	Japan	(2)								
46	Pottery	2	0	6	1	3 gals	Colors in oil	(2)	do	do	8–10		50	(2)	Yes	Yes.
47	Electrical supplies	20	0	40	10	45 gals	Vitreous enamel	60% silica	do	do	6		45	(2)	No	No.
48	Metal depositories	10	1	50	1	82 gals.[3]	Paint	Lead	do	do	12–36	15–20	25–40	(2)	Yes	Yes.
							Enamel	(2)								
							Bronzing liquid	(2)								
49	Do	12	1	45	1	66 gals.[3]	Paint	Lead	do	do	12–36	15–20	40–60	125	Yes	No.
							Enamel	(2)								
							Bronzing liquid	(2)								
50	Stoves	9	1	50	17	1,650 lbs	Vitreous enamel	Silica and 15% lead	do	do	15	15–20	40	100	On cast-iron work.	Yes.
						do	do	50% silica								
51	Washing machines	8	1	38	5	28 gals	Lacquer	(2)	do	do	8–10		15	145–168	Yes	No.
52	Auto bodies	9	1	15	1	10 gals.[3]	Paint	(2)	do	do	8–10		60	(2)	Yes	Yes.
							Lacquer	(2)								
53	Stoves	10	0	44	3	11 gals	Aluminum bronze.	(2)	do	do	12	15–20	18	(2)	Yes	No.
54	Do	10	3	50–55	14	1,500–1,800 lbs.	Vitreous enamel	(2)	do	do	15–24		40–50	(2)	No	No.

55	Auto bodies	5	1	32	8	27 gals.[3]	Lacquer Filler	(2) Lead	Booths and rooms.	do	15		50–65	(2)	No	No.
56	Trucks	11	5	50	12	110 gals 27 gals	Paint Lacquer	20–55% lead. (2)	Booths	do	12–24	15–20	30–40	(2)	Yes	Yes.
57	Auto bodies	12	1	32	2	27–44 gals	Lacquer Filler	(2) Lead	Rooms	Exhaust fan	15–24		30–40	(2)	Yes	Yes.
58	do	10	1	50	14	220 gals.[3]	Lacquer Filler	(2) Lead	Booths	do	20	15–20	60–90	(2)	Yes	Yes.
59	do	9	2	47½	250	220 gals	Lacquer	(2)	do	do	15–20	15–20	50	160–190	Yes	By some.
60	Trucks, cars, furniture.	5	1	10–15	1	Varies	Paint Varnish Lacquer Filler	(2) (2) (2) (2)	do	do	8–10		25–30	(2)	Yes	Yes.
61	Stoves	2	1	33	5	3,000 lbs	Vitreous enamel	66% silica	do	do	10–18		75	100	No	No.
62	Advertising specialties.	15	2	38	11	6–27 gals	Paint Lacquer	Lead (2)	do	do	6–12		60	(2)	Yes	No.
63	Radiators	3	1	9	1	10 gals	Paint	40% lead	Rooms	None	(2)	(2)	(2)	(2)	No	No.
64	Auto body frames	5	0	9	1	(2)	Varnish	(2)	Booths	Exhaust fan	(2)		(2)	(2)	No	No.
65	Automobiles	8	0	44	5	66–97 gals	Lacquer	(2)	Rooms	do	12 14		75	10 15	Yes	No.
66	Stoves	2	2	48	6	110–165 gals	Vitreous enamel	23% lead 76% silica	Booths	do	12–15		80	(2)	Yes	No.
67	do	6	3	53	3	135–145 gals	do	23% lead 76% silica	do	do	15		125	(2)	Yes	Yes.
68	do	(2)	1	47½	3	135–145 gals	do	(2)	do	do	12–15		90	(2)	Yes	Sometimes.
69	do	(2)	1	54	9	65–80 gals	do	(2)	do	do	15		75–80	(2)	Yes	No.
70	Auto bodies	2	1	40	12	38 gals	Lacquer	(2)	do	do	10–12	(2)	75–90	(2)	Yes	Sometimes.
71	Furniture	4	0	47	1	27 gals	do	(2)	do	do	9–14		60	(2)	Yes	No.

[2] Data not reported.
[3] Proportion not reported.
[10] Spray operator hired only when walls are to be sprayed.

Cases of Poisoning

TABLE 2 shows the important facts for the 39 cases of poisoning found in the investigation. In 10 additional cases either no definite information was available as to the cause of disability or the cause was found to be other than spray painting.

The table shows the duration of the disability, the years in the occupation, the product sprayed, the materials used in the process, the nature and the amount of the harmful ingredients in the materials, any possible previous exposure in other employment, and the diagnosis of the illness or incapacity.

Six of the cases resulted in death, while in the remaining 33 cases the disability, at the time of the agent's visit, had lasted one year or less, the slightest being a case in which the person suffered cramps while at his work. He was sent to a doctor, who made a thorough examination including a blood count which revealed many stippled cells. Thereafter he worked at the same job by exercising great care, according to the doctor's instructions, in the performance of his work.

A review of the occupations shows that four of the persons were not spray painters, but were exposed to the effects of spray materials because of the nature of their employment. Investigation showed that their disability was due to the toxic ingredients of the spray materials used in the plants where they were employed.

TABLE 2.—RESULT OF POISONING, NATURE AND LENGTH OF EMPLOYMENT, MATERIALS USED, PREVIOUS EXPOSURE, AND DIAGNOSIS

Case No.	Duration of disability or result of poisoning	Occupation	Years at occupation	Object sprayed	Materials used	Harmful contents of materials	Possible previous exposure	Diagnosis
1	Death	Sprayer	4	Furniture	Varnish; shellac; substitute shellac; stain; lacquer.	Stain, 40% benzol	Brush painter	Benzol poisoning.
2	Do	Watchman	[1] 3	Typewriters	Baking enamel; lacquer	Benzol	None	Do.
3	1 yr. 5 mos.; death.	Sprayer	5½	Metal containers	Paint; enamel; bronze	Lead	do	Lead poisoning, endocarditis.
4	5 mos.; death	do	4	Automobile bodies	Primer; lacquer	Primer, 25% lead	do	Nephritis.
5	10 wks.; death	do	2	Radiators	Paint	40% lead	do	Lead poisoning, heart disease.
6	Death	do	6	Automobile bodies	Primer; lacquer	Lead	Not reported	Lead poisoning, pneumonia.
7	1 yr. to date	do	1/6	Stoves	Vitreous enamel	Silica, lead	None	Lead poisoning.
8	8 mos.[2]	do	2	do	do	60% silica; lead	Varnish sprayer, 10 yrs.	Do.
9	7 mos	do	1	do	do	60% silica; 15% lead	None	Toxemia.
10	4 mos	do	1/3	Glass objects	Paint; lacquer	Paint, 10–40% lead	do	Lead poisoning.
11	13 wks	do	6	Automobile bodies	Lead and oil; lacquer	Lead	Varnisher, 17 yrs	Do.
12	12 wks	do	1/6	Stoves	Vitreous enamel	Not reported	None	Do.
13	10 wks	do	1½	Automobile bodies	Primer; lacquer	Lacquer, 0,025% lead	Not reported	Lead colic.
14	9 wks	do	6	do	do	Primer, 25% lead	None	Lead poisoning.
15	8 wks	do	1	Stoves	Vitreous enamel	76% silica; 23% lead	Enamel mixer, 1½ yrs.	Do.
16	7 wks	do	3	Automobile parts	Paint	Lead	Brush painter, 3 mos.	Do.
17	Do	do	7	Glass objects	Paint; lacquer	Paint, 10–40% lead	None	Do.
18	Do	do	1	do	do	do	Spray helper, 2 yrs.	Do.
19	Do	Helper	2	do	do	do	None	Do.
20	Do	Sprayer	14	Metal containers	Paint; enamel bronze	Lead	do	Do.
21	6 wks	Maintenance man	2	Buildings	Lead and oil	do	Brush painter, 12 yrs.	Do.
22	Do	Sprayer	2/3	Glass objects	Paint; lacquer	Paint, 10–40% lead	None	Do.
23	Do	do	1	Automobile bodies	Primer; lacquer	Lead	Brush painter, 6 yrs.	Lacquer poisoning.
24	Do	do	2	do	Lacquer	None	None	Do.
25	Do	do	2	do	Paint; varnish; filler; lacquer	Not reported	Varnisher, 1 yr.	Lead poisoning.
26	Do	do	¼	Stoves	Vitreous enamel	Silica; lead 28%	Enamel sprayer	Do.
27	5 wks	do	3/8	do	do	76% silica; 23% lead	Enamel sprayer, 20 mos.	Do.
28	Do	do	1/3	do	do	do	Enamel mixer, 2 yrs.	Do.
29	4 wks	do	4	do	do	60% silica; 15% lead	None	Do.
30	Do	do	6	Automobile parts	Paint; lacquer	Paint, 20–55% lead	Spray painter	Not reported.
31	Do	do	3	do	Paint; turpentine; lacquer	Lead	None	Turpentine poisoning.
32	3 wks	do	3	Stoves	Vitreous enamel	60% silica; lead	do	Lead poisoning.
33	Do	Booth cleaner	1	Automobile bodies	Lacquer	None	do	Lacquer poisoning.
34	15 days	Sprayer	¼	Glass objects	Paint; lacquer	Paint, 10–40% lead	do	Lead poisoning.
35	14 days	do	11 7/12	Buildings	Paint	Lead	do	Do.
36	Do	do	4	Metal and glass objects.	Paint; lacquer	do	do	Do.
37	7 days	do	1/3	Stoves	Vitreous enamel	Silica; lead	Brush painter, 3 yrs.	Do.
38	3 days	Maintenance man[3]	6	Interior walls	Lithopone paint; turpentine	Turpentine	None	Do.
39	No lost time	Sprayer	6	Automobile bodies	Primer, lacquer	Lead	do	Do.

[1] Spent considerable time in the drying room where freshly sprayed objects were placed.
[2] Including disability from appendicitis operation.
[3] Used spray intermittently for only about 4 weeks.

Coating Materials

THE TERM "paint" usually means an oil and pigment which will form a film over any surface, protecting it from the normal processes of oxidation. There are numerous compounds used for the purpose, such as paints, enamels, varnishes, lacquers, stains, and wax.

Paints are made up of a base, a vehicle, a solvent, and driers, with the addition of either metallic, earthy, or animal pigments for decorative effect. The base in paints now in use usually consists of white or red lead, zinc oxide, titanium oxide, or iron oxide; the vehicle generally consists of raw or boiled linseed oil and, for a few delicate colors, poppy-seed oil. The solvents used are usually turpentine or petroleum distillates. The driers are many and of diverse character, turpentine probably being used more widely than others. The term "enamel" is commonly applied to any color paint giving a hard, glossy surface.

Varnishes are made from gums dissolved in linseed oil, turpentine, spirits, or water. Lacquers are much like varnishes, consisting of a gum and thinners, or of gums, cellulose, and a suitable solvent. The latter are the modern lacquers commonly known as pyroxylin lacquers.

Stains are used mainly to change color of work without hiding the surface aspects. Various vehicles are used. Wax is primarily a preservative, but because of the gloss or luster obtainable may also be considered in a measure as decorative.

Commercial Method of Applying Paint

IT HAS NOT been long since the commercial processes of applying finish took more time than the process of manufacturing the object. Coat after coat of paint or varnish was applied. Each coat had to dry and be rubbed down before the next could be applied. The drying process was slow and dust was ever present. Manufacturers resorted to the use of drying ovens to hasten drying. Changing the air in the ovens increased the dust problem. Washing machines were installed to wash the dust out of the air before it entered the ovens. Workmen were required to wear clothing of special goods to minimize the dust from the clothing fabric. Brushing was gradually eliminated, as manufacturers, in their effort to meet competition, resorted to dipping such parts as could be conveniently dipped in a tank of paint, while in other cases, where the article was too large or of such a nature that dipping was impossible, the paint was flowed on through fan-shaped nozzles in the hands of experienced men, the excess paint running down into drip troughs and back into a recuperator tank.

The above processes were limited mainly to the application of paints and varnishes which were cut with turpentine or thinned with linseed oil or other thinners in common usage before the World War. Pyroxylin lacquers were next developed and rapidly gained in favor. Because of the highly volatile solvents and diluents necessary these materials will quickly stiffen a paintbrush with gum. They are very adaptable to the process of spraying, however, because the volatile materials have little chance to vaporize from the time they leave the container until they are actually applied. These solvents and diluents then vaporize so readily and the surface sets so quickly

that additional coats are often applied at intervals of not more than half an hour.

Spray Guns

THE FIRST attempt to spray paints or other coating materials in a large way was on the buildings and equipment for the World's Fair at Chicago in 1892. The apparatus used at that time was not of the commercial type in use to-day, but was on the order of the spray apparatus now used in the application of fungicides and similar materials. The action was much like that of water leaving a spray nozzle, except in the case of the small apparatus used by artists which resembled the ordinary atomizer in action. From this latter instrument the spray guns now used in industry have been developed. The term "gun" is used because the air valve is operated by a trigger and in general the apparatus, especially the pressure type, resembles a revolver in shape and size. The cup-type suction gun commonly used consists of a cup in which the coating material is placed. A small tube extends down nearly to the bottom of the container and the upper end, which goes through the cover, is situated just below and at right angles to the orifice from which a jet of compressed air is blown. The velocity of the compressed air so reduces the atmospheric pressure at the top end of the tube that a vacuum is formed which sucks the material from the container through the tube directly into the jet of air which breaks it up into fine particles and blows it against the object to be coated. This type of gun is very advantageous in that any one of several cups containing different colors may be readily attached and used as necessity demands.

The type of apparatus next to appear was one using compressed air to break up the material but in which the material is supplied to the gun through a rubber hose either from a container suspended overhead or from a container in which air pressure is used to force the material to the gun. In such apparatus the trigger of the gun has a double function. By pulling it part way, the valve which releases the compressed air is opened, while pulling it the rest of the way opens the valve allowing the paint or other material to escape. In most standard guns converging jets of air are used to atomize or nebulize the material and to blow it onto the surface to be coated. There are guns now being marketed in which the atomization is performed before leaving the gun. These guns as a rule do not require as high pressure to accomplish atomization and consequently are generally spoken of as low-pressure guns. The pressure gun has been followed by the pressure cup gun which has all of the advantages of the suction cup but which is said to give more satisfactory nebulization of the spray materials.

In the development of these guns engineers have striven to produce a gun which would efficiently spray materials of varying viscosity and also would be light enough and operate easily enough for a workman to handle continuously for a full day without fatigue from the trigger action. The fact that the trigger has a double action has presented the problem of securing a double tension so that the operator can use the jet of air for blowing dust from the surface without danger of opening the paint valve, and at the same time the pull of the trigger on the paint valve will be sufficiently light to permit him

to use the gun throughout the workday without unnecessary fatigue. The trigger is usually pulled at the beginning and released at the end of each to and fro movement by the operator, thus preventing the use of an excessive amount of paint or excessive application to any part of the area being coated.

Growth and Extent of Spray Painting

THERE is no possible way of definitely measuring the growth of spray painting, nor is there any way of measuring the extent to which the process is being used. A few establishments in some industries were using spray apparatus to apply materials at least 20 years ago, but the real advances in the use of the process came with the advent of the World War (with its tremendous camouflaging and painting program) and the adaptation of pyroxylin lacquers which could not well be applied with a brush or by dipping. Manufacturers are now putting on the market spray-painting apparatus of all kinds and sizes, with prices ranging from two dollars for hand sprays to thousands of dollars for complete equipment for manufacturing establishments. The various models are usually designed for specific purposes.

Such equipment has found its way into practically every industry. The Federal Government employs the process in the production of aircraft, ammunition, and various equipment, as well as in the maintenance of buildings, furniture, ships, naval craft, and army equipment. In the automotive field the finishing of chassis, motors, wheels, and bodies, and the refinishing of old cars depends upon the spray process. Automotive accessories are finished by the process. Airplane fabrics are "doped." The furniture industry has made such use of paint-spray equipment that furniture manufacturers and even merchandising houses have to resort to its use in order to be able to compete. Manufacturers of farm implements, lighting fixtures, office partitions, telephone booths, window cases, door casings—in fact, of almost every line in which millwork is performed—use spray equipment. In the leather industry various finishes can be effected that are obtainable in no other way. This applies, not alone to leather, but also to the varicolored household articles, including all sorts of kitchen equipment, decorated to match the room, many of which are pictured in present-day advertisements. The spray gun is used in the textile industry, not alone for maintenance, but also in the coloring of awning materials, rugs, cottons, and other fabrics, and in the manufacture of straw hats, paper, willow reed, glassware, and other merchandise. In the maintenance of houses and buildings, interiors are coated, usually with lithopone paint, enamels, varnish, shellac, aluminum paints, and even inside waterproofing materials. The exteriors are coated with lead paints, varnishes, lacquers, graphites, aluminum, and asphaltum paints. Some peculiar uses to which the apparatus is put is to apply the egg and milk solution to pies, to obtain the batik effect on silks, and the sheen on silk stockings. In short, there is practically no industry in the United States in which the spray process does not find a place.

The above may give some idea of the wide use of the spray process in industry. The growth of the use of the process can be indicated in a small way by a review of the production of one of the principal

materials used; i. e., pyroxylin lacquers. The United States census in 1924 began showing the amount of pyroxylin lacquers produced. The figures show that in the first six months of 1924 1,430,700 gallons were produced, while in the same period in 1928 8,900,644 gallons were produced. The figures by 6-month periods for the years 1924 to 1928 are as follows:

	Gallons		Gallons
1924—First half	1, 430, 700	1926—First half	7, 040, 800
Second half	2, 160, 300	Second half	7, 621, 000
1925—First half	4, 880, 200	1927—First half	8, 644, 300
Second half	6, 223, 200	Second half	8, 038, 290
		1928—First half	8, 900, 644

The above figures which apply only to pyroxylin lacquers, in no way indicate the increase in the use of the spray gun in applying paints, varnishes, stains, and various other materials which are the principal materials sprayed in the maintenance of buildings and the finishing of many manufactured products.

Harmful Materials Used in Spray Painting

PYROXYLIN lacquers were developed as one result of the tendency toward high-speed production. They are all "high-speed" driers. To get the quick-drying quality demanded for rapid production of finish, it was necessary, of course, to use materials which are highly volatile. Many of these volatile materials are nontoxic. Some materials, like lead and benzol, when used without sufficient relief from exposure, are unfailing in their ultimate action.

Benzol especially constitutes one of the most insidious hazards of the present day. It is used in many stains, some lacquers, and some thinners, and is usually one of the basic materials in paint and varnish removers. It is a by-product in the manufacture of coal gas and in several other processes. It is described in the report of the National Safety Council (May, 1926) as "* * * a colorless limpid, highly refractive liquid having a pleasant characteristic odor. * * * It has a specific gravity of 0.899 at 0° C."

While harmful diluents such as benzol have characteristic odors it is impossible, even by experienced chemists, to detect the presence of benzol when mixed with acetates and other materials in lacquer or thinner. The use of harmless lacquers purchased from one source and low-priced thinners from another source may often unnecessarily inject the benzol hazard in the process of spray painting as benzol is a constituent of many cheap lacquers.

As a causative factor in industrial poisoning lead is considered the most important of all metals. It is used in the form of white lead, as a base for most outside paints and in other chemical combinations, especially in many yellow, orange, and green pigments, in many inside paints and lacquers. It is also a constituent of many primers or fillers and of vitreous enamels used on cast iron. Such materials are usually applied with spray guns.

Another dangerous element which is generally found in enameling is silica, although in the course of this study no cases were found where an operator was seriously affected by the material, or where the disability was diagnosed as silicosis. An occupation such as sand

blasting offers, perhaps, a greater exposure to silica than does that of spraying vitreous enamels.

Several other harmful substances are used in connection with lacquers, varnishes, paints, and enamels, such as methyl or wood alcohol, denatured alcohol, tetrachlorethane, which is used in some "dopes," and turpentine, which is often used in paints.

Hazard of Poisoning

POISONING or disability from the use of paint or coatings arises mainly from three sources; namely, from the use of lead and its compounds, from benzol, and from siliceous materials.

The lead compounds are used in the form of lead chromates in pigments, and carbonates, sulphates, and sulphides as paint bases. Poisoning from lead compounds in paints may occur from:

(*a*) Inhalation of dust from sandpapering one coat of paint preparatory to applying another.

(*b*) Entry of dust into either the respiratory or digestive system from mixing dry white lead with oil.

(*c*) Inhaling fumes from burning off old paint.

(*d*) Inhaling dust arising from lead paint dried on overalls and drip cloths.

(*e*)Breathing of lead paints nebulized by spraying and suspended in the air, which may find their way into both the alimentary canal and the respiratory system.

(*f*) Using glazing putty containing lead compounds.

Of these six possibilities the result may be either contamination of food by unwashed hands, entrance of lead into the alimentary canal by placing objects in the mouth while working with lead compounds, or the direct inhalation of lead in dust form into the lungs where it can be directly absorbed into the blood. In spray painting the last named type of absorption is the most likely, and authorities state that this type produces the greatest toxic effect because the lead is absorbed directly by the blood without having to go through the liver, while lead which passes through the alimentary canal does go to the liver and much of it is thrown off through the excretory system.

Benzol poisoning results from the continual breathing of benzol fumes. These fumes can not be removed from the air by any method not involving chemical means. It has been stated that a worker continually breathing air containing 100 parts or more of benzol in 1,000,000 parts of air is working under a substantial hazard. This is due to the fact that benzol taken into the system forms a chemical combination with the body tissues, especially the marrow of the bones, where it affects the formation of red blood corpuscles. The National Safety Council's report on benzol (May, 1926) states that "generally cases of acute poisoning from inhalation are either rapidly fatal or respond favorably to treatment with more or less complete recovery within a short period * * *. In chronic benzol poisoning we find a wholly different picture. The onset is insidious, the early symptoms are generally overlooked, and it is not until the condition becomes relatively grave that it receives medical attention."

Silica, as used in various enamels and glazes, also presents certain dangers. Breathing sufficient siliceous material causes what is known

as silicosis, an ailment resulting from the accumulation of considerable quantities of insoluble dust material in the lungs. This dust is not absorbed by the blood and its presence causes irritation and later what is termed "fibrosis."

Substitutes for Toxic Materials

MANUFACTURERS of paints, varnishes, and lacquers appear to have reduced hazards of paint spraying considerably by the substitution in many products of less harmful materials for those which cause disability. Paints for finishing the interiors of buildings are usually lithopone paints, the base consisting of zinc and barium compounds, which are harmless, instead of lead compounds. The use of lead paints on metal structures has been supplanted by iron oxide paints, and for other outside work considerable success has been achieved in substituting titanium oxide for lead, especially for white outside paints. According to an article in the June, 1928, number of the Journal of Industrial Hygiene, experiments with titanium oxide have shown that it has no deleterious effects. During the experiments it was fed in large doses to various animals regularly for a period of 16 months without effect.

The United States Navy has experimented with titanium paints for several years. Concerted efforts have been made to eliminate the hazard in the use of lead paints as well as to improve the quality of the paints. The first action was the reduction of the red lead in red lead paints. As a result of substitution of other materials, none of which are harmful, the amount of red lead was reduced from 20 pounds to 1.66 pounds per gallon.

The Navy standard outside white paint contains 5.33 pounds of white lead carbonate per gallon, while the standard inside white contains 7.7 pounds of white lead per gallon. During the last five years experiments substituting titanium oxide for the lead have been made which indicate that lead can be eliminated entirely. It is estimated that the quantities of red lead and white lead carbonate used in Navy paints will be reduced at least 70 per cent as the ultimate result of these experiments.

Not only does this pioneering move on the part of the Navy tend to eliminate the hazards offered by lead paints, but the substitutes, which are entirely harmless, are found to be equal to the present standards as to stowage, brushing, and spreading qualities, and are proving superior to such standards in hiding power, general appearance, and durability.

In lacquers, materials less toxic than benzol are being substituted, and some manufacturers describe their principal products as containing no harmful ingredients. The substitutes consist of toluol, xylol, and similar materials, which are not as volatile as benzol and most of which have no serious toxic effect on the worker. Not only does this substitution reduce hazards in spraying lacquers, but it also lessens the possibility of "blushing" in damp weather. (See p. 17.)

Ventilating Equipment

THE PROCESS of spraying paints, lacquers, enamels, or other coatings, when performed within any building or inclosed space, should be done only where proper ventilation obtains regardless of the toxic or nontoxic character of the materials used.

During this study some small plants were visited where lacquers and primers were being sprayed and sanded in a closed room provided with absolutely no ventilation except small natural ventilators in the roof, which could by no stretch of the imagination begin to remove dust or fumes from the materials. Among the other plants visited ventilating equipment of many types were observed. Most frequently ventilation was procured by exhaust systems, with open windows or ventilators serving as the source of supply. A few plants were supplied with plenum fans as well as an exhaust system. The capacity of exhaust equipment, as a rule, exceeded that of the plenum fans by 10 to 20 per cent. This excess insures a positive direction of air movement toward the exhaust equipment.

Exhaust equipment of many types were used by the various plants visited, ranging from fans in the exhaust duct driven from line shafts to the indirect exhaust system in which the exhaust movement is induced. In a few cases a fan driven directly by a motor was observed, the whole unit being centered in the exhaust duct. Most frequently, however, exhaust ventilation was secured by 16 to 18 inch fans of various types driven by a belt from a ½-horsepower motor located outside of the duct and operating usually at 1,725 revolutions or more per minute.

Large booths were generally equipped with from two to six of the small fans, which in many cases could be operated independent of each other. Where a booth is supplied with baffle plates to secure equalization of air movement into the booth, such fans under normal conditions will exhaust about 2,000 cubic feet of air per minute. Without baffle plates the fan's capacity ranges up to about 2,500 cubic feet per minute. Larger equipment, with 22 or 24 inch fans, usually exhausts from 4,500 cubic feet with baffles to 6,000 cubic feet without baffles at 1,200 revolutions per minute, while still larger fans of 40-inch diameter driven at 900 revolutions per minute will exhaust about 14,000 cubic feet per minute and at 1,200 revolutions per minute about 18,000 cubic feet per minute through baffles. The figures quoted are based on the capacities of the different types and sizes of fans found in use.

The blades of plenum fans were in several cases found to be of pressed steel, while in the exhaust systems the blades were usually of brass, aluminum, or other nonsparking metal, the "propeller" design being highly favored. Six-blade fans, commonly made of brass, were found in use more often than the other types, due to the fact that they were part of the original equipment which had been installed prior to the general introduction of the propeller type.

Indirect exhaust, which is the latest and most favored exhaust ventilating system, consists usually of the injection of a high-velocity current of air into an exhaust duct through a small opening either around the wall of the duct or a Venturi opening projecting to the center, either method of introduction causing the injected current of air

to blow outward. The velocity of the introduced current of air reduces the atmospheric pressure at the point of introduction. An equalizing current of air is thus induced, moving from the booth or spray room outward in the same direction as the introduced current of air. Such an arrangement permits the location of fans and source of power to be entirely outside the booth and exhaust duct. The possibility of materials collecting on the fan and its supports is thus eliminated, minimizing the task of keeping the duct clean. The use of highly volatile solvents sometimes necessitates the reduction of exhaust velocity. If the velocity is too great, the liquid materials are volatilized to a considerable extent before the particles of spray hit the object to which they are applied, resulting in a slightly sandy looking finish. The remedy is the reduction of the velocity to a point where the materials have little chance to evaporate before reaching the surface.

What is commonly termed "blooming" or "blushing" may sometimes result from too high a velocity, especially during damp weather. Blushing results from the refrigerative effect of the volatile materials and the consequent condensation of moisture on the film before it sets. The result is partial precipitation of the cellulose, so that it makes the surface appear white in spots. This effect can be eliminated by the use of thinners, consisting of less volatile materials, known as "retarders" or "fortifiers," and to some extent by either the reduction of the pressure on the gun or the velocity of the exhaust.

Respirators

IN THE USE of respirators there seems to be a belief among workmen that the ordinary felt disk or sponge type respirators are adequate protection against dust and also, in many cases, against the fumes from volatile material. A respirator highly effective in removing fine dust would be so difficult to breathe through that the workman could not wear it for any extended period of time; in other words, if it is easy to breathe through, it is not a safe protection as a fine dust catcher.

Records of tests, made during the study of spray coating by the National Safety Council, with various respirators using filters in silica dust spray, indicate that "commercial respirators of the pig-snout type ranged in efficiency from 24 per cent for one with a sponge filter to 73 per cent for a respirator with two plies of a cotton paper filter. Not all of the pig-snout respirators are efficient in restraining very fine silica dust under spray-coating conditions; the better ones can restrain about half or a little more of the dust in air as breathed, and so can be of real benefit."

Tests made at the same time with the various types of filters, for efficiency in filtering the mist of lead paint from the air, showed that filters remove lead mist more efficiently than they remove dust. In both cases the sponge type of filter ranked very low. In the case of lead, the sponge was 84 per cent efficient, outranking only a filter consisting of one ply of silk and three plies of cheesecloth, which was 74 per cent efficient. The next filter more efficient than the sponge, was one of four plies of paper which was 92 per cent efficient; all other filters tested rated even higher. This would indicate that most respi-

rators are of considerable benefit in preventing inhalation of lead dust, but should not be understood as furnishing complete protection.

So far as fumes of volatile materials are concerned, the above types, except one with a canister containing a considerable amount of activated charcoal, are of no value at all. The report of the National Safety Council on the efficiency of respirators in the case of benzol fumes, shows that "activated charcoal filters can reduce the amount of benzol in air from 2,000 to 75 parts per million or less. A sufficient quantity must be provided; 60 cubic centimeters of the charcoal was found adequate for a period of 19 minutes; under test conditions, 600 cubic centimeters lasted 250 minutes. Under conditions prevailing in painting practice, considerably longer life may usually be expected." Probably the most convenient respirators which prove effective in the case of volatile materials are either of the type which has a canister or of the hose type designed to bring fresh air to the operator from an unpolluted source. The latter usually connects directly with the compressed air line at the gun. The air hose is equipped with a filter to remove oil and moisture from the air before it is breathed by the operator. A small valve regulates the amount of air which is supplied into the respirator. Expiration is through a small flap or flutter valve, much the same as in the felt disc and sponge types.

The various types of pig-snout respirators usually have a roll edge of soft rubber. These types, when used while spraying in rather close quarters with light paint, not only clog quickly with the paint, but accumulate material on the face of the operator along the roll edge of the respirator and eventually the paint will run down the operator's face inside of the mask, often directly into the mouth. If tight enough to prevent such an occurrence, the pressure soon tires the face and the operator is required to remove the respirator for rest. This condition, it would seem, might possibly obtain under the conditions mentioned, with any type of mask which only partially covers the face.

Respirators for regular use must be of a type that can be conveniently worn under all conditions. For instance, the hose type mentioned above, may prove inconvenient at times. If the operator has to move about beyond the range of the hose attached to the gun, this necessitates the removal of the mask, but if he wears any of the other types, it can be slipped from his face to hang about his neck and he can move freely whenever necessary. The inconvenience of removing the mask may seem only slight, but instances have been found where the operator was required to leave his place of work many times during the day and the removal of the mask each time became so tiresome as to tempt him to leave it off entirely.

One of the general faults of respirators is that they do not always fit perfectly the contour of the operator's face. Unless perfectly fitted, the air entering by any other source than the filter device renders the respirator ineffective for the service it was designed to perform. In the case of the hose type, in which there is a positive air pressure, if the fit is not perfect the air will escape, especially around the nose, blowing into the eyes and causing the operator considerable annoyance. In one plant visited such condition was overcome by the use of goggles. The operator said that the goggles

not only protected his eyes from the air currents blowing around his nose, but also helped to keep his eyes free from turpentine fumes from the paint, as some fresh air was continually forced into the goggles from the respirator.

The use of masks which cover the entire head is not looked upon with favor. Such a mask is held to be too inconvenient, causing inefficiency on the part of the operator and also tempting him to leave it off whenever he is not being observed by officials in charge of the work. Operators provided with such masks, and many times even with masks of the respirator type, are usually instructed to wear the equipment whenever spraying, but officials in many plants have admitted that it is impossible to compel the men to follow the instructions, saying that it is often brought to their attention that careless operators don the mask only when they see officials approaching.

As a rule neither the worker nor the person directly responsible for the manner in which the work is done, is conversant with the relative value of such safety devices, and consequently only in the most efficient shops are the workmen protected by devices on the basis of their relative efficiency. In other shops it is a matter of supplying, either because the law or the workman calls for it, anything which can be easily obtained and does not involve considerable expenditure. In every case an effective respirator should be supplied and worn, and the fact should be emphasized that a respirator effective for one purpose is often of little or no value if worn for another purpose.

The Mist or Spray Cloud

In the course of this investigation particular attention was given to the action of the cloud of spray relative to the various objects being sprayed. The rebound of this mist was particularly noticeable where objects presented large unbroken areas at right angles to the direction of the exhaust air. If the distance from the nozzle of the gun to the surface being sprayed was too close, the rebound seemed to be farther, while if the distance was too great, there was an exceptionally heavy mist although not so much rebound. The proper distance for the gun nozzle from the work seemed to depend on the pressure used and the material sprayed. The distances for ordinary work, varied from 6 inches, which for most guns is too close, to 24 inches, which is probably too great. Where large unbroken areas were sprayed while standing at an angle to the direction of the exhaust ventilation, the spray cloud seemed to be drawn rather effectively toward the exhaust opening.

In several cases, some in rooms and others in booths, the inside surface of hollow articles were sprayed. Where there was no escape for the air bearing paint mist except the opening through which the operator worked, the problem of ventilation was difficult. While spraying the inside of a very deep object the rebound was especially pronounced, because the spraying was done in some instances at a distance of 36 inches from the inside surface, a large amount of mist thus accumulating which poured out of the object in heavy clouds, being displaced by 8 to 12 cubic feet of air per minute from the gun. In one case where the objects were from 10 to 16 inches deep they were laid in a booth with the open end outward. The mist would shoot

out of the object, opposite to the direction of the exhaust-air current as much as 4 or 5 feet. The most efficient method observed for removing the excess spray from hollow articles was to place them where a high-velocity exhaust current would pass across the opening through which the operator manipulated the gun. The air moving at right angles to the rebound would capture the fumes and carry them into the exhaust duct.

For small objects or those with open surfaces the problem seemed simple, as the spray operator could easily place them in the best possible position to take advantage of the air currents moving toward the exhaust opening by directing the spray as nearly as possible in the direction of the air movement.

Spraying of paint on the outside of buildings did not seem to present a particularly serious problem. The superfluous mist from a spray gun used in the open seemed to be rapidly disseminated even where there was no noticeable movement of air. This rapid dissemination, however, can not be depended on sufficiently to protect the workman. An operator should be instructed when the air is moving noticeably always to work with the wind, as the spray otherwise would drift back into his face, thus presenting an unnecessary hazard.

Spraying the interiors of buildings presents, perhaps, one of the most serious ventilating problems for the spray painter. Even though lithopone paints or other materials which contain no recognized toxic substance may be used, the cloud of spray may become so dense as to cover entirely the exposed parts of the workman's body as well as his clothing. Under such conditions the use of some device to prevent breathing the materials suspended in the air is essential. If the materials used contain such toxic substances as benzol or tetrachlorethane, the use of a well-fitting canister mask or respirator employing activated charcoal, or a well-fitting hose mask or respirator, is the only means of assuring the health of the worker.

It is not uncommon for spray materials to adhere to the operator's hands but this is more often from handling freshly sprayed objects than from the spray cloud or mist surrounding the work. Spray material on an operator's face, however, is not so common and usually results from a pronounced amount of mist either rebounding from large surfaces or accumulating because of insufficient ventilation, or both.

Observations seem to indicate that, as a rule, spray operators hold the gun farther from their work than is usually specified for best results, probably on the theory that the cone or fan of spray will cover more surface at a greater distance. Some instances of this practice may be ascribed to the high pressure used. However, an equal film may be applied at the greater distance only by slower movement and hence the practice does not necessarily result in any speeding up of production.

Faulty Equipment

In manufacturing establishments where large amounts of spray materials are being used continually, efforts are generally made to remove the danger in the use of materials which might be harmful, by the use of spray booths or spray rooms equipped for constant

ventilation, by the use of masks, and in some places by enforcement of rigid safety rules.

Faults found in the use of spray rooms and booths are the following: (*a*) Good booth supplied with inefficient exhaust; (*b*) a good exhaust but the booth too shallow for the work; (*c*) the exhaust poorly located in the booth; (*d*) the exhaust fan too far from the booth; (*e*) the exhaust opening too small; (*f*) the booth of improper shape with non-uniform movement of air; (*g*) booth too small for the work, that is, placing large objects in front of or in a booth where the object projects out of range of the exhaust draft; (*h*) moving the stand upon which the object is placed out of the booth so far that the ventilation is ineffective, especially in cases of piecework; (*i*) poor light.

In some plants, booths and ventilation systems, ordinarily efficient, were in operation, but because of bad weather the employees had closed the windows, ventilators, doors, and other means by which air could enter the shop. The exhaust fans were thus decreasing the air pressure in the room in an effort to draw air out through the exhaust ducts, and the fan's capacity was of little value because there was no adequate supply of air to be drawn through the booths.

Fans used in exhaust systems often become coated with an accumulation of spray material. The accumulation of any material on the fan blades, which destroys the characteristic smooth surface of the blades increases the friction of the blade. This increase of friction decreases the amount of air that will be thrown by the fan in operation. Allowing the inner surface of the booth and exhaust duct to become coated with materials also impedes the free movement of the exhaust air and helps to reduce the efficiency of the equipment. Such residue also presents, in the case of pyroxylin lacquers, the serious hazard of explosion. An accumulation of lacquer dust may be, and has been, exploded either by friction, by static, or by spontaneous combustion. Such an explosion occurred in an establishment the day before the bureau's agent visited the plant. Two booths were side by side, the working openings facing the windows. Exhaust was maintained by a 16-inch 6-blade brass fan in each booth. These were each operated by a ¼-horsepower, 1,725 revolutions per minute, motor mounted outside the exhaust duct and belted to the fans. The exhaust ducts curved upward in the rear and outward over the tops of the booths, where they converged into a single larger duct. The larger duct projected through the windows, thus discharging the fumes from both booths outside. The explosion, which had its origin somewhere over the booths in the exhaust duct, was of sufficient force to blow several of the fan blades off from the hubs of the fans. The two spray operators working at the booths, and two truckers working between the booths and the windows, were badly burned and all four were removed to a hospital. Frequent cleaning of the duct would probably have prevented the occurrence.

Some exhausts opening directly to the outside, although of sufficient capacity, were at times exposed to the direct pressure of the winds, which counteracted the efficiency of the fans. Operators in many cases open windows directly by the booth or exhaust outlet, so that the entrance of air through the windows either interferes with the normal movement of air out through the booths, or carries dust from the exhaust opening outside back into the room from which it

had been blown. This condition in one plant was overcome by the installation of recuperators outside and increase of the fan capacity.

While the relative velocity of exhaust air moving through a booth or spray room would apparently be a definite controlling factor of the prevalence of excess spray dust or cloud from the gun, observations made during this study indicate otherwise. Exhaust velocities in plants visited, as shown by the various records, ranged from 40 to 190 feet per minute. The amount of spray in some plants where the velocity was relatively high was apparently worse than in other plants doing similar spraying where the velocities were lower, even where the same model equipment was in use. The difference apparently was due to both a slight difference in the shape and size of object sprayed and the shape and size of the exhaust outlet. In general, the observations would indicate that the problem of giving the workman good air to breathe involves not only the theoretical capacity of the ventilating system but also the nature of the object being sprayed, the nature of the building, the location of the exhaust discharge, the type of vent on the exhaust, the location of near-by buildings which may deflect normal winds, and, above all, the availability of openings of sufficient size to allow the entrance of a positive supply of fresh air. Engineers advise at least 10 per cent excess exhaust capacity over the supply of fresh air to insure exhaust currents toward the proper outlets.

Measures for Overcoming Dangerous Practices

Often the lack of safety rules or the loose enforcement of them gives rise to dangerous practices. The spray gun is often used in a manner causing the spray unnecessarily to roll back out of the booth. In other cases, especially where the operator is paid by the piece, he may pull the turntable or other stand out too near the opening of the booth in order to save time in removing the finished piece, and replacing it with one to be worked upon. In a few plants there was evidence of the gun having been used promiscuously about the spray room. One of the commonest of dangerous practices is the negligent manner in which a respirator is used, even though it may afford only partial protection.

Granting that a spray room or booth is provided with sufficient ventilation to expel dust or fumes immediately and prevent inhalation by the operator, precautions which may provide additional protection are:

(*a*) Greasing unprotected portions of the body, to make any material collecting thereon easily removable.

(*b*) Thorough washing and the brushing of the finger nails, as well as avoiding the habit of placing anything in the mouth during work hours.

(*c*) Protection of food and of street clothing from dust and spray.

(*d*) Cleanliness of working clothes.

(*e*) Teaching employees the proper use of the gun.

(*f*) Equal protection of all employees who are working within 30 feet of the spray gun where no direct exhaust is available.

(*g*) Wet sanding instead of dry sanding wherever possible.

(*h*) Reduction of the pressure on pressure containers to the lowest point consistent with speed of application required.

(*i*) Reduction of the pressure used to break up the material to the lowest point consistent with the nebulization required.

(*j*) Careful use of the gun at the proper distance from the work.

(*k*) Use of nontoxic materials of nonirritating character wherever possible.

Some manufacturers question the value of greasing, as they have had employees suffer from epidemics of boils which they attributed to the grease used on the arms. Thus it would appear that only specially prepared greases or solutions should be used for the protection of the skin.

Other Safety Measures

In addition to installing efficient equipment, further steps have been taken by some manufacturers to forestall any disability from the process of spraying. In many instances materials which contain no harmful ingredients have been substituted for materials which may cause ill effects.

When there is need for a spray painter, some plants do not hire former sanders, brush painters, brass foundry workers, battery workers, glaziers, paint factory workers, or other workers who may have absorbed toxic materials, especially lead or benzol, at a previous occupation. Again, a thorough physical examination, including a blood count, followed by periodic examinations serves to indicate the possible toxic effect of materials used. Such blood counts are usually made at three or six months' intervals. At one plant operated by the Government, where considerable benzol is used, they are made monthly.

Some manufacturers have instituted periodic relief of such workers as may by continuous employment be affected by spray. This may be either by a daily relief period or by the rotation of employees. By the latter plan, as practiced in plants visited, a double spray force is employed; that is, one crew will spray for a specified period (in some plants one week and in some two weeks), and then exchange jobs with another crew which has been at work away from the spray materials. In one plant visited this rotation was applied to three jobs, each employee working at spraying but one week in three. The matter of adequate washing facilities is also important. Plants were visited where washing facilities were good, but not adequate. In one plant, for example, hot and cold running water, soap, and towels were furnished, but though a large force was employed there was provision for only three or four employees to wash at a time. At the end of a work period, the first to reach the wash room were accommodated, while the rest, rather than wait, would eat or go home unwashed.

The cleaning of booths and exhaust ducts in one case studied was the cause of poisoning to the person doing the work. The precautions heretofore specified could, therefore, well be applied to all people working in or around the space where spray painting is being done.

Attitude of Employees Toward Safety Measures

WORKERS who are susceptible may often suffer temporary or permanent effects without knowledge of the real cause of their disability. As a rule, workers are reluctant to make known that they are feeling ill, reasoning that such acts jeopardize chances of promotion or their general standing with the employer, knowing that the habitual fault-finder is considered undesirable. They do not often recognize the cause as occupational and so lose time and are inconvenienced while the family physician treats them for some ailment based on the outstanding symptoms. Such ailments are sometimes diagnosed as stomach trouble, appendicitis, or various other disabling diseases of a similar nature, while a blood test or other tests would show the presence of an occupational cause. A case resulting in death (Case No. 1, p. 9), illustrates how serious the situation may become where facts are not promptly reported. The fatal aspects of the case might have been avoided if precautions had been taken after the first attack. The facts in the case were as follows:

The spray operator was 35 years of age at the time of his death. The cause of death was held to be benzol poisoning. The man had been a spray operator and decorator for approximately four years, previous to which he had been a brush painter at different periods. According to the doctor who attended him, he had an attack of benzol poisoning about two years before his death, involving two dorsal and the first lumbar nerves. This attack confined him to his home for 10 days. Before his death the employee made a statement that he did not report that attack to the industrial commission because his employer was good to him. For the next four or five months he was employed as a house painter working on the outside, and during this time he suffered a fall which injured his back.

Seven months after the illness mentioned above, he was reemployed in the establishment where he had suffered his first attack. It was said that he made a practice of washing his hands with benzol to remove lacquer which had adhered to them, and two months after his reemployment he began to have increasing pains in the lumbar region. The nerves which had first been affected slowly ceased to function and limitation of motion increased. Ten days after the reoccurrence the doctor was again called in and found him suffering from severe pain, which required hypodermics to relieve. The doctor called in consultation another doctor, who diagnosed the case as neuritis from benzol poisoning. The condition grew steadily worse, resulting in total paralysis in both legs, loss of sphincteric control, and inability to empty the bladder, requiring catheterization. He was removed to a hospital, where a third doctor diagnosed the case as neuritis from benzol poisoning. Two weeks later he had total paralysis of both legs with anesthesia of inner anterior surface of both tibias; no reflexes; cramps of lower abdomen; marked blood hæmolysis; and slight elevation of temperature; the heart, lungs, liver, spleen, and urine were normal. After eight weeks confinement in the hospital the man died.

The product of the plant in which the man worked was wooden furniture. It employed 150 men, 11 of whom were spray operators. The factory worked 10 hours per day on Monday to Friday, and 5 on

Saturday. The spray operators averaged 7 hours a day actually manipulating the spray gun, making a total actual exposure of about 38 hours per week.

The company had been spraying furniture for about 10 years and in the process used varnish, lacquer, shellac, substitute shellac, thinner, and stains. It used a material to form the outer coat or glazing consisting of 40 per cent benzol, 20 per cent ethylate, 20 per cent butylate, and 20 per cent acetylate. The materials were applied with a standard pressure spraying system, using a pressure of 10 to 15 pounds in the container and 60 to 70 pounds to break up the material as it left the gun, and having a nozzle distance of approximately 15 inches.

The work was performed in booths equipped with separate exhausts, from which air was drawn by an exhaust fan. The velocity of the air at the working surface was estimated, from the size of the booth and the capacity of fan, to be 80 feet per minute. The agent was informed that the company furnished masks of the ordinary respirator type which were worn by some operators but not by others. It was also stated that at the time of the investigation 10 per cent of all spray material used consisted of a stain in which there was 40 per cent benzol. It is not known how effective the equipment may have been in clearing the spray room of fumes or of preventing materials from adhering to the person of the operator. Washing facilities with cold water only were furnished, a few taking advantage of these facilities.

Sometimes workers misinterpret regulations designed for their protection. In some plants visited printed regulations regarding the use of spray equipment had been posted. These were designed to keep continually before the worker the necessity of precautions in the use of equipment and handling of materials. These rules or regulations when first displayed were interpreted to mean that the work was extremely hazardous and spray operators promptly quit their jobs. The hiring of new spray operators proved a difficult problem in these plants because of the hysteria or mental stampede among employees at the time. In other plants regulations were posted, with no resulting trouble. This would seem to indicate that the workers in the latter plants were already educated to the possible hazards of the occupation and had a full realization of the necessity of care in the work.

Conditions which apparently were responsible for cases of poisoning in plants studied have in many cases been improved to such an extent as to indicate the probable prevention of further trouble in such plants. In a few plants, however, where cases of poisoning had also occurred no definite steps have been taken in any direction, although various State agencies have pointed out to the plant officials that hazardous conditions have existed for some time.

In one plant where an employee had been affected by the materials sprayed, ventilation had not yet been provided at the time of this study, which was approximately a year after the poisoning. This plant had been engaged in doing touch-up body and fender work by spraying for only two months when the case occurred. Four men had been engaged on that particular part of the work, which was done in the rear of the establishment, in a room which was separated from the automobile repair shop only by a series of

stock racks. The operations of filing, grinding, applying the prime coat, sanding, and spraying were all performed within this room. The ceiling was about 15 feet high and the space for refinishing was about 60 feet square. There were no booths, nor was there any special provision for ventilation. The end of the building was practically all windows. There was a door in one corner for ingress and egress of cars, but the door was closed because of cold weather. During the agent's interview the door was opened to permit the entrance of a car, at which time the fresh air coming in was very noticeable. There were no windows open at the moment, but it is possible that they would be opened in warmer weather.

The air compressor, which furnished pressure for spraying, was electrically driven and drew air from the center of the working space. It was a small portable outfit of a size sufficient to operate but a single gun. The odors of the materials were very noticeable and, together with the dust from sanding, make conditions for all the employees in the room very poor.

The employees who worked in the finishing department were of the opinion that the products used were absolutely harmless. The fact that there was no provision for their safety did not appeal to them as having any serious consequences, and they took no precautions to prevent accumulation of material on their persons. The only washing facility was a spigot and trough, where cold water was available.

No safety rules were issued by the employer nor was a physical examination required. The employer said that if a mask was desired by any employee, he would furnish one of any type the man might ask for.

In a few very large plants covered in the study employing as many as 200 or 300 spray operators, there have been only 1 or 2 inconsequential cases of disability in the course of several years' experience. These examples indicate that many of the large manufacturers have worked out rather highly efficient and protective systems. In a few smaller plants covered several cases of disability have resulted from the operation of spray painting. Some of these cases, however, may be ascribed as much to the carelessness of the spray operators in using the safety equipment provided as to anything particularly wrong with the system itself. In fact, several examples were found where spray operators were actually antagonistic toward certain rules or safety equipment furnished for their protection, and other cases where operators imbued with a false sense of security were indifferent to the use of safety devices.

There were other plants visited where the conditions seemed very unsafe. The workmen in these plants, as a rule, were assured that the material used could have no harmful effects. The only guaranty, however, in many such cases was information furnished by salesmen who might or might not have known the formula or ingredients used in the manufacture of the materials.

Economies of Spray Painting

A FEW years ago manufacturers in general devoted a generous amount of working space to the finishing process necessary to make the

product marketable. In some industries a large per cent of the total space was devoted to finishing, because of the great amount of time required to obtain the desired finish with the methods and materials then in use. One example illustrating the evolution of finishing is that of the automobile body. In one plant manufacturing bodies just after the war 42,240 square feet of space was necessary to produce one body per hour. The minimum finish on many cars consisted of six rough coats, three coats of varnish, and two coats of color varnish, requiring about six weeks for the process. The paint alone on a car weighed 75 pounds. At that time, the high percentage of the space devoted to the building of a body was largely for the finishing department. Increasing demands for bodies brought about the adoption of other processes and finishing materials, which cut the space necessary for the production of one body per hour from 42,240 square feet to 16,000 square feet. This was previous to the adoption of pyroxylin lacquers. No record could be obtained of the space necessary since their adoption, but it is safe to say that it is far below the figures given above.

The real economies of spraying, however, can be shown by other examples. In considering the figures hereafter presented, one should bear in mind that paint brushed on seldom dries without brush marks, which are in fact alternate thick and thin streaks of paint. These inequalities often appear in the film of paint covering wood which has weathered ridges and grooves. In such cases, where the ridge of the wood and the thin portion of the brushed paint are in conjunction, the film is reduced to a minimum thickness and is bound to wear through much more quickly than where the thick part of the film crosses the groove in the wood. Also, where there is insufficient brushing small bubbles of air are often imprisoned by the paint film and the expansion and the contraction thereof by the heat and the cold in the weather, causes such a film to deteriorate rapidly. With such possibilities in mind, it is obvious that paint applied as a very fine mist by an experienced operator would not only cover the wood more evenly regardless of its surface characteristics, but also would prevent the formation of air bubbles beneath the film. Thus the skill of the painter and the quality of the film applied must be given due weight in making comparisons between brushing and spraying. An unskilled brush man may fail to apply paint evenly or to brush it out thoroughly, and an unskilled spray painter may apply the material either insufficiently or excessively.

The saving effected by a school board by spray painting [1] is shown in the following:

> We rented a machine from a local banker and, after a short trial, purchased a complete one-unit outfit. We continued during the summer to use both machines. With the help of two men to operate the spray guns and three helpers, we completely decorated the interiors of these six large buildings, including our senior high school.
>
> Before we began the work with spray guns, we had specifications prepared and requested the painting contractors in town to bid on the work. We received some 9 or 10 bids for the work on the six buildings, ranging from $8,375 to $9,667 for the work complete, the painter to furnish labor, materials, and equipment. At the completion of the job we found our total expense, which included rent for each of the two machines and all labor, materials, and equipment, including

[1] From the Spray Painting Machine, by G. B. Heckel.

electricity and all other items, to be only $5,521.55, making a saving of $2,848.95, figured on the price of the lowest bidder.

We found the spray gun used about 50 per cent more paint on one coat than putting on by brush, but we found also that the one coat will cover as well as two coats with the brush, thus resulting in a net saving of 25 per cent of the paint. Everyone (even painters who were not friendly with the spray gun) who has seen the decoration agrees that the paint is more evenly applied and looks better than it would if put on by brush. Our experience proves that one man with a spray gun, on an average, can do as much work as four to five skilled painters with brushes.

Another example of the economy of spray painting is found in the spraying of a previously painted metal roof. The facts are analyzed as follows:

Actual area of surface (578 square feet)

	Paint, gallons	Time, man-hours
Spraying	1. 49	0. 5
Brushing	1. 35	1. 5

10,000 square feet

Spraying	25. 8	8. 6
Brushing	23. 3	25. 9

Comparative cost of 10,000 square feet of work

Spraying:	
Paint (25.8 gallons at $4 per gallon)	$103. 20
Labor (8.6 hours at 90 cents per hour)	7. 74
Total	110. 94
Brushing:	
Paint (23.3 gallons at $4 per gallon)	93. 20
Labor (25.9 hours at 90 cents per hour)	23. 31
Total	116. 51

Spraying required approximately 10 per cent more paint than brushing. Brushing required approximately 200 per cent more labor than spraying.

Still another example is the spraying of a previously painted brick wall with stone cornices:

Actual area of surface

	Paint, gallons	Time, man-hours
Spraying (8,364 square feet)	10. 8	20
Brushing (8,188 square feet)	9. 87	41

10,000 square feet

Spraying	12. 90	23. 9
Brushing	12. 05	50. 0

Comparative cost of 10,000 square feet of work

Spraying:	
Paint (12.90 gallons at $4 per gallon)	$51. 60
Labor (23.9 hours at 90 cents per hour)	21. 51
Total	73. 11
Brushing:	
Paint (12.05 gallons at $4 per gallon)	48. 20
Labor (50 hours at 90 cents per hour)	45. 00
Total	93. 20

Spraying required approximately 7 per cent more paint than brushing. Brushing required approximately 109 per cent more labor than spraying.

An example of interior work on the ceiling and walls of a plastered room is shown below:

Actual area of surface

	Paint, gallons	Time, man-hours
Spraying (2,600 square feet)	6. 39	5. 33
Brushing (1,000 square feet)	1. 75	5. 33

10,000 square feet

Spraying	24. 5	20. 5
Brushing	17. 5	53. 3

Comparative cost of 10,000 square feet of work

Spraying:	
Paint (24.5 gallons at $4 per gallon)	$98. 00
Labor (20.5 hours at 90 cents per hour)	18. 45
Total	116. 45
Brushing:	
Paint (17.5 gallons at $4 per gallon)	70. 00
Labor (53.3 hours at 90 cents per hour)	47. 97
Total	117. 97

Spraying required approximately 40 per cent more paint than brushing but gave quite good "hiding" in one coat. Brushing required approximately 160 per cent more labor than spraying and gave poor "hiding" in one coat.

A test by the United States Navy between handwork and spray painting on the U. S. S. *Neptune* was made on the inside of the midship tank, using a red-lead paint. Stages had to be rigged for the handwork, while all parts could be reached with the gun without staging. The results were as follows:

The paint was sprayed at the rate of 1,024 square feet per hour by the spray equipment, using 2.73 gallons of paint per thousand square feet. In the same tank, under similar conditions, 82.5 square feet per hour were painted by hand, using 2.02 gallons of paint per thousand square feet of surface.

Another example shows that:

A contracting painter made a bid of 65 cents per square yard for painting a stucco house, and was low bidder at a total of about $650. He bought a small spray painting outfit and did the work at a cost of slightly over $350.

Spray Equipment in the Government Service

SPRAY painting was also observed at three arsenals, two air depots, two navy yards, and a proving ground. Steps were being taken at one of the arsenals at the time of the bureau agent's visit to install efficient equipment and to establish regulations which would guarantee the protection of the spray operators. At the other seven posts efficient equipment was already in operation. Such equipment had been installed in most cases to eliminate possible hazards rather than to correct conditions which had been in any way conducive to poisoning from the process. In comparison with the conditions observed at the different manufacturing plants the conditions

at the Government posts maintained by the equipment in use were of a high standard.

Spray materials in the Government include most of the kind of paints used in industry and also coatings for special purposes. Some of these special-purpose materials contain benzol, while many contain lead in different compounds. The dopes used in the manufacture of airplanes are usually thinned with acetone (CH_3 $COCH_3$). The specifications for the dopes usually provide "that the vapors of the dope shall not cause serious discomfort or injury to the workers engaged in the application of the dope."

State Regulations Regarding Spray Painting

MASSACHUSETTS, Michigan, and Wisconsin control the process of spray coating by a code of special rules and regulations, while California, New York, and Pennsylvania have tentative codes of rules and regulations. In New York the code is still in the hands of an advisory committee; in California and Pennsylvania the codes have been submitted to the public but have not yet been approved by proper authority and therefore do not now have the force of law.

Illinois, New Jersey, and Ohio have comprehensive laws dealing in considerable detail with means of protecting the health and welfare of workmen, and which apply generally to any hazardous process or condition in manufacturing plants. These laws guide inspection of spraying equipment and conditions in the three States.

In Maryland and Wyoming, and in the United States Congress, bills are pending to regulate the process of spray painting.

The Colorado Department of Labor has formulated a set of rules and requirements as a guide for factory inspectors in certifying spray-painting equipment in the State.

Connecticut, Delaware, Iowa, Maine, Minnesota, Missouri, New Hampshire, Rhode Island, Washington, and West Virginia have general statutes concerning ventilation or sanitation which would probably apply to any spray painting where the materials used contained lead, benzol, or other toxic material.

In Ohio the industrial commission is empowered to supervise the life, health, safety, and welfare of employees. Under this authority the commission has issued supplementary rules for the guidance of factory inspectors in making or issuing specific orders when inspecting spray-coating equipment. These rules for the inspectors operate only as a guide to the inspector and do not in any sense apply as law to spray operations in establishments in the State. When the inspector issues a specific order to the employer, however, the order has the effect of law. In Tennessee the general law covering ventilation is pointed out by the State department of labor as its only recourse at present in dealing with the problems of spraying paint. The State has made some efforts toward the formulation of special rules and regulations applying to spray painting, but no definite results have been obtained up to this time. In Utah a similar condition exists. The industrial commission of that State points out that the provision

of their workmen's compensation act which obligates the employer to do what is reasonably necessary to protect the life, health, safety, and welfare of workmen is the only provision at present covering in any way the subject of spray painting.

All of the statutes mentioned above appear in Bulletin No. 370 of the United States Bureau of Labor Statistics. The bulletin, however, does not contain special rules and regulations which have the force of law.

The following compilation includes the codes or special rules and regulations for the three States where such codes are in force and also the tentative codes for California and Pennsylvania. All of the rules in the codes which were primarily for the prevention of fire where the spray process is used were omitted. In addition to the above codes the compilation shows the rules issued by the Colorado Department of Labor and the supplementary rules of the Ohio Industrial Commission.

CALIFORNIA

Tentative Spray Coating Safety Orders Issued by the Department of Industrial Relations, Division of Industrial Accidents and Safety

Section I.—*Definitions*

For the application of these orders:

(*a*) The term "approved" shall mean approved by the department of industrial relations, division of industrial accidents and safety.

(*b*) The term "spray coating" shall mean the application of paints, stains, varnishes, lacquers, enamels, or similar materials by the spray method.

(*c*) The term "spray method" shall mean the application of atomized paints, stains, varnishes, lacquers, enamels, or similar materials delivered through or applied by a spray gun or similar device by compressed air or other means.

(*d*) The term "cabinet booth" shall mean a compartment within a room or section of an establishment which compartment shall be equipped for the coating of objects by the spray method.

(*e*) The term "room booth" shall mean a room which is built or set apart for spray coating and equipped with exhaust ventilation, and which can be closed off entirely from the rest of the building.

(*f*) The term "structure" shall include buildings, walls, bridges, ships (when not under maritime jurisdiction), or other fabricated units.

(*g*) The term "air helmet" or "hose mask" shall mean a device so designed and equipped as to enable the wearer to breathe air obtained from an unpolluted source.

(*h*) The term "respirator" shall mean a device designed to be worn over the nose and mouth and so equipped as to prevent the wearer from inhaling solid particles contained in the surrounding air.

(*i*) The term "gas mask" shall mean a device to be worn over the nose and mouth (and may include the eyes) and be equipped with materials which will absorb or neutralize the fumes, gases, or vapors contained in the air being breathed by the wearer.

(*k*) The phrase "place of employment" shall mean and include any and every place, whether indoors or out or underground, or elsewhere, and the premises appurtenant thereto where, either temporarily or permanently, any enterprise, project, industry, trade, work or business is carried on, or where any process or operation directly or indirectly related to any enterprise, project, industry, trade, work or business is carried on, including all excavation, demolition, and construction work, and where any person is employed by another, or suffered or permitted to work for hire but shall not include any place where persons are employed solely in household domestic service or any place of employment, concerning the safety of which jurisdiction may have been vested by law heretofore or hereafter in any other State commission or officer, or any offices or department of the Federal Government. (Workmen's compensation act, sec. 33, ch. 586, Laws of 1917; as amended, ch. 471, Laws of 1919; ch. 90, Laws of 1923.)

SECTION II.—*Orders*

ORDER 2200. *Scope.*—These orders shall govern the use and control of all spray coating apparatus, in every place of employment: *Provided, however,* That they shall not prohibit or regulate any farmer, horticulturist, fruit grower, or other person engaged in farming, or fruit or vegetable growing, from using a spray machine for the purpose of spraying trees, shrubs, and vines with chemicals to protect the same from disease; or prohibit or regulate any dairyman, creamery owner, or operator or other person from using any spraying machine to spray any building or part thereof with solutions composed of water and chemicals of recognized medical value, when used for the purpose of keeping said building in a sanitary condition.

ORDER 2201. *Application.*—(*a*) Unless otherwise stipulated, spray coating shall be performed in cabinet booths. Orders applying to cabinet booths or room booths shall not apply to the use of the spray method for coating interiors or exteriors of buildings or other structures, or for the coating of objects in the open air or in sheds open at least on two opposite sides.

(*b*) On interior and exterior spray coating of buildings or other structures, each operator must be provided with and shall wear while spraying is being done, an approved type of respirator, gas mask or air helmet and hood, jacket and gauntlets made of rubber or other material impervious to paint or other spray solutions and in addition, on interior work, where there is not sufficient natural ventilation, exhaust systems shall be installed and operated continuously while spraying operations are being carried on. These exhaust systems shall be so designed as to maintain sufficient velocity and air circulation to adequately remove the vapors and to prevent all possibility of explosive mixtures forming in the room. Sufficient fresh air must enter the room to permit the fans to act efficiently. The discharge from such exhaust systems must not endanger the health of any employee. The spray coating of interiors shall be so performed that neither the spray operator, nor any other worker, shall come between the spray gun and exhaust openings during spraying operations.

(*c*) The spray coating of large objects or large parts need not be accomplished in cabinet booths or room booths if not reasonably subjected to such treatment. The spray coating of large objects or large parts shall not be carried on by any individual unless he wears an approved type of respirator, gas mask, hose mask, or air helmet, and approved hood, jacket and gauntlets. Spray coating shall not be done within 30 feet of another worker unless that worker is provided with the protection equal to that furnished the sprayer.

(*d*) On interior and exterior spraying of buildings and other structures, any type of equipment may be used except the suction or true ejector type of more than 1 quart capacity. During operation the nozzle of the spray gun shall not at any time be more than 13 inches from the surface being spray coated. When necessary, scaffolding or other approved support shall be used so that the maximum allowable distance between the gun nozzle and surface being spray coated is not exceeded.

(*e*) The spraying of vitreous enamel or other siliceous materials in places other than where the sprayer stands in front of a cabinet booth with exhaust ventilation equal to that specified in Order 2203 (*a*) is prohibited unless the operator is provided with an approved respirator, gas mask, or air helmet and approved hood, jacket and gauntlets, with a positive supply of air from an unpolluted source.

(*f*) All orders, except those in which locations are otherwise specifically mentioned in these orders, shall be construed as applying equally to spraying operations conducted inside and outside of cabinet booths and room booths.

(*g*) The use of benzol as a spray lacquer thinner is prohibited.

(*h*) In cases where, in the opinion of the department of industrial relations, division of industrial accidents and safety, the enforcement of any order would not materially increase the safety to employees in the use of any equipment and would work undue hardship on the employer, exemptions may be made at the discretion of said division on written request, but such exemptions must be in writing to be effective, and can be revoked after reasonable notice has been given in writing.

ORDER 2202. *Specifications for cabinet booths.*—(*a*) Except as hereinafter noted, all cabinet booths shall be large enough completely to contain all objects to be spray coated therein. Objects that are too large for any one cabinet booth may be spray coated by first placing one end in a booth and then the other end.

ORDER 2203. *Exhaust systems.*—(*a*) All cabinet booths and room booths shall be equipped with an exhaust fan or fans of sufficient capacity to move the air past the working face of the booth (or point of operation) toward the fan at a velocity to insure under all operating conditions the protection of operators and helpers and other persons in the vicinity from deposit or inhalation of the materials discharged from the spray apparatus. This velocity shall be maintained approximately uniform over not less than 75 per cent of the working area. Fans shall be of such size and rated capacity as to perform the required duty without the necessity of overspeeding. The air in the breathing zone furnished and maintained shall be reasonably pure, fresh, and clean. Air shall not be recirculated unless it has been passed through an effective air cleansing apparatus.

(*b*) All spray operators in cabinet booths shall exercise care not to come between the exhaust outlet and any spray gun in operation.

(*c*) In room booths used for the spray coating of objects by more than one spray operator working at the same time, exhaust ventilation shall be provided so that it will be unnecessary for anyone to come between the spray gun and the nearest opening of the exhaust system.

(*d*) *Exhaust ducts.*—(1) All exhaust ducts shall be as short as possible. They shall terminate at a point where the discharge will not endanger the health of any employee.

(2) If horizontal ducts are used, the discharge ends of such ducts shall be protected from wind pressure or precipitation by one of the following methods:

(A) The projecting end shall be turned down;

(B) The projecting end shall be turned up and projected with a shield or cowl above;

(C) A shield or baffle shall be installed in front of the discharge end.

(3) The projecting end of a vertical duct discharging upward shall be protected with a shield or cowl.

(4) All exhaust ducts shall be so constructed as to be easily inspected and cleaned. All ducts longer than 10 feet and less than 60° from the horizontal shall have clean-out doors at 10-foot intervals, or shall be so constructed as to be easily taken apart for cleaning in lengths of not more than 10 feet. All ducts over 10 feet in length shall have clean-out doors 10 feet from connection with booth.

(*f*) Exhaust ventilation shall be maintained in every case at such rate that no visible spray is seen to come outside the face of the cabinet booth.

(*g*) To maintain adequate ventilation, cross currents of air shall be avoided.

(*h*) All cabinet booths and room booths shall be so located and operated as to insure an adequate amount of reasonably pure, clean air, of comfortable temperature or equal to normal outside atmosphere, to replace the air removed by the exhaust system.

(*i*) All exhaust systems shall be of such type and arrangement that operating efficiency can be maintained independent of weather and adjacent working conditions inside or outside the plant.

ORDER 2209. *Separation of spray operators.*—(*a*) Where workers are engaged in the spray coating of automobiles, trucks, railroad cars, and similar large objects placed approximately parallel to each other in sheds, or in the open, a space of at least 6 feet shall intervene between each two vehicles or objects being so coated.

(*b*) Operators using the spray method shall be prohibited from spraying toward each other where there is any possibility of spray striking the head or face of another operator.

ORDER 2210. *Additional requirements for health and sanitation.*—(*a*) All spray operators working inside of room booths where cabinet booths are not provided, or in the open air, shall wear an approved hood, jacket, and gauntlets.

(*b*) Where respirators or other similar devices of the filter type are used, they shall be cleaned, or the filtering material renewed not less than twice each working day, and as often in addition thereto as necessary. In the case of intermittent use, such respirators shall be cleaned, or the filtering material renewed at least once each five hours of use. If the filtering, neutralizing, or absorbing material is of such character that it may be used with safety for a longer time than that just specified, the directions of the manufacturer of the device for the renewal of such material shall be followed.

(*c*) In addition to approved washing or bathing facilities, adequate supplies of soap and nail brushes shall be provided for spray operators and their helpers.

(*d*) No person or persons shall be permitted to eat or to bring food inside any room booth. No person or persons shall be permitted to eat their meals where spraying is being done within a radius of 25 feet of such spraying.

(*e*) No person under 18 years of age shall be required or permitted to spray coat objects or to act as helpers on sandpapering jobs.

(*f*) When sandpapering is continuously done in conjunction with spray coating, the wet process shall be used to eliminate the dust. When dry sanding is done on either interior or exterior work, an approved type of respirator, gas mask, or air helmet must be provided and shall be worn by the operator.

(*g*) All protective clothing shall be furnished and maintained in a sanitary condition by the employer. A complete change shall be furnished at least once each week or oftener if necessary.

ORDER 2211. *Reporting of paint pots.*—Whoever owns, uses, or causes to be used, any pressure paint tank or pot, carrying 15 pounds pressure per square inch or more, shall report the data and number thereof to the department of industrial relations, division of industrial accidents and safety, within 90 days after the effective date of these orders.

ORDER 2212. *Inspection of paint pots.*—(*a*) No person, persons, firm, company, or corporation, shall use or cause to be used, any pressure paint tank or pot, subject to these orders, unless such pressure tank or pot shall have been inspected and approved by an inspector authorized by the department of industrial relations, division of industrial accidents and safety, as hereinafter required or a request for such inspection has been made in writing.

(*b*) Inspectors must hold certificate of competency as provided for in order 803 of the boiler safety orders.

ORDER 2213. *Reports of paint pots.*—(*a*) A copy of all inspection reports shall be filed with the department of industrial relations, division of industrial accidents and safety, within 21 days after such inspection has been made, on forms provided. Such reports shall set forth the necessary changes or additions or repairs to make such apparatus conform to the requirements of those orders.

(*b*) Insurance companies whose inspectors hold certificates of competency as boiler inspectors or deputy boiler inspectors shall report to the department of industrial relations, division of industrial accidents and safety, the name of the owner or user and the location of every pressure paint tank or pot on which insurance has been refused, canceled, or discontinued, giving the reasons therefor.

(*c*) Upon request of the department of industrial relations, division of industrial accidents and safety, or of any inspector or deputy inspector of boilers holding a certificate of competency from the department of industrial relations, division of industrial accidents and safety, the owner or user of any pressure paint tank or pot shall prepare same for inspection. The application of hydrostatic pressure test shall rest in the discretion of the inspector and if so ordered the owner or user shall make the necessary preparations for such test.

(*d*) In no case shall the hydrostatic test exceed one and one-half times the maximum safe working pressure.

ORDER 2214. *Construction of paint pots.*—The air pressure tank safety orders shall govern the construction of all pressure paint tanks and pots carrying a pressure of 15 pounds per square inch or more.

ORDER 2215. *Design of spray equipment.*—(*a*) All pressure paint tanks and pots shall either be built to safely carry the full pressure of the compressor system, or be protected from over-pressure by a safety valve. The safety valve shall be located between the reducing valve and the pressure paint tank or pot, and where it will not be affected by collections of spray material. The safety valve being a protective device shall not be used to regulate the pressure and may be sealed at the discretion of the department of industrial relations, division of industrial accidents and safety.

(*b*) Safety valves with either the seat or disk of iron are prohibited.

ORDER 2218. *Handling of paint pots.*—(*a*) Whenever a pressure paint tank or pot is placed on a staging or platform, it shall be securely fastened or tied to staging or platform when in use.

(*b*) The hoisting of pressure paint tanks or pots by the paint hose or when pressure is on the tank or pot is prohibited.

COLORADO

Rules and Requirements

(Published in the twenty-first biennial report of the Colorado Bureau of Labor Statistics)

1. All indoor spraying of manufactured objects should be done in a properly constructed booth where size permits. The best type of booth is automatic, with a small opening for the placement and the removal of objects, these being carried by track or wheel to the automatically controlled spray gun located as far as possible from the feed opening.

2. For nonautomatic spraying the 3-sided booth should be used. This booth should be large enough to completely cover the object being coated and with adequate ventilation from the rear, or from slit exhausts on the sides and the top. Wide booths should have multiple fan installations or a large exhaust fan well baffled to distribute air currents. The face area of the booth should be from four to eight times the area of the object sprayed, not too large or too small. The booth should be cleaned periodically, preventing any appreciable accumulation on the walls, and no litter should be allowed to accumulate on the floor. Walls and ceilings of the booth should be greased or papered, or both.

3. Open windows near the booth face should not be permitted as they often materially disturb the air currents and prevent proper exhaust through the booth. At times they may even reverse the air flow and actually increase the workers' exposure.

4. Fans are best located on the rear or sides, and better low than high, as most of the harmful ingredients used in spray coating give either heavy vapors or are heavy solids. Indirect ventilation is seldom efficient.

5. It is important that there is sufficient fresh air to supply the fan pull, and supply air from special ducts rather than draw from a room already full of fumes from other processes. In no case should air be drawn from the drying room, where the air is already heavily charged with lacquer fume.

6. Fans and ducts must be kept clean. The fan must be properly adjusted. No fan will give its claimed rating of air flow if caked with dirt or if improperly balanced.

7. Exhaust ducts should be straight and avoid sharp angles. Where solids in suspension are sprayed as vitreous enamel, ducts should not be horizontal. But if absolutely necessary to be horizontal they should be large and frequently cleaned.

8. Ducts should be appreciably larger than the fan area to avoid friction. They should discharge at a point where the exhaust fumes will not be a menace to others, and where they will not reenter the room.

9. Discharge openings should be protected from wind back pressure by baffles or cowls or by not too abrupt bends.

10. One essential to good exhaust ventilation is air movement past the sprayer's face toward the exhaust fans at a rate of at least 150 feet, or better, 200 feet per minute, regardless of booth area or cubic contents.

11. Objects being sprayed in booths should be placed entirely within the booth. Spray should be directed away from the worker toward the exhausts, and large flat surfaces should be sprayed at other than a right angle and placed at an angle in relation to the fan. Deep boxes should be placed side on towards the fan when being sprayed inside. When small objects are being sprayed in a large booth, they should be on low stands or turn tables so that spray is directed down rather than up.

12. Gun pressure should always be as low as is consistent with good workmanship. Tests show that high pressures increase materially the dispersion of toxic substances in the air.

13. No lacquer spraying should be done without exhaust ventilation, regardless of benzol content, and benzol lacquers or paints should not be sprayed unless the sprayer is equipped with a positive pressure air mask or helmet.

14. Quick drying paints containing benzine, mineral spirits, turpentine, etc., should not be sprayed indoors without exhaust ventilation, or positive pressure air masks or helmets.

15. Interior decorator's equipment should include portable exhaust fans to be installed in windows where other than benzol or lead-containing materials are being sprayed, and with these materials a mask should be worn. Lead

paints or enamels should not be sprayed without adequate exhaust ventilation or air masks, and the lead content should be known.

16. Large objects, too large for booths, may be sprayed behind curtains or partitions to confine spray, and exhaust fans may be used here also.

MASSACHUSETTS

(From Revised Rules and Regulations pertaining to the Painting Business. December, 1925.)

RULE 6. *Health requirements.*—(1) Reasonable ventilation shall be provided at all times.

(2) When sandpapering lead-painted surfaces, wet sandpaper shall be used.

(3) When exposed to injury, the operator of spray coating apparatus shall be protected by a respirator or other effective device, subject to approval by the department.

(4) Exposed parts of the body shall be annointed with a harmless, nondrying oil, grease, or cream during the spraying operations.

(5) Respirators or devices shall be furnished by the employer and kept in a sanitary condition by the employee or person using them.

MICHIGAN

RULES AND STANDARDS ON SPRAY COATING OF MANUFACTURED OR FABRICATED ARTICLES—PAINTS, VARNISHES, LACQUERS, ENAMELS, STAINS, AND SIMILAR SURFACE COATINGS—BY MEANS OF COMPRESSED AIR, ETC., 1927

RULE 3. All spray coating equipment shall be complete in all details essential to effective operation and prevention of excessive mist or vapors.

RULE 4. * * * (*d*) Booths shall be so designed that the position of the operator shall be between the source of the fresh air supply and the surface being spray coated.

RULE 6. (*a*) Every booth shall be equipped with a mechanical exhaust system which shall be constructed and maintained so as to operate effectively independent of weather or adjacent building conditions.

(*b*) Exhaust systems shall be so designed as to maintain an average air velocity of not less than 90 linear feet per minute (as determined by the vane anemometer or the kata thermometer) at the face of the booth to adequately remove vapors and to prevent combustible mixtures forming in the room or the booth. The direction of the air flow shall be from the operator toward the objects or work being sprayed and thence to the discharge orifices of the booth or room.

RULE 7. (*a*) Except as hereinafter provided, booths shall be large enough completely to contain all objects to be coated therein. Objects such as automobile or truck chassis and other articles of unusual lengths may be coated as far as possible in such booth and the end projecting outside of booth may be coated without removing the object; provided ventilation is of such velocity as to carry vapors or residue into the booth. Where booths are used the discharge of any sprayed material into the atmosphere outside of the booth is prohibited, except as provided above for articles slightly projecting beyond the face of the booth.

RULE 11. (*a*) Respirators or other equally efficient protective devices shall be supplied by the employer and used and maintained in clean and efficient working condition by the employee or person using them when the material being sprayed is known to contain any ingredient which when taken into the system in excessive quantities is injurious to health, where such mist or fumes may be present.

OHIO

RULES FOR PAINT SPRAYING

(Used by the inspectors of the department of industrial relations as a guide in issuing specific orders when making inspections; such orders having the effect of law.)

The principal hazards of paint spraying, whether of large or small objects, arise from the toxic and explosive or inflammable quality of the material used for spraying.

To obviate these hazards, the following precautions are necessary:

Provisions which the employer must make to protect the worker

1. Provisions should be made so that the spraying room will be lighted by as much natural light as possible. Where possible it is desirable to have either a southeast or southwest exposure with a saw-tooth roof. Proper light is important as it enables the worker with normal vision to work as far from the pistol point as is practicable.
2. Exhaust fans of adequate size should be provided and so located that the fumes will be effectively drawn away from the worker to the outer air. In new installations the back wall and ceiling of the room can be designed to facilitate the removal of the air.
3. Provisions must be made for a place outside of the spraying room for the worker to take his lunch.
4. Provisions must be made for a wash room entirely apart from the spraying room, provided with running hot and cold water, soap, and towel.
5. Two respirators or a suitable hood must be furnished each employee engaged in this work and same must be kept in working order.
6. Two pairs of overalls and jumpers shall be provided for each employee. The employer shall keep these in repair and have same washed once each week.
7. There should be an examination of employees intended for this work, and unless they are sound physically and have normal eyesight they should be rejected. Those actually engaged in this work should be reexamined once every six months, or oftener if signs of sickness appear.
8. New workers should have the hazards of the work fully explained to them and impressed on them.
9. The foreman in charge of spraying should be instructed to see that the provisions made for the safety of the employees are properly maintained and the safety rules for workers obeyed.

Rules for workers

1. Workers must wear the respirator or hood provided when engaged in spraying.
2. The pistol should be directed at the work, not at right angles, but at such an angle as will deflect the spray in the direction of the exhaust fan.
3. The worker must use the garments and gloves provided by the employer.
4. The worker must not eat his lunch in the spray room.
5. The worker must wash his hands thoroughly before placing any food or tobacco in his mouth.
6. In so far as consistent with the work being done the worker must avoid getting covered with the spray.
7. The worker must thoroughly wash his hands, arms, face, and other parts of his body which may have spray on them before leaving the work.
8. In adjusting the pistol the spray should be directed into the exhaust fan and not into the air of the room.

PENNSYLVANIA

Tentative Draft (1928) Regulations for Spray Coating

Foreword.—These regulations shall be understood—

To pertain to all spray-coating operations, as hereinafter defined, within the Commonwealth of Pennsylvania. The secretary of labor and industry may require additional protection not called for in these regulations if, in his opinion or that of his authorized representative, sufficient hazard exists to warrant such action.

To set forth the rules to safeguard the lives, limbs, and health of workers in spray-coating operations.

To place the responsibility of complying with the rules upon both the employer and the employee.

It shall be understood further that the provisions of all other regulations of the department shall apply in all matters not specifically covered by these regulations which involve the lives, limbs, and health of workers.

Petition.—Any employer, employee, or other person interested or affected by such rules may petition for a hearing on the reasonableness of such rules by filing a petition with the secretary of the industrial board at Harrisburg, Pa., setting forth the rule or rules upon which a change is desired and the reason for said change.

Upon receipt of a petition the industrial board will determine its merits, and if a hearing is necessary notice of time and place will be given to the petitioner and to such other persons as the industrial board may find directly interested.

SECTION 1.—(*a*) No person or persons shall remove or make ineffective any safeguard, safety appliance, or device attached to machinery except for the purpose of immediately making repairs or adjustments; and any person or persons who remove or make ineffective any such safeguard, safety appliance, or device for repairs or adjustments shall replace the same immediately upon the completion of such repairs or adjustments.

(*b*) Every employer or person exercising direction or control over any person or persons who remove such safeguard, safety appliance, or device, or over any person or persons for whose protection it is designed, shall have the safeguard, safety appliance, or device so removed promptly and properly replaced.

(*c*) Every employee shall use all safeguards, safety appliances, or devices furnished for his protection and shall carry out all regulations which may concern or affect his conduct.

SEC. 3. RULE 1.—(*a*) Unless otherwise stipulated, spray coating shall be performed in booths. Booths may be located in basements or below the grade floor of any building under the following conditions:

(1) If the basement has at least two means of egress for employees (elevators not included).

(2) If the booths are located not less than 30 feet from the openings for egress.

(3) There shall be either one exhaust duct within 1 foot of the floor level at the back of the booth equipped with an exhaust fan, or the booths shall be equipped with baffles so as to insure comparatively uniform exhaust from all portions of the front of the booth.

(*b*) No regulations applying to the booths or room booths shall apply to the use of the spray method for coating interiors or exteriors of buildings or other structures, or for the coating of objects in the open air or in sheds open at least on two opposite sides. If materials containing benzol or lead are used in the spray coating of building or other structural interiors, each operator shall wear an approved type respirator, gas mask, or air helmet; or an exhaust fan or fans of sufficient capacity shall be installed in a near-by wall opening. Such fan or fans shall be operated constantly while spraying operations are being carried on in such interiors, and shall effect not less than 10 changes of air per hour. The spray coating of interiors shall be so performed that neither the spray operator nor any other worker shall continuously come between the outlet of the spray gun in operation and such fan.

(*c*) The spray coating of large objects or large parts need not be accomplished in booths or room booths if not readily subjected to such treatment. The spraying of large objects or large parts with materials containing benzol or lead shall not be carried on by any individual unless he wears an approved type of respirator, gas mask, hose mask, or air helmet. Such spraying shall not be done within 30 feet of another worker unless that worker is provided with protection equal to that furnished the sprayer.

(*d*) The spraying of vitreous enamel or other siliceous materials in places other than where the sprayer stands in front of a booth with an exhaust ventilation equal to that specified in rule 3 (*a*) is prohibited unless the operator is provided with an approved respirator or air helmet with a positive supply of air from an unpolluted source.

(*e*) All rules, except those in which locations are specifically mentioned, shall be construed as applying equally to spraying operations conducted inside of and outside of booths and room booths.

RULE 2.—(*a*) Except as hereinafter noted, all booths shall be large enough completely to contain all objects to be coated therein. Objects that are too large for any one booth may be coated by placing first one end in a booth and then the other end. If the outer end of such object does not extend more than 6 feet from the face of the booth, it shall be permissible to extend one side of the booth and the roof as far as the object extends. Materials used for the extension of sides or roof shall be of the same general character as that used for the construction of the original booth.

RULE 3.—(*a*) All booths and room booths shall be equipped with an exhaust fan or fans capable of moving the air past the working face of the booth (or point of operation) toward the fan, at a speed of not less than 125 linear feet per minute as measured by a vane anemometer. This rate shall be maintained approximately uniform over not less than 75 per cent of the working area. Fans shall be of such size and rated capacity as to perform the required duty without the necessity of overspeeding.

(*b*) All spray operators in booths shall exercise care not to come between the exhaust outlet and any spray created.

(*c*) In room booths, where the spray coating of objects is done by more than one spray operator working at the same time, exhaust ventilation shall be provided so that it will be unnecessary for anyone to come between the spray and the nearest opening of the exhaust system.

(*d*) (1) All exhaust ducts shall be as short as possible. They shall terminate at a point where the discharge will least endanger health or property. Noncombustible and readily cleanable screens or baffles and drip pans shall be provided where necessary. All outlets shall be protected where the building is exposed to the hazard of fire or sparks entering the exhaust ducts and setting fire to the spraying or other equipment.

(2) If horizontal ducts are used, the discharge ends of such ducts shall be protected from wind pressure or precipitation by one of the following methods.

(A) The projecting end shall be turned down.

(B) The projecting end shall be turned up and protected with a shield or cowl above.

(C) A shield or baffle shall be installed in front of the discharge end.

(3) The projecting end of a vertical duct discharging upward shall be protected with a shield or cowl.

(4) All exhaust ducts shall be so constructed as to be easily inspected and cleaned. All ducts longer than 10 feet shall have clean-out doors at 10-foot intervals or shall be so constructed as to be easily taken apart for cleaning.

(*f*) (1) Except as hereinafter noted, nothing in these regulations pertaining to the exhaust system shall be construed as applying to the spraying of materials, other than lacquer, in booths with a face area of not more than 4 square feet, except where 1 gallon or more of such material is sprayed at one booth, or by one operator in the course of one day's work.

(2) Where amounts under 1 gallon per day per booth or per person are sprayed, exhaust ventilation shall be maintained at such rate that no visible spray is seen to come outside the face of the booth.

(*g*) To maintain adequate ventilation, cross currents of air shall be avoided. While spraying is being carried on, windows shall not be opened on either side of the sprayer within an area extending 15 feet to the right or left from the face of the booth.

(*h*) All booths and room booths shall be so located and operated as to insure an adequate amount of pure, clean air of comfortable temperature or equal to normal outside atmosphere to replace the air removed by the exhaust system.

(*i*) All exhaust systems shall be of such type and arrangement that operating efficiency can be maintained independent of weather and adjacent working conditions inside or outside the plant.

RULE 9.—(*a*) Where workers are engaged for more than one-quarter of their working day in using the spray method for the application of materials containing lead or benzol to automobiles, trucks, railroad cars, and similar large vehicles placed approximately parallel to each other in sheds or in the open, a space of 13 feet (or the equivalent of a standard-gauge railroad or trolley track plus clearances) shall intervene between each two vehicles being so coated.

(*b*) Operators using the spray method shall not spray toward each other where there is any possibility of spray striking the head or face of another operator.

RULE 10.—(*a*) All spray operators working without booths, inside of room booths, or in the open air shall wear caps or other head coverings to protect the hair. Nothing in this regulation shall be construed to require a spray operator, stationed outside a booth and spraying into a booth, to wear a cap or other head covering.

(*b*) Where respirators or other similar devices of the filter type are used, they shall be cleaned, or the filtering material renewed not less than twice each working day, and as often in addition thereto as necessary. In the case of intermittent use, such respirator shall be cleaned, or the filtering material renewed at least once each five hours of use. If the filtering, neutralizing, absorbing, or adsorbing

material is of such character that it may be used with safety for a longer time than just specified, the directions of the manufacturer of the device for the renewal of such material shall be followed.

(*c*) In addition to the washing or bathing facilities required by the regulations for industrial sanitation issued by the department of labor and industry, adequate supplies of soap and nailbrushes shall be provided for spray operators and their helpers.

(*d*) No person or persons shall be permitted to eat or to bring food inside any room booth. No person or persons shall be permitted to eat their meals where spraying is being done within a radius of 25 feet of such spraying. The distance of 25 feet may be reduced to 15 feet, provided the exhaust system has been kept in operation for at least five minutes after spraying has been stopped.

(*e*) No person under 18 years of age shall be required or permitted to spray-coat objects with any substance containing lead, benzol, or ground siliceous material.

(*f*) Where vitreous enamel or other siliceous materials are being sprayed, brushing off of excess enamel shall be carried on at such a point that the dust produced by the operation will not get into the fresh-air supply of the sprayer. This should be done preferably in connection with an exhaust ventilating duct.

WISCONSIN

GENERAL ORDERS ON SPRAY PAINTING

ORDER 2050. *Scope.*—These orders shall govern the use and control of all spray-coating apparatus, in every place of employment: *Provided, however,* That they shall not prohibit or regulate any farmer, horticulturist, fruit grower, or other person engaged in farming or fruit or vegetable growing, from using a spray machine for the purpose of spraying trees, shrubs, and vines with chemicals to protect the same from disease; or prohibit or regulate any dairyman, creamery owner or operator, or other person from using any spraying machine to spray any building or part thereof with solutions composed of water and chemicals of recognized medical value, when used for the purpose of keeping said buildings in a sanitary condition.

ORDER 2055. (1) *Type of equipment.*—Any type of equipment may be used except the suction or true ejector type of more than 1 pint capacity.

(2) *Character of equipment.*—All spraying equipment shall be complete in all details essential to effective operation and prevention of excessive mist.

ORDER 2056. (1) *Nozzle distance from surface.*—During operation the nozzle of the spray gun shall not at any time be more than 13 inches from the surface being spray coated.

(2) *Scaffolding.*—When necessary, scaffolding or other approved support shall be used so that the maximum allowable distance between gun nozzle and the surface being spray coated is not exceeded.

(3) *Maximum allowable paint pressure.*—The paint pressure shall at no time exceed that necessary to produce a free flow of paint, not a spurt, at gun nozzle when gun is operated independent of atomizing pressure.

(4) *Operation at different levels.*—At no time shall two or more operators working at elevations differing more than 8 feet, use paint from the same supply tank, unless spray guns are equipped with a paint pressure regulator.

(5) *Exclusion of others.*—None other than spray operators and their helpers shall be permitted within a zone where a mist or deposit is apparent, unless such person is protected the same as operator and helper.

(6) *Contamination of adjacent areas.*—Proper precautionary measures shall be taken to prevent contamination of atmosphere in adjacent occupied areas.

ORDER 2057. (1) *Nose and mouth protection.*—Nose and mouth shall be protected with a respirator or other device of an effective type which must be furnished and maintained in a clean and efficient working condition by the employer and used by the operator.

(2) *Cleansing of respirators.*—Respirators or other such devices of the filter type shall be cleansed or replaced not less than twice each working day or oftener if necessary. In case of intermittent use of respirators, they shall be cleansed or replaced at least once each calendar day of use.

(3) *Approval of respirators.*—Respirators or other such devices used shall be such as to meet the approval of the industrial commission.

(4) *Head protection.*—Head shall be covered with a low fitting cap with visor.

(5) *Body protection.*—Body shall be covered with clothing as close fitting as possible consistent with comfort, paying particular attention to fit at neck and wrists.

(6) *Hand protection.*—Hands shall be protected by suitable gloves, preferably of the gaunlet type.

(7) *Responsibility and maintenance.*—All protective clothing shall be furnished and maintained in a sanitary condition by the employer. A complete change shall be furnished at least once each week or oftener if necessary.

(8) *Face and neck anointed.*—All exposed parts of the body shall be kept anointed with a nondrying oil, grease, or cream during spray operations.

Washing facilities shall be in compliance with Order 2214 of the general orders on sanitation, except that upon shifting employment, such as house painting, clean rags shall be furnished by the employer.

ORDER 2060. (1) *Cabinet booths.*—One or more booths or cabinets suitable for the class or classes of work to be done therein, shall be provided, maintained, and used for all paints, varnish, or other similar spray coating of objects other than buildings, ships, and structures.

(2) *Room booths.*—Where the size and nature of the objects to be spray coated are such as to make the use of cabinet booths impracticable, a suitably constructed and secluded portion of a building may be equipped and used as a booth for spray operations of large movable objects, such as assembled automobiles, trucks, and railway cars.

(3) *Miscellaneous objects.*—Miscellaneous objects, such as heavy machinery, castings, structural members, not adaptable to booth spraying shall be governed by Orders 2055 to 2057, inclusive, of these regulations.

(12) *Protective clothing required.*—The entire person, except face and neck of the spray operator and of his helper, shall be protected by suitable clothing and equipment during spray work operation. This requirement shall not apply when ceramics or pyroxylin coatings only are applied.

ORDER 2062. (6) *Discharge orifices.*—The discharge orifices and outlets through which spray-laden or contaminated air is to be removed from any type of booth shall be of such size, effectiveness, distribution, and arrangement as to promote and resonably assure uniform distribution of air flow through working zone and around the work.

(8) *Ventilation system required.*—Every cabinet or room booth shall be suitably equipped and operated with an exhaust or ventilation system which shall protect the operators and helpers and other persons in the vicinity, from deposit or inhalation of the materials discharged from the spray apparatus.

(9) *Independent of weather conditions.*—All protective systems shall be of such type and arrangement that efficacy of operation is maintained independent of weather and adjacent working conditions.

ORDER 2063. (1) The air in the breathing zone furnished and maintained shall be pure, fresh, and clean.

(2) *Quantity.*—Properly tempered fresh air shall be positively supplied by gravity or mechanical means to rooms containing or constituting any booth, in amounts not less than the amounts removed from such inclosures and room booths, respectively, by the booth or other ventilation systems.

(3) *Direction of air flow in booths.*—The direction of air flow in all exhaust and ventilation systems in all booths shall be from the operators and helpers, toward the objects or work being spray coated and thence to the discharge orifices of the booths.

ORDER 2064. (1) *Location of work.*—All portions of objects being spray coated shall be well inside the booths at all times during spray operations and shall be arranged so as to permit easy access and manipulation, and so the direction of spray will be effectively toward the booth discharge orifice, preferably inclined downward.

(2) *Position of operator.*—All booth installations shall be so arranged and operated, that the operators will be effectively between the source of air supply and the points of application of spray.

(3) *Exclusion of others.*—No employees, other than spray operators and helpers, shall be permitted inside of any booths during spray coating operations, or subsequent thereto, while the breathing zone therein remains perceptibly contaminated.

(4) *Contamination of adjacent areas.*—The size, depth, construction, arrangement, operation and control of booth installations and all services pertinent thereto shall be such as to effectively prevent contamination of breathing zone and persons in adjacent areas.

ORDER 2065. (1) *Cleanliness.*—All booth installation shall be kept reasonably clean throughout at all times.

(2) *Effectiveness.*—All booth installation shall be maintained in good effective working order throughout during all periods of operations.

(3) *Clothing periodically cleaned.*—The protective clothing worn during spray operations shall be thoroughly and regularly cleaned at reasonably frequent intervals.

ORDER 2066. *Approval.*—All booth installations shall be complete in all details essential to effective operation and shall be of such character throughout, as will meet the approval of the industrial commission.

United States Government

THE Army Air Corps, having recognized the inherent hazards of spraying airplane dopes and other materials, recently issued technical orders for the promotion of the comfort and the health of the spray operators in that service. The orders were as follows:

1. *Purpose.*—The instructions contained herein are issued for the information and compliance of all concerned, to promote the comfort and health of personnel engaged in spray painting, doping, etc.

2. *Painting booth.*—(*a*) A booth of the dimensions required by the size and quantity of work performed by the activity, will be installed in the most practical location within the dope room or building. The booth will be constructed of suitable sheet-metal materials to form an inclosure having a top, two ends, and a back, and so shaped as to induce complete and uninterrupted air flow, induced by exhaust fans, from all points of the open front through the back to the outside air.

(*b*) All doping and spray painting will be performed within the limits of the booth.

(*c*) The ends, ceiling, back, and floor of the booth, and all booth equipment will be kept free from excessive deposits of dope, paint, and other foreign substances.

(*d*) The exhaust fans may be installed in a wall of the dope room or building to eliminate the necessity of exhaust air ducts. In such event, that portion of the wall will serve as part of the back of the booth, and the remaining part of the back will be shaped to induce complete, free flow of air.

3. *Exhaust fans.*—(*a*) Exhaust fans of the required number and size will be installed in or connected by suitable sized air ducts to the back of the booth. The fans will be operated at a speed producing at least one complete air change within the booth every two minutes during all spray-painting and doping operations, and during the presence of fumes or atomized paints, dopes, etc.

(*b*) The fans will force the air from the booth into the open air outside of the dope room or building, and will be kept well lubricated and cleaned. All exposed surfaces will be kept well greased to facilitate removal of excessive deposits of foreign substances.

4. *Exhaust air ducts.*—Exhaust air ducts, if used, will connect the booth directly with the outside air, and will be sealed at all points to prevent leakage and to add to the air change efficiency of the installation. They will be free from obstructions and unnecessary bends, provided with suitable weather protection covers at their exhaust ends, and will be kept free from excessive deposits of foreign substances.

5. *Heating equipment.*—The heating equipment will maintain a minimum temperature of 65° F. within the dope room or building during cold weather, and a temperature as much higher as is necessary to prevent blushing of the dope due to excessive humidity.

6. *Masks.*—Each person engaged in the work of doping or spray painting will wear a mask to prevent the breathing of disagreeable or harmful fumes and atomized dopes, paints, etc. The masks will be obtained by requisition.

7. *Relative position of personnel.*—Personnel while within the limits of the booth will avoid positions between the work and the exhaust fans when fumes or atomized paints, dopes, etc., are present. The articles being doped or painted will be so placed and turned during the operation as to be kept between the personnel and the exhaust fans.

8. *Fresh-air periods.*—A 15-minute period in fresh air will be spent by each individual at the conclusion of each hour he is required to stay within the limits of the booth during the presence of fumes or atomized paints, dopes, etc.

At one of the arsenals visited by a bureau agent, where new equipment was being installed, the necessity for adequate protection had been brought to the attention of the commanding officer. He appointed a committee to consider the operations of spray painting and to recommend provisions for improvements and adequate safeguards for operators. The recommendations were in part as follows:

That all paint spraying be done in so far as possible by the paint shop.

That whenever it be found impracticable to have paint spraying done by the paint shop, such work be subject to the supervision of the paint-shop foreman.

That a test be made of * * * paint, and if it be found to contain benzol, the other paints mentioned by the * * * specifications for shell interiors be likewise tested, and that only nonbenzol paints be used for spraying shell interiors.

That if all the * * * specification paints contain benzol, the * * * department be requested to specify a nonbenzol paint.

That no benzol paints be considered for spraying on any kind of work, that benzol paints be dropped from standard stock, and that no benzol paints be purchased without the approval of the director of laboratories.

That the use of benzol for any and all purposes be discontinued after satisfactory substitutes are developed, that benzol be dropped as an article of standard stock, and that no benzol be purchased, except with the approval of the director of laboratories.

That no siliceous material be sprayed.

That the use of lead paints for spraying be discontinued in so far as possible, and where not possible, that the lead content be reduced to a minimum.

That no portable articles be sprayed except in ventilated booths, or in the automobile painting room in the paint shop.

That interiors of buildings, partitions, etc., be brush painted, except when cold-water paints, paints containing only a small percentage of lead, or no lead, are used.

That medical supervision of all employees engaged on paint spraying be conducted. Examination to be made at the time of application for employment and at least once every three months thereafter. The examination of present employees should be started promptly.

That planning rooms maintain tickler files of employees engaged on paint-spraying operations to insure periodic examination.

That employees be required to clean up thoroughly at the end of each working period, so that there will be no chance of food becoming contaminated with lead paints, and to eat their lunch at a place away from all paints.

Productivity of Labor in Newspaper Printing

THE present study of productivity in newspaper printing deals with composition, stereotyping, and presswork, the three primary mechanical processes in modern newspaper printing.[1] The relative importance of these processes varies considerably. In a newspaper of small circulation composition is by far the largest item in both time cost and labor cost and may represent more than 90 per cent of the total cost of the three processes. As the circulation increases, however, the composition cost, which does not vary with the number of copies printed, declines in comparison to presswork cost, which does vary directly with the number of impressions. Stereotyping usually represents less than 10 per cent of the total cost when the circulation is small and decreases relatively as the circulation increases.

Newspaper printing has for many years been dominated by the daily newspapers. These have only a limited time for the production of a single issue. In addition, competition in the speed with which the buying public is reached is keen, especially in the large cities. Clock-time production thus becomes the important factor, to which both time cost and labor cost are constantly sacrificed.

The data presented in the present study are based on a recent survey by the Bureau of Labor Statistics, supplemented by certain valuable, though limited, information contained in an earlier report by the bureau, then called the Department of Labor, on productivity for the year 1896.[2] During the recent survey detailed production and cost data were obtained for the years 1916 and 1926. Therefore a summary view of productivity and labor costs in the industry may be had for a period of 30 years, the data being for 1896, 1916, and 1926.

It must be emphasized that such a summary can not produce entirely satisfactory results. In the first place, the basic data for the years prior to 1926 are extremely limited in scope. In the second place, the output of the newspaper industry is not measurable in a simple invariable unit. Not only do newspapers vary among themselves in size and style, but the same paper may undergo great changes in these respects over a period of time. Also, the number of impressions seriously influences both time costs and money costs.

It was necessary, therefore, in the present study to adopt a rather arbitrary unit of measurement in order to make comparisons for the combined processes, and the unit selected is an issue of 10,000 copies of a 4-page paper, containing 59,200 ems of 5½-point type or their equivalent in larger sizes.

Trend in Labor Productivity and Labor Cost, 1896 to 1926

A NUMBER of inventions have speeded up the mechanical production of newspapers since 1896. While the majority of these were intended mainly to reduce the clock time for the operations, so as to

[1] Summary of a forthcoming bulletin by the U. S. Bureau of Labor Statistics.
[2] U. S. Commissioner of Labor. Thirteenth Annual Report, 1898. Hand and Machine Labor. 2 vols. Washington, 1899.

shorten the interval between receipt of the news and the distribution of the printed papers to the public, the improvements have also affected labor productivity. Naturally, the adoption of even the most important inventions was gradual, depending on the individual requirements of each establishment and on the existing competition. In consequence, all sorts of conditions existed at the same time throughout the country, and even at the present time some of the older methods are still being used.

Composition, Stereotyping, and Presswork, Combined

Productivity.—As no data for stereotyping in 1896 are available, the trend over the 30-year period for unit production by machine methods in the three processes combined can not be determined. A comparison can, however, be made of the unit production in 1896 by the hand method, which included composition and presswork only, and in 1926 by the machine method, which required all three processes. In 1896 composition by the hand method, presswork on hand presses, and folding the printed papers by hand of 10,000 copies of a 4-page newspaper involved an average of 635 man-hours. In 1926, the same number of copies of a printed and folded 4-page newspaper, requiring the combined processes of composition, stereotyping, and presswork, was produced on an average in 174.4 man-hours, an increase in man-hour output of 264 per cent. This meant that where 71 employees were required for 9 hours by the hand method in 1896, only 25 employees for 7 hours were necessary by the machine method in 1926.

The trend for the three processes combined, from 1916 to 1926, is indicated fairly well by the experience of a representative newspaper establishment for which all the necessary data were available. In this establishment it required in 1916, 215 man-hours to turn out 10,000 copies of a 4-page newspaper, while in 1926 the same production required only 158 man-hours, an increase for the 10-year period of 36.5 per cent in man-hour output. Consequently, 27 employees working 8 hours were required in 1916, while 23 employees working 7 hours were necessary in 1926.

The above figures, however, apply only if no more than 10,000 copies are produced from the same four pages. The number of man-hours per unit of production does not expand in the same ratio as the number of units. The time cost for composition remains stationary, regardless of how many copies of the paper are printed. This is important, as composition is by far the largest factor in total time cost. The time cost for stereotyping also remains practically the same, being affected only in a minor degree by the number of presses operated. The time cost for presswork, however, advances in the same ratio as the number of units. Under the hand method of 1896 each additional unit involved 250 additional man-hours, or about two-fifths of the total man-hours for one unit. By the machine method the time cost for presswork is only 1 per cent of the total time cost for the unit, so that duplications of units can be made at comparatively slight increase in time costs.

In 1916 each additional unit from the same four pages was produced in the representative establishment at a time cost of 1.8 man-hours,

and in 1926 of 1.7 man-hours. Man-hour output was consequently determined by the multiples of units produced, as follows:

TABLE 1.—MAN-HOUR OUTPUT OF SPECIFIED NUMBERS OF COPIES OF A 4-PAGE SECTION IN A REPRESENTATIVE ESTABLISHMENT, 1916 AND 1926

Number of copies of a 4-page section printed	Number of man-hours worked in—		Number of copies produced per man-hour in—	
	1916	1926	1916	1926
10,000	215.1	157.5	46.5	63.5
50,000	222.3	164.1	225.0	304.6
100,000	231.2	172.5	432.5	579.9
500,000	303.0	239.0	1,650.3	2,092.0
1,000,000	392.6	322.2	2,546.8	3,103.9

The actual trend of time cost was affected by the production of a larger number of 4-page sections in 1926 than in 1916, caused by increases in the circulation and also in the page contents of the issues. In this establishment the circulation had advanced 25 per cent and the bulk of the issues approximately 108 per cent, resulting in an increase of 150 per cent in the number of units turned out, as against an increase of 93 per cent in the number of man-hours. This was equal to an actual increase of nearly 30 per cent in man-hour output of 4-page sections for the combined processes in the establishment.

Labor cost.—Actual man-hour labor costs are partially regulated by the wage rates; but they are also affected by the amount of overtime involved in the work, as the hourly rate for overtime in newspaper printing is customarily 50 per cent higher than the regular rate. In addition the labor costs per unit are influenced by increases or reductions in man-hour output, so that the trend of labor costs per unit may differ widely from the trend in man-hour labor cost or in basic wage rates.

The absence of data in the 1896 survey for the entire personnel in composing rooms using the machine method, and the omission of the stereotyping process for that period, restricted the use of labor costs for unit production in 1896. Only for composing rooms using the hand method solely, for hand compositors, for line-casting machine operators, and for presswork, were data available for comparison with later years.

Under the hand methods used in 1896 composition and presswork were the only processes required for unit production. The labor cost amounted to $82.74 for composition and $33.33 for presswork, a total of $116.07 for the first unit of 10,000 copies of a 4-page section. Each additional unit was produced at a total cost of $33.33, so that the average cost per unit declined with the increase in unit output. In 1926 the stereotyping process was included. The labor cost for unit production was $215.04 for composition, $11.36 for stereotyping, and $2.76 for presswork, a total of $229.16. The cost for each succeeding unit was $2.76, the cost of the presswork. So, while the labor cost for the first unit was 98 per cent higher in 1926 by the machine method than in 1896 by the hand method, the production of five units in 1896 cost almost $1 more than the production of eight units in 1926.

Like the trend in production, the trend in labor cost for the three methods combined can be determined only for the last 10-year period and through labor costs for 1916 and 1926 in a representative newspaper establishment. The labor cost for the first unit of production in 1916 was $135.77. By 1926 it had advanced to $200, an increase of 47 per cent. Additional units from the same four pages carried labor costs of $1.19 in 1916 and $2.06 in 1926. Actual labor cost per unit was, therefore, like man-hour output, regulated by the number of units produced, as follows:

TABLE 2.—LABOR COST OF SPECIFIED NUMBERS OF COPIES OF A 4-PAGE SECTION IN A REPRESENTATIVE ESTABLISHMENT, 1916 AND 1926

Number of copies of a 4-page section printed	Total labor cost in—		Labor cost per 10,000 copies of a 4-page section in—	
	1916	1926	1916	1926
10,000	$135.77	$200.00	$135.77	$200.00
50,000	140.55	208.23	28.11	41.65
100,000	146.52	218.52	14.65	21.85
500,000	194.25	300.85	3.89	6.02
1,000,000	253.92	403.76	2.54	4.04

The actual trend in labor cost in this establishment was regulated by the proportionate increase in the number of units turned out in 1926, as compared with the output in 1916. The increase was almost 150 per cent, due both to growth of circulation and to increase in the number of pages printed per issue. The actual labor cost per unit for the establishment was $4.81 in 1916, in 1926 it was $7.27, an increase of 51.1 per cent.

Composition

Productivity.—By 1896 the evolution from hand composition to machine composition had made some progress, but a number of establishments still existed in which all of the type was set by hand. In 1916 the bulk of the news composition was on machines, and by 1926 a relatively larger portion of it was by that method. Part of the type, however, was still set by hand, so that in a modern composing room both machine and hand methods are in use.

In 1896 the actual type setting by the hand method for the 4-page unit required an average of 350 man-hours in five composing rooms; by the machine method in five other composing rooms an average of about 57 man-hours was necessary, an increase of more than 500 per cent in man-hour output by the machine method over the hand method. Some increase in output of line-casting machine operators has taken place since then, as shown by the trend for this labor group in a typical composing room. In 1896 the specified unit production in this establishment required about 66 man-hours; in 1916 it required 71 man-hours, through the employment of a proportionately larger number of operators to meet the demands of clock-time production speed created by competition. In 1926 the unit was produced in a little over 64 man-hours, an increase in man-hour produc-

tion of more than 10 per cent over 1916 and of about 3 per cent over 1896.

In another representative establishment there was a wider variation. In 1896 the type setting on a unit of production on line-casting machines took a little over 52 man-hours; in 1926 it took less than 44 man-hours, an increase in man-hour output of 19 per cent.

Other operations were also necessary in composing rooms, such as assembling the type, proof reading, and machine adjustments. These did not add to the output. Consequently man-hour production for the entire composing room depended partly on the proportion of nonproductive labor employed therein, and the trend for the entire personnel might vary considerably from the trend for compositors alone.

According to data of the 1896 survey an average of 385 man-hours were required for the composing rooms employing the hand method to turn out four pages of an average modern newspaper. Figures secured during the survey for this study show that in 1916 the same result was attained in a representative composing room in 204 hours by combined machine and hand methods, an increase in man-hours output of nearly 90 per cent. In 1926 only 145 man-hours were necessary in the same establishment for the total composing-room work on four pages, an increase of over 40 per cent in man-hour output during the 10-year interval 1916 to 1926. In other words, it required 40 employees 10 hours by the hand method in 1896 for production equal to four present-day newspaper pages. Using both machine and hand methods the same output was reached in 1916 by 26 employees in 8 hours, and in 1926 by 21 employees in 7 hours.

Labor cost.—According to wage studies by the Bureau of Labor Statistics the average hourly basic wage rates for hand compositors advanced approximately 200 per cent from 1896 to 1926. The increase for machine operators during the same period was about 180 per cent. Hand compositors and machine operators constituted the principal labor groups in composing rooms, but other groups existed with lower or higher hourly rates. These, together with the varying proportion of overtime in the different establishments, affected the actual hourly cost for composition as a whole, resulting in an increase of approximately 350 per cent in the man-hour labor cost between 1896 and 1926.

Labor cost per unit of production is determined by the actual man-hour labor cost and man-hour output. In 1896 the weighted average labor cost for the composing-room work per unit, in the establishments using the hand method, was $82.74. In 1916 it was $126.75, or 53 per cent more, in a representative establishment, using both machine and hand methods, and in 1926 it had risen to $182.71, equal to 44 per cent above the 1916 unit cost; but the weighted average labor cost for several establishments in 1926 was higher than for the single establishment, reaching $215.04. Figured on the average basis, the advance in the labor cost per unit for the 30 years was only 160 per cent, in spite of the 190 per cent increase in basic hourly rates and the 350 per cent increase in actual man-hour labor cost.

The weighted average labor cost in 1896 for setting sufficient type by hand for four pages was $72.16; by the machine method in the same

period it was $33.64. As the average labor cost for news operators in 1926 could not be separated from that for hand compositors, the trend of labor cost for unit production by machine operators can be determined only for two individual establishments. In one of them the average labor cost for four pages of news composition was $44.05 in 1896; in 1926 it had advanced to $92.57, an increase of 110 per cent. In the other establishment the labor cost rose from $33.15 in 1896 to $47.04 in 1926, an increase of only 42 per cent. These extreme differences were caused by the variation in wage rates because of the different geographical location of the establishments, and by the variation in the relative increases in man-hour output.

Stereotyping

Productivity.—The survey of 1896 did not cover stereotyping, in which comparatively old style methods were then used. In the survey for this study, however, data were obtained for 1916 and 1926 in a representative establishment using modern methods during both periods. In this establishment 8.9 man-hours were sufficient in 1916 for the stereotyping of four average pages of the newspaper, whereas in 1926 it required 10.6 man-hours, a decrease in page output per man-hour for all employees of nearly 16 per cent.

Stereotyping consists of two separate operations, the molding of matrices and the casting of plates. One matrix is ordinarily molded from each type form, so that four pages require four matrices, but the number of plates cast from each matrix varies according to the number of presses operated for printing the required number of newspapers in the time allotted for that purpose. In the establishment for which the above data on productivity in stereotyping were obtained changes in molding methods, to facilitate clock-time production of matrices, had been made between 1916 and 1926. Increases in page contents and in circulation had raised the number of pages molded daily 115 per cent and the number of plates cast daily 140 per cent, but it was necessary to turn out the increased quantities in practically the same number of clock hours each day as for the previous, smaller production. The change in molding methods had reduced the clock time for the molding operation more than 50 per cent, but it had also reduced the man-hour production of matrices over 29 per cent for the portion of labor actually engaged in that operation.

In 1926 an average of 56.7 plates was necessary for each four pages molded, while an average of 50.8 plates per four pages was sufficient in 1916, as the circulation was smaller and fewer presses were used. Man-hour output of plates for the portion of labor actually engaged in that operation had increased over 10 per cent, but the additional man-hours for the molding operation and for other labor were reflected in a decrease of 6 per cent in man-hour output of all employees. The main object of the changes had, however, been achieved, though at the expense of man-hour production. In 1916 it took eight minutes to deliver the first plate to the pressroom after the form had been received from the composing room; by 1926 the clock time had been reduced to four minutes.

Labor cost.—The hourly wage rates for stereotypers between 1896 and 1926 advanced about 140 per cent, according to wage studies by

the Bureau of Labor Statistics. The increase between 1916 and 1926 was around 84 per cent. While the majority of the workers received the basic rates, some were paid more or less per hour. In a representative establishment such differences in hourly rates, together with variations in relative overtime, were reflected in the actual man-hour labor cost, which advanced only 64 per cent in the 10-year period 1916 to 1926. In this case, however, the labor cost for the unit was further increased through the decrease in man-hour production during the interval. In 1916 the labor cost per unit was $7.83. By 1926 it had risen to $15.23, an advance of nearly 95 per cent, though the increase for the man-hour labor cost was only 64 per cent. The decrease in man-hour output was caused by the change in working methods for the purpose of speeding up clock-time production.

Presswork

Productivity.—In 1896 the rotary press had displaced other presses in the larger newspaper establishments, but in some of the smaller plants the hand press was still used and the newspapers were folded by hand after printing. According to figures for the 1896 survey an average of 250 man-hours were necessary for printing and folding 10,000 copies of a 4-page newspaper in pressrooms using the hand method. The rotary presses of that period advanced man-hour output greatly, reducing the time cost of unit production. The weighted average time cost in 1896 for the unit production in the pressrooms surveyed, in which the machine method was used, was about three man-hours, on the basis of all employees, an increase over the man-hour output by the hand method of more than 8,000 per cent. This meant that while it required 25 employees for 10 hours to produce the unit by the hand method, 3 employees for 1 hour were sufficient by the machine method.

The trend of labor productivity in modern newspaper presswork between 1896 and 1926 is shown by a comparison for a typical pressroom, on the basis of operating time for the machines. In 1896 it required 1.53 man-hours to produce 10,000 copies of a 4-page section of the newspaper, while in 1926 the same number was turned out in 1.32 man-hours, an increase in man-hour output of more than 70 per cent. The large rotary presses are ordinarily operated intermittently, depending on the time allotment for printing the required number of newspapers. Time is necessary for preparing the presses for operation, and the proportion of actual productive man-hours on a machine to total man-hours worked vary considerably. Figures for the 1926 survey give a range of 16.3 to 70.3 per cent. In this pressroom the productive time for the workers presumably maintained nearly the same relation to the total working time during both periods, so it is reasonable to assume that the 13 per cent decrease in man-hours between 1896 and 1926 also applied to the total hours.

The trend between 1916 and 1926 can be more definitely determined through data for another representative establishment, surveyed for this study. In this establishment it required 1.79 man-hours in 1916 to produce 10,000 copies of a 4-page section, while in 1926 the same result was accomplished in 1.66 man-hours. This represented an increase of nearly 8 per cent in output per man-hour.

Labor cost.—The hourly wage rate for pressmen increased about 190 per cent between 1896 and 1926, according to wage studies by the Bureau of Labor Statistics, and approximately 90 per cent between 1916 and 1926. The average labor cost per man-hour during 1896 was 266 per cent more in pressrooms using the machine method than in those where the hand method was used. The average man-hour labor cost in machine-method pressrooms rose 136 per cent during the 30 years from 1896 to 1926, a smaller advance than that for the basic wage rate, caused by a relative increase in lower priced labor and variations in relative amount of overtime.

The average labor cost for unit production in hand-method pressrooms during 1896 was $33.33; in machine-method pressrooms during the same period it was only about $1.33, or, due to the tremendous increase in output, 4 per cent of the cost for the hand method. The average unit cost in 1926 by the machine method was $2.76, an increase of 108 per cent over the cost for the machine method in 1896, as compared with an increase in wage rates for pressmen of 190 per cent and an increase in man-hour labor cost of 136 per cent.

The labor cost per unit between 1896 and 1926 in modern newspaper presswork, based on actual operative time for the machines in one representative pressroom, was nearly twice as high as the average labor cost. The unit cost in 1896 was 51.7 cents; by 1926 it had reached $1.615, an advance of more than 210 per cent. The labor cost for the idle-machine time was not included in either case. It would probably have made the complete labor cost from 33 to 50 per cent higher for both periods, but would not have changed the percentage of increase greatly.

A more definite trend of complete unit labor cost for presswork can be determined for the 10 years from 1916 to 1926 from data for another representative pressroom. In 1916 the labor cost per unit in this establishment was $1.19; by 1926 it had advanced to $2.06, an increase of over 72 per cent. The rise in man-hour labor cost for this pressroom during the 10-year interval was about 86 per cent, but the unit cost was modified through an 8 per cent increase in man-hour output.

Variations in Productivity and Labor Cost Between Establishments

THE FIGURES cited previously to indicate trend of production are for individual establishments, and while probably quite accurate for that purpose are not representative of average conditions in different plants. A wide variation is created through differences in factory and sales conditions. Labor costs per unit of production also vary greatly in the different establishments, so figures quoted for the trend of a process in a single establishment can not be regarded as representative for the entire process. The number of man-hours required for the production differs, and even where these correspond the prevailing wage rates may be twice as high in one locality as in another.

Composition

Productivity.—In 1896 hand composition was used exclusively in some newspaper establishments. Unit production (10,000 copies of a

4-page paper) in those surveyed at that time required from 250 to 500 man-hours, giving a weighted average of 385 man-hours. In other establishments machines were used for most of the typesetting, but the data did not cover the total employees in the process. In 1926 the average time for unit production, by combined machine and hand methods and for the entire personnel of each composing room, ranged from 144 to 205 man-hours, with a weighted average of 163 man-hours.

Production on line-casting machines depends considerably on personal ability of the operators, but varies also according to the class of the product, whether news or advertising composition. In 1896 practically only news composition was produced on machines, and the time required for turning out enough to fill 4 pages ranged from 52 to 66 man-hours, with a weighted average of 57 man-hours.

A tabulation of weekly production records for operators on news composition during 1926 in one establishment showed a range of 46.6 to 50.3 man-hours per unit. The lowest average by one operator for the full five weeks in the tabulation was 40.3 man-hours, but a weekly average as low as 38.5 man-hours was reached by the same individual. The highest average for one operator was 61.6 man-hours.

In another establishment, where unit production in 1896 required an average of 52.3 man-hours, this had been lowered to 43.9 man-hours in 1926, an increase of 19 per cent in man-hour production during the 30 years. These averages for 1896 and 1926 were considerably lower than the general average for 1896, or that shown in the above-mentioned establishment for 1926, respectively. The variations were caused partly by driving the machines in this composing room at a higher speed, but also were probably influenced by the operators there being paid on a production basis. In 1926 the average time requirements for production of the unit for the individual news operators in this establishment for a 2-week period ranged from 39 to 59 man-hours, but some exceptional records existed, such as 18 man-hours, the minimum, and 106 man-hours, the maximum.

In a third establishment the production of a 4-page unit by machine operators in 1926 required an average of 62.1 man-hours. This was nearly 30 per cent more than in the first composing room and 40 per cent more than in the second composing room. One of the important factors in the extended time was the inclusion of advertising composition, from which the news composition could not be separated, and which ordinarily requires more time.

Labor cost.—The labor cost for unit production by the hand method in 1896 ranged from $60.19 to $113.24, making a weighted average of $82.74. The cost in 1926, by combined hand and machine methods, ranged from $182.71 to $270.99, with a weighted average of $215.04, or about 160 per cent more than by the hand method in 1896.

The labor cost per unit for the entire composing room personnel by the machine method in 1896 can not be determined from the data, only the labor cost per unit for machine operators on news composition being separable. This ranged from $23.55 to $44.04, with a weighted average cost of $33.64, a reduction of 53 per cent from the cost for the hand compositors in the same period, which ranged from $52.10 to $105.24 with a weighted average of $72.16.

Stereotyping

Productivity.—The time cost for production of the unit varied greatly in the five selected stereotyping rooms of the 1926 survey, depending on the number of presses operated in each establishment. This was principally regulated by the circulation of the respective newspaper, as it required more presses to turn out a large number of copies than a small number in the same clock time. More presses meant more plates per page. The time cost ranged from 3.9 to 13.7 man-hours, with a weighted average of 9.1 man-hours.

Labor cost.—Decided differences existed in the number of man-hours required in the various establishments of 1926 for unit production. These resulted in a proportionately wider range of labor costs for stereotyping than for the other two processes—from $4.34 to $16.42, with a weighted average labor cost of $11.36.

Presswork

Productivity.—Printing on hand presses and folding the newspapers by hand, in establishments surveyed in 1896, required from 240 to 270 man-hours per unit of 10,000 copies of a 4-page paper, giving a weighted average of 250 man-hours. Unit production by the machine method in the same period required approximately from 2.3 to 3.2 man-hours, with a weighted average of about 3 man-hours. In 1926 the necessary man-hours ranged from 1.66 to 3.68, with a weighted average of 2.55 man-hours for each unit turned out. As previously pointed out, presswork differs from composition and stereotyping in that it expands with increased output.

Labor cost.—The labor cost per unit for printing on hand presses and folding the printed papers by hand in 1896 ranged from $25.77 to $50.33, giving a weighted average cost of $33.33. By the machine method in the same period it was reduced to an approximate range of from 69 cents to $2.76, with a weighted average of about $1.33, or 4 per cent of the cost for the hand method. In 1926 the labor cost for the machine method ranged from $1.96 to $4.16, resulting in a weighted average of $2.76, or 108 per cent above the average in 1896 for the machine method.

Trend of Employment

A NEWSPAPER has only a certain amount of time for the mechanical production of each issue, regardless of whether it contains 4 or 60 pages, so the production of a larger number of pages naturally requires more workers. Census figures for the United States do not segregate wage earners employed on newspapers from those employed on periodicals, and accurate comparison for the trend of employment for 1896 can be made only for the total number employed on newspapers and periodicals combined. Between 1889 and 1919 the wage earners employed in manufacturing newspapers and periodicals increased 40 per cent. Between 1919 and 1923 a 4 per cent reduction took place, but the number employed in 1925 exceeded that for 1923 by 1.2 per cent.

Composition.—From an employment standpoint composition is the most important process in the mechanical production of newspapers.

Approximately 60 to 70 per cent of the total man-hours for the three processes are taken by it under normal conditions, though in the production of only 10,000 copies of a 4-page newspaper the relation is 95 per cent.

Before the introduction of the linotype it required 16 compositors for approximately seven hours to set sufficient type for four pages of a representative newspaper at that time. Distribution of the type required about one-half that number for the same length of time, while other hands necessary in composing-room work would probably bring the personnel on a 4-page daily newspaper to about 40.

A decided change was created by the evolution from hand composition to machine composition. One machine operator could set approximately four times as much type as one hand compositor. The time previously devoted to distribution of type, about one-fifth of the total time, was reduced to a very small fraction. Three or four hands were eliminated, out of every five formerly engaged in setting and distributing type. Consequently the adoption of the machine method displaced a great number of typesetters. Others engaged in assembling the products, in proof reading, or other duties were still necessary and were not affected materially, while some new vocations were created.

The application of machine methods to composition, however, stimulated the growth of the industry, which soon expanded sufficiently to absorb the dispaced workers. In a comparatively short time more compositors were employed than formerly, and the number continued to increase until after the World War. Suspensions and mergers of publications since that time have reduced the number of newspapers and created more or less unemployment, though part of this has in turn been eliminated through further growth in the industry.

The principal reasons for the larger number of composing-room employees, in spite of the increased man-hour output, were the establishment of new publications and, especially, the constantly increasing number of pages in the daily issues. In one typical establishment, for example, the average daily issues consisted of 12 pages in 1896, 24 pages in 1916, and 36 pages in 1926. The Sunday issues contained an average of 48 pages in 1896, of 54 pages in 1916, and of 60 pages in 1926. The number of different editions published daily had also increased through the years. Consequently, 115 per cent more pages were turned out in 1926 than in 1916, and these contained approximately 122 per cent more new type than the 1916 pages. But as the clock time alloted for the composing-room work was no longer in 1926 than in 1916, the demand for larger production was met by the installation of more machines and by the employment of more operators, as well as of other labor, resulting in an increase of 73.5 per cent in total man-hours.

Stereotyping.—From an employment standpoint stereotyping is relatively the least important of the three processes. The ordinary proportion of the man-hours for the three processes devoted to stereotyping does not exceed 10 per cent, and for the production of 10,000 copies of a 4-page newspaper it is only 4 per cent.

The invention in 1900 of the Autoplate equipment, which was rapidly adopted by the larger daily newspapers, revolutionized the

casting of stereotype plates. Only 4 employees were required to turn out the same number of plates as 12 formerly produced by the hand method. It served, however, especially to reduce the clock time for plate production, and the facilities afforded through it increased employment of stereotypers.

The two main factors in employment of additional stereotypers, in face of increased man-hour production, were the same as those for composing-room employees, but to these was added the constant growth in circulation. Data for 1896 are not available, but the trend between 1916 and 1926 in a representative establishment reveals the employment of additional men to speed up the clock-time production. The average number of pages per issue advanced approximately 45 per cent during the interval. Together with the additional number of editions published daily in 1926, it resulted in 115 per cent more pages being stereotyped than in 1916. A 15 per cent rise in circulation necessitated the use of more presses to produce sufficient newspapers in the allotted time. Consequently 140 per cent more plates were needed in 1926 than in 1916, and to accomplish this in the required clock time, more equipment had been installed and the working force increased 155 per cent.

Presswork.—In modern newspaper production the proportion for presswork of the total man-hours for the three processes ranges from 20 to 30 per cent. While it represents only 1 per cent in the production of a single unit (10,000 copies of a 4-page paper), the man-hours for the process expand directly with multiple production from the same four pages, while the man-hours for the other two processes remain stationary.

The transition from the hand press to the rotary press permitted 3 hands to accomplish what it had required 250 hands to do. The subsequent expansion of the industry, however, provided a steady growth in pressroom employment, as in the other two processes, though a drop has been experienced in recent years. Presswork was mainly affected by the same issues as stereotyping—new publications, more pages per issue, and increase in circulation. Comparison of similar periods in 1916 and 1926 for a representative establishment shows that the increase in circulation and in bulk of the newspaper had raised the output of pages 150 per cent, which had been accomplished through an increase in employment of 131 per cent.

Development of Processes

THE FIRST newspaper which continued publication for an extended period in this country was established in 1704, with an equipment of a few fonts of type and a slow, cumbersome hand press. The large modern newspapers of 1926 were turned out in plants equipped with numerous machines for casting and setting of type, for production of stereotype plates, for printing and folding of the papers, and for other auxiliary processes.

A hundred years after the establishment of the first newspaper the publications were still produced mechanically in the same manner as the first one. Printing was done directly from hand-set type on hand presses, and the printed papers were folded by hand. All of the

radical changes which have assisted in creating the modern newspaper have taken place since the beginning of the nineteenth century. The possibilities of steam for motive power influenced the inventions of automatic or semiautomatic machines for direct use in the printing industry, or to produce material for its development, such as the paper-making machine which permitted manufacture of an unlimited supply of cheap paper. The development of the printing press, in the beginning a cylinder press and later a rotary press, with gradually increased speed and the addition of folding and assembling mechanisms, permitted printing of larger and more newspapers per hour. The perfecting of curved stereotype plates as a substitute for type permitted faster production and, through duplication of pages, the installation of sufficient presses to insure printing the required number of copies of the paper in the allotted time. Semiautomatic production for the composing room was effected through line-casting machines, which permitted printing a greater number of pages in the newspaper and reduced the distribution of type. Distribution was later entirely eliminated through the introduction of other composing-room machines.

While many of the inventions or improvements have reduced the operating cost for the publishers, another feature has become even more prominent. Speed, and more speed, is demanded first of all. The vast importance of modern events, their sudden and frequent occurrence, and the desire of the public for immediate knowledge of such transactions, together with competition and the aim of each newspaper to publish the events in advance of its contemporaries, have resulted in making speed the paramount issue. The shortest possible time between receipt of the news and its publication is an important sales factor. It is often not only a question of minutes but of seconds. Newspaper publishers naturally try to keep their mechanical production at the lowest possible cost, but on the larger newspapers often sacrifice all for speed. Consequently development of the various processes has been principally along the line of reduction in clock time, rather than in man time or in money cost.

By 1896 line-casting machines had been installed in the composing rooms and rotary presses in the pressrooms of the larger daily newspapers. The closing year of the century saw the introduction of automatic machines for the stereotyping process, completing mechanization of the three processes. By 1916 improvements had taken place in the machines used and other machines had been added, notably type-casting machines, which practically eliminated distribution in the composing room.

Between 1916 and 1926 the machines were further improved through time-saving and labor-saving devices, though no startling innovation was brought out. The most notable improvement was the adoption in recent years of dry molding in the stereotyping process, which reduced clock time greatly. Attention was directed strongly toward layout of establishments, cooperation between departments, factory management, and building facilities, subjects which were not included in the surveys but which exert immense influence on production. As a result many newspaper publishers have recently established up-to-date and model plants for their products and applied efficiency methods to the printing processes.

Development of the Industry

ONLY a few newspapers were published in the early days, and they were mostly weekly issues. They rendered no practical assistance to business, as the inadequacy of transportation confined the influence of each newspaper to a very limited area. There were not many stirring events in any individual community. News from other places arrived infrequently and interested the people only in a general way. The majority of the settlers had lived long without newspapers and continued to do so after they were obtainable.

By 1850 the number of newspapers in the United States had risen to 2,302, with an average aggregate circulation for that year of 3,832,306 copies per issue. The population of the country had passed the 23,000,000 mark, but towns were widely separated and travel to and fro was difficult. Less than 10,000 miles of railway existed. While about 11,000 miles of telegraph lines had been erected, the capacity of the wires was limited and the bulk of the news was received by mail. At least 10 days were required for news to reach New York from Europe and three times as long from San Francisco.

Newspapers increased in value as advertising mediums with the growth of the towns, their importance as commercial centers, and their accessibility. Before 1810 the circulation of the most widely read daily did not exceed 900 copies, and only a few of the weekly or semiweekly newspapers had a circulation of over 600 copies per issue. In 1871 there existed 548 newspapers with a circulation of more than 5,000 copies per issue and 11 newspapers with a circulation of over 10,000 copies per issue.

Expansion of railway and telegraph systems, laying of the trans-Atlantic cable, and the invention of the telephone rendered communication with both surrounding territory and distant parts easy and created an abundant supply of news. The desire of the people for information, the continual growth in population, and the ever-increasing demand for advertising space made it difficult for publishers to print sufficient copies and sufficient pages in each copy to satisfy the public. The difficulties were solved through the introduction and use of machinery in the various departments during the latter part of the nineteenth century, which transformed newspaper publication into an industry requiring elaborate factory processes and was instrumental in creating the great publications of the present day. It was assisted by further developments in facilities for news gathering and for distribution of the printed papers, such as the wireless, the automobile, and finally the airplane.

Number of publications.—By 1896 newspaper publishing had made considerable progress. Figures from the United States census show that 12,658 newspapers were being published in 1889, of which over 10,000 were weekly issues and only about 1,600 were issued daily. The total number of newspaper publications increased 26 per cent during the following 10 years, and around 12 per cent between 1899 and 1909, reaching nearly 18,000, of which 2,600 were daily, 520 were Sunday, and almost 14,000 were weekly issues. A drop of over 11 per cent took place between 1909 and 1919 and another reduction of about 37 per cent between 1919 and 1925. Returns for 1925 show only 9,869 publications, including 2,116 dailies, 597 Sunday editions,

and 6,435 weeklies. The number of daily newspapers thus increased about 31 per cent between 1889 and 1925, while the number of weekly newspapers decreased 40 per cent.

Growth in circulation.—In 1889 the aggregate circulation per issue was nearly 38,000,000 copies, more than 8,000,000 of which were for the daily newspapers. Ten years later it had risen to over 58,000,000 copies, with more than 15,000,000 of these for the daily publications. By 1909 it was above 61,000,000 copies, over 24,000,000 of which were for the dailies. By 1919 it had grown to over 75,000,000, with more than 33,000,000 of these for the daily publications. In 1925 it had reached nearly 81,000,000, over 37,000,000 of which were for the daily newspapers. The aggregate circulation per issue of the daily papers had thus increased 346 per cent between 1889 and 1925, though the increase for the total publications was only 113 per cent.

Increase in bulk of issue.—The increases in bulk affected mainly the daily and Sunday newspapers. In 1896 the daily issues contained on an average 12 pages while the average Sunday issues consisted of 48 pages. By 1916 the average size of the daily issues had risen to 24 pages and of the Sunday issues to 54 pages. In 1926 increases had been made to 36 pages for the daily issues and to 60 pages for the Sunday issues, equal to an increase of 200 per cent over the 1896 size for the daily newspapers and of 25 per cent for the Sunday newspapers. The majority of the newspapers had also changed the width of the pages during the interval, adding one extra column of type, thus increasing the type content per page about 10 per cent.

UNEMPLOYMENT CONDITIONS AND RELIEF

Survey of Unemployment in Baltimore, February-March, 1929

THE report of the unemployment survey of Baltimore City made in February–March, 1929, by the State commissioner of labor and statistics, in full, is as follows:

In February, 1928, the office of the commissioner of labor and statistics of Maryland conducted a survey into the actual amount of total unemployment in Baltimore City at that time. This survey was repeated in February and March, 1929. In both cases the required data were secured by the members of the Baltimore Police Department, through the courtesy of their commissioner, in a house-to-house canvass.

In February, 1928, the facts revealed by the census indicated that at that time there were 15,473 men and women who were usually gainfully employed without employment of any kind and seeking work. At approximately the same time of the year in 1929 there were found to be 13,177 such persons in the city of Baltimore.

No effort was made, in making either canvass, to secure information for those persons who were working part time, and every possible means was taken to eliminate those persons who could not or would not work if employment were available for them.

Based then on the estimated population of Baltimore (830,400, estimate of the United States Census Bureau, as of July 1, 1928), in February and March, 1929, approximately 1.6 per cent of the total number of persons residing in the city were without gainful employment of any kind and seeking work. If, again, we may assume that the number of persons who usually work for wages or on their own account in some business has increased in the same proportion as the estimated population, approximately 3.4 per cent of these men and women were entirely without work of any kind.

Of the 13,177 persons found unemployed in 1929, 11,244 were men and 1,933 were women; 9,190 were white and 3,987 were colored. Although more than 22 per cent of these unemployed persons had been engaged in manufacturing industries, the largest number of persons charged to an individual industry was reported for the building industry. About one-third of the total number of persons who had been connected with manufacturing industries had worked in establishments engaged in the production of textiles and their products and food products, the number divided almost equally between the two industries. The clothing industry was by far the most severely affected of the textile industries.

While more than one-fourth of the total number of persons were unskilled laborers, the second largest group had been factory workers. Of the building and hand trades, the largest number were carpenters.

According to the reports, there were involved through the unemployment of the 13,177 persons, 11,315 of the approximate number of 175,000 families who reside in Baltimore; and at least 56,006 persons were either directly or indirectly affected. These figures may be compared favorably with the 12,739 families in which unemployment was reported in February, 1928. The removal of 1,424 families with their constituent members from the ranks of the unemployed and therefore from the ranks of the potential, if not actual, objects of public or charitable assistance, represents, we believe, a decided improvement over the situation of last year.

An analysis of the reports indicates, however, that each of the eight police districts into which the city is divided has felt the effects of unemployment, in varying degrees of intensity, of course. The following list presents the relative number of families in which one or more cases of unemployment were found residing in each district:

PER CENT OF FAMILIES HAVING ONE OR MORE CASES OF UNEMPLOYMENT

District	Per cent of total number of families in district	District	Per cent of total number of families in district
Northeastern	29.0	Southern	10.0
Northwestern	16.2	Western	4.4
Southwestern	13.6	Central	3.3
Eastern	13.3		
Northern	10.2	All districts (11,315 families)	100.0

These figures are stated, of course, without consideration for the relative population of the various districts.

In addition to the fact that the actual number of totally unemployed persons was found to be less in 1929 than in 1928, the situation in regard to the length of time during which the persons included had been without gainful employment of any kind, while still severe, showed improvement, nevertheless. In 1928 a little more than three-fourths of the total number of persons had been without work for periods of time varying between one month and six months; in 1929 slightly more than two-thirds were included in the same class.

It has been stated previously that no effort was made to secure information in either canvass in regard to the number of persons who were employed only part time, and this office realizes that, in presenting only the findings of the census itself, only a part of the actual progress during the past year is indicated. In the absence of definite information covering all lines of industry and all occupations, it is with some difficulty that a definite statement in regard to part-time employment can be made. There is, however, reason to believe that this situation, too, has been relieved to some degree. Since July, 1928, this office has been including in its published monthly reports covering changes in employment in industries throughout Maryland statements in regard to the operating time of various manufacturing establishments covered by the reports. The following is quoted from the February statement:

"Of the 258 establishments for which operating time was reported, two plants were shut down, one probably permanently. Of the

remaining 256, 186 were running on a normal full-time basis, 30 were working overtime, and 42 were operating on a part-time schedule. In other words, 89.6 per cent of the total number of persons were employed in establishments working full time or more. In the establishments operating on a part-time basis, 10.4 per cent of the total number of persons were employed. In the 256 establishments there were employed in February, 1929, 42,403 persons who were working on an average of 100.5 per cent of normal full time." (In computing the per cent of normal full time, due weight is given to the size of each establishment reporting.)

The following list indicates the average per cent of normal full operating time for selected manufacturing industries in Maryland for each month since July, 1928:

AVERAGE PER CENT OF NORMAL FULL OPERATING TIME FOR SELECTED MANUFACTURING INDUSTRIES, JULY, 1928, TO MARCH, 1929, BY MONTHS

Month	Average per cent of normal full operating time	Month	Average per cent of normal full operating time
July	97.4	December	99.6
August	98.3	January	98.9
September	99.5	February	100.5
October	99.8	March	100.4
November	98.2		

In 1929 about 1,000 persons only had been able to secure even pick-up work during the time since they had left their regular employment.

The following statement indicates the time during which the 13,177 unemployed persons had been entirely without work of any kind:

Less than 1 month	2,054
1 month and less than 2 months	1,671
2 months and less than 3 months	2,343
3 months and less than 4 months	1,981
4 months and less than 5 months	1,289
5 months and less than 6 months	574
6 months and less than 7 months	1,124
7 months and less than 8 months	192
8 months and less than 9 months	247
9 months and less than 10 months	172
10 months and less than 11 months	87
11 months and less than 12 months	31
12 months and over	1,321
Time not reported	91
Total	13,177

The accompanying facts and tables present in detail the distribution of the 13,177 unemployed men and women in Baltimore, according to sex, color, regular occupation, and regular industry.

The total number of families in which one or more cases of total unemployment were found was 11,315, distributed as follows:

Private families	10,704
Boarding houses	138
Lodging houses	158
Unclassified family groups	315

The total number of persons included in the 11,315 families was at least 57,006, and the total number of persons who are usually engaged in gainful occupations was at least 26,749.

TABLE 1.—NUMBER OF PERSONS IN BALTIMORE WHO ARE USUALLY ENGAGED IN GAINFUL OCCUPATIONS AND WHO ARE ENTIRELY WITHOUT EMPLOYMENT, CLASSIFIED ACCORDING TO SEX, COLOR, AND REGULAR OCCUPATION

Regular occupation	Total number	Male			Female		
		Total	White	Colored	Total	White	Colored
All occupations	**13,177**	**11,244**	**7,956**	**3,288**	**1,933**	**1,234**	**699**
All manufacturing and mechanical occupations	**8,966**	**8,431**	**5,832**	**2,599**	**535**	**459**	**76**
Apprentices in building and hand trades	121	121	101	20			
Bakers	16	16	16				
Blacksmiths	27	27	27				
Boiler makers	24	24	24				
Brick and stone masons	180	180	177	3			
Building industry	125	125	123	2			
Contractors	55	55	54	1			
Builders and building contractors	14	14	14				
Cabinet makers	29	29	29				
Carpenters	699	699	688	11			
Building industry	491	491	486	5			
Other industries	34	34	33	1			
Contractors	174	174	169	5			
Compositors	7	7	7				
Coopers	5	5	5				
Dressmakers and seamstresses	27				27	25	2
Dyers	1	1	1				
Electricians	147	147	147				
Building industry	54	54	54				
Other industries	21	21	21				
Contractors	72	72	72				
Electrotypers	1	1	1				
Engineers (stationary and cranemen)	70	70	65	5			
Building industry	10	10	9	1			
Other industries	25	25	25				
Contractors	35	35	31	4			
Engravers	3	3	3				
Factory workers (not otherwise classified)	1,604	1,392	851	541	212	172	40
Food and kindred products	238	188	112	76	50	48	2
Textiles and their products	120	79	53	26	41	31	10
Iron and steel and their products, not including machinery	252	236	136	100	16	13	3
Lumber and allied products	100	89	60	29	11	11	
Leather and its manufacture	13	9	4	5	4	4	
Rubber products	8	7	4	3	1	1	
Paper and printing	34	30	25	5	4	3	1
Chemicals and allied products	174	164	36	128	10	8	2
Stone, clay, and glass products	102	97	42	55	5	3	2
Metal and metal products, other than iron and steel	46	46	29	17			
Tobacco manufactures	14	8	5	3	6	6	
Machinery, not including transportation equipment	25	25	22	3			
Musical instruments	1	1	1				
Transportation equipment	71	71	64	7			
Railroad repair shops	12	12	11	1			
Other industries, and unclassified	394	330	247	83	64	44	20
Filers, buffers, and polishers	8	8	8				
Firemen (not locomotive or fire department)	63	63	41	22			
Foremen and overseers, manufacturing and mechanical	40	37	34	3	3	3	
Glassblowers	9	9	9				
Jewelers (not in factory)	4	4	3	1			
Laborers (not otherwise classified)	3,370	3,327	1,482	1,845	43	29	14
Building industry	1,012	1,009	355	654	3		3
Other laborers	2,358	2,318	1,127	1,191	40	29	11
Lithographers	34	34	34				
Machinists	128	128	126	2			
Mechanics (not otherwise classified)	111	111	100	11			
Molders	52	52	44	8			
Oilers of machinery	10	10	10				
Painters	439	438	424	14	1	1	
Building industry	249	249	244	5			
Other industries	47	46	46		1	1	
Contractors	143	143	134	9			

TABLE 1.—NUMBER OF PERSONS IN BALTIMORE WHO ARE USUALLY ENGAGED IN GAINFUL OCCUPATIONS AND WHO ARE ENTIRELY WITHOUT EMPLOYMENT, CLASSIFIED ACCORDING TO SEX, COLOR, AND REGULAR OCCUPATION—Con.

Regular occupation	Total number	Male			Female		
		Total	White	Colored	Total	White	Colored
All manufacturing and mechanical occupations—Continued.							
Paper hangers	62	62	58	4			
Building industry	23	23	23				
Contractors	39	39	35	4			
Plasterers and cement finishers	163	163	116	47			
Building industry	91	91	73	18			
Contractors	72	72	43	29			
Plumbers, gas and steam fitters	256	256	251	5			
Building industry	95	95	94	1			
Other industries	25	25	25				
Contractors	136	136	132	4			
Printers (not otherwise classified)	69	69	69				
Roofers and slaters	24	24	21	3			
Semiskilled operatives (not otherwise classified)	839	596	558	38	243	223	20
Food and kindred products	157	141	126	15	16	15	1
Textiles and their products	275	141	134	7	134	125	9
Iron and steel and their products, not including machinery	62	53	50	3	9	6	3
Lumber and allied products	43	38	35	3	5	5	
Leather and its manufacture	26	24	24		2	2	
Rubber products	9	7	6	1	2	2	
Paper and printing	33	24	22	2	9	9	
Chemicals and allied products	10	10	10				
Stone, clay, and glass products	15	12	11	1	3	1	2
Metal and metal products, other than iron and steel	23	22	21	1	1	1	
Tobacco manufactures	49	28	28		21	18	3
Machinery, not including transportation equipment	11	10	10		1	1	
Musical instruments	5	5	5				
Transportation equipment	21	21	18	3			
Railroad repair shops	9	9	8	1			
Other industries and unclassified	91	51	50	1	40	38	2
Shoemakers, not in factory	9	9	6	3			
Stonecutters and marble workers	28	28	27	1			
Structural-iron workers	57	57	53	4			
Tailors and tailoresses	78	74	71	3	4	4	
Tinsmiths and sheet-metal workers	80	80	79	1			
Upholsterers	24	24	23	1			
Others	34	32	29	3	2	2	
All public utilities	**835**	**805**	**517**	**288**	**30**	**29**	**1**
Water transportation	133	133	62	71			
Sailors and deckhands	41	41	30	11			
Stevedores	65	65	9	56			
Others	27	27	23	4			
Road and street transportation	621	620	409	211	1		1
Chauffeurs	484	483	325	158	1		1
Draymen and teamsters	133	133	83	50			
Others	4	4	1	3			
Railroad transportation	41	41	35	6			
Express, post, telegraph, telephone	40	11	11		29	29	
Telephone operators	32	3	3		29	29	
Others	8	8	8				
All mercantile trades	**820**	**572**	**554**	**18**	**248**	**244**	**4**
Retail dealers	7	7	7				
Salesmen	707	467	454	13	240	238	2
Others	106	98	93	5	8	6	2
Public service	**1**	**1**	**1**				
Professional service	**73**	**53**	**48**	**5**	**20**	**19**	**1**
Domestic and personal service	**1,213**	**472**	**144**	**328**	**741**	**131**	**610**
Servants	705	106	16	90	599	62	537
Others	508	366	128	238	142	69	73
Clerical occupations	**715**	**423**	**417**	**6**	**292**	**288**	**4**
Cashiers, accountants, bookkeepers	88	52	52		36	36	
Clerks (office)	444	307	303	4	137	136	1
Stenographers and typists	120	14	14		106	103	3
Others	63	50	48	2	13	13	
Other occupations	**554**	**487**	**443**	**44**	**67**	**64**	**3**
Clerks (unclassified)[1]	71	62	59	3	9	8	1
Other occupations	483	425	384	41	58	56	2

[1] Unclassified as to whether sales or office clerks.

TABLE 2.—NUMBER OF PERSONS IN BALTIMORE WHO ARE USUALLY ENGAGED IN GAINFUL OCCUPATIONS AND WHO ARE ENTIRELY WITHOUT EMPLOYMENT, CLASSIFIED ACCORDING TO SEX, COLOR, AND REGULAR INDUSTRY

Regular industry	Total number	Male			Female		
		Total	White	Colored	Total	White	Colored
All industries	**13,177**	**11,244**	**7,956**	**3,288**	**1,933**	**1,234**	**699**
All manufacturing industries	**2,917**	**2,489**	**1,911**	**578**	**428**	**386**	**42**
Food and kindred products	508	433	326	107	75	71	4
Beverages	21	21	18	3			
Bakery products	131	121	113	8	10	8	2
Canning and preserving (fruits and vegetables)	56	40	28	12	16	16	
Canning and preserving (sea food)	21	19	4	15	2	1	1
Confectionery	64	33	30	3	31	31	
Dairy products	21	20	14	6	1	1	
Ice cream	7	5	3	2	2	1	1
Ice (manufacturing)	69	69	48	21			
Slaughtering and meat packing	66	59	45	14	7	7	
Other food products	52	46	23	23	6	6	
Textiles and their products	527	315	273	42	212	191	21
Clothing	450	271	231	40	179	161	18
Cotton goods	55	32	32		23	23	
Other textiles	22	12	10	2	10	7	3
Iron and steel and their products, not including machinery	395	368	257	111	27	21	6
Plumbers' supplies	27	25	23	2	2	2	
Steel works and rolling mills	114	113	45	68	1		1
Tinware	139	116	113	3	23	18	5
Other iron and steel products	115	114	76	38	1	1	
Lumber and allied products	214	191	153	38	23	22	1
Boxes [1]	56	45	39	6	11	11	
Furniture	70	67	59	8	3	2	1
Lumber, planing mill products	52	50	31	19	2	2	
Other lumber products	36	29	24	5	7	7	
Leather and its manufacture	55	47	39	8	8	8	
Boots and shoes	48	41	35	6	7	7	
Other leather products	7	6	4	2	1	1	
Rubber products	22	19	14	5	3	3	
Paper and printing	171	155	141	14	16	15	1
Boxes [2]	15	8	5	3	7	7	
Printing and publishing, book and job	89	85	83	2	4	4	
Printing and publishing, newspapers	35	33	30	3	2	2	
Other paper products and printing	32	29	23	6	3	2	1
Chemicals and allied products	226	215	83	132	11	9	2
Fertilizers	103	101	1	100	2		2
Oils	57	57	48	9			
Other chemicals	66	57	34	23	9	9	
Stone, clay, and glass products	70	65	45	20	5	1	4
Clay products	34	34	8	26			
Glass products	70	65	45	20	5	1	4
Marble, slate and stone	38	38	21	17			
Other products	9	6	5	1	3	3	
Metal and metal products, other than iron and steel	96	95	76	19	1	1	
Brass, bronze and copper	51	50	34	16	1	1	
Stamped and enameled ware	25	25	25				
Other metal products	20	20	17	3			
Tobacco manufacture	65	38	35	3	27	24	3
Machinery, not including transportation equipment	117	114	109	5	3	3	
Musical instruments	11	11	10	1			
Transportation equipment	259	259	237	22			
Motor vehicles (including repairs)	128	128	113	15			
Shipbuilding and repairing	125	125	118	7			
Other transportation equipment	6	6	6				
Railroad repair shops (steam and electric)	30	30	28	2			
Other manufacturing industries	70	56	51	5	14	14	
Brooms and brushes	22	22	21	1			
Umbrellas	11	5	5		6	6	
Other	37	29	25	4	8	8	
All mechanical industries	**2,441**	**2,390**	**1,681**	**709**	**51**	**9**	**42**
Building	2,373	2,369	1,670	699	4		4
Laundries	68	21	11	10	47	9	38

[1] May include some paper boxes.
[2] Some of these may be included under wooden boxes.

TABLE 2.—NUMBER OF PERSONS IN BALTIMORE WHO ARE USUALLY ENGAGED IN GAINFUL OCCUPATIONS AND WHO ARE ENTIRELY WITHOUT EMPLOYMENT, CLASSIFIED ACCORDING TO SEX, COLOR, AND REGULAR INDUSTRY—Contd.

Regular occupation	Total number	Male			Female		
		Total	White	Colored	Total	White	Colored
All mercantile industries	**1,264**	**892**	**636**	**256**	**372**	**325**	**47**
Wholesale establishments	53	52	39	13	1	1	-------
Retail establishments	967	642	406	236	325	278	47
Department stores	380	170	125	45	210	204	6
Other retail stores	587	472	281	191	115	74	41
Unclassified as to wholesale or retail	244	198	191	7	46	46	-------
All public utilities	**590**	**572**	**333**	**239**	**18**	**18**	-------
Buses and taxicabs	17	17	16	1	-------	-------	-------
Gas and electric supply	46	45	31	14	1	1	-------
Railways, electric	29	29	21	8	-------	-------	-------
Railways, steam [3]	245	244	133	111	1	1	-------
Telegraph	10	10	9	1	-------	-------	-------
Telephone	24	8	4	4	16	16	-------
Water transportation	219	219	119	100	-------	-------	-------
Unclassified by industry [4]	**5,965**	**4,901**	**3,395**	**1,506**	**1,064**	**496**	**568**

[3] Probably includes some who might be included under "Railroad repair shops."
[4] Includes laborers, contractors, professional, domestic, and personal service, etc., not classified according to industry.

Report of Senate Committee on Causes and Relief of Unemployment

THE United States Senate on May 3, 1928, provided that the Senate Committee on Education and Labor should make an investigation of the causes of unemployment and possible methods of relief. After extended hearings, Senator Couzens submitted the report of the committee on February 25, 1929. The general findings of the committee were summarized in its report as follows:

1. Private industry should recognize the responsibility it has to stabilize employment within the industry. The Government should encourage this effort in every way, through sponsoring national conferences, through publishing information concerning the experience had by industries in this work, and through watching every opportunity to keep the thought of stability uppermost in the minds of employers.

2. Insurance plans against unemployment should be confined to the industry itself as much as possible. There is no necessity and no place for Federal interference in such efforts at this time. If any public insurance scheme is considered, it should be left to the State legislatures to study that problem.

3. The States and municipalities should be responsible for building efficient unemployment exchanges. The Government should be responsible for coordinating the work of the States so as to give a national understanding of any condition which may arise and so as to be able to assist in any national functioning of the unemployment exchanges.

4. The existing United States Employment Service should be reorganized, and every employee should be placed under civil service.

5. Efforts should be made to provide an efficient system for obtaining statistics of unemployment. The first step should be taken by the Bureau of the Census in 1930, when the bureau should ascertain

how many were unemployed as of a certain date and how many were not seeking employment and yet were unemployed as of that date.

6. The Government should adopt legislation without delay which would provide a system of planning public works so that they would form a reserve against unemployment in times of depression. States and municipalities and other public agencies should do likewise.

7. Further consideration might well be given to two questions, the effect had on unemployment by industrial developments such as consolidation of capital, and the necessity and advisability of providing either through private industry, through the States, or through the Federal Government, a system of old-age pensions.

The full text of the report other than the conclusions, which have been printed above, is as follows:

Text of the Report

UNDER DATE of May 3, 1928, the Senate adopted Senate Resolution 219 of the Seventieth Congress, first session. The resolution was as follows:

Whereas many investigations of unemployment have been made during recent years by public and private agencies; and

Whereas many systems for the prevention and relief of unemployment have been established in foreign countries, and a few in this country; and

Whereas information regarding the results of these systems of unemployment, prevention, and relief is now available; and

Whereas it is desirable that these investigations and systems be analyzed and appraised and made available to the Congress: Therefore be it

Resolved, That the Committee on Education and Labor of the Senate, or a duly authorized subcommittee thereof, is authorized and directed to make an investigation concerning the causes of unemployment and the relation to its relief of (*a*) the continuous collection and interpretation of adequate statistics of employment and unemployment; (*b*) the organization and extension of systems of public employment agencies, Federal and State; (*c*) the establishment of systems of unemployment insurance or other unemployment reserve funds, Federal and State, or private; (*d*) curtailed production, consolidation, and economic reconstruction; (*e*) the planning of public works with regard to stabilization of employment; and (*f*) the feasibility of cooperation between Federal, State, and private agencies with reference to (*a*), (*b*), (*c*), and (*e*). For the purposes of this resolution such committee or subcommittee is authorized to hold hearings and to sit and act at such times and places; to employ such experts and clerical, stenographic, and other assistants; to require, by subpoena or otherwise, the attendance of such witnesses and the production of such books, papers, and documents; to administer such oaths and to take such testimony and make such expenditures as it deems advisable. The cost of stenographic services to report such hearings shall not be in excess of 25 cents per hundred words. The expenses of such committee, which shall not be in excess of $15,000, shall be paid from the contingent fund of the Senate upon vouchers approved by the chairman. The committee or subcommittee shall make a final report to the Senate as to its findings, together with such recommendations for legislation as it deems advisable, on or before February 15, 1929.

Shortly after the Senate had adopted the resolution your committee met to consider plans for making the survey. The assistance of the Institute of Economics of the Brookings Institution of Washington, a nonpartisan, private organization, was sought, and the institute assigned Dr. Isador Lubin, of its staff of economists, to assist in directing the work. The work of the institute has been voluntary, and, as a result, the expense of the survey to the Government has been slight.

The committee and the Senate owe the Institute of Economics a debt of gratitude, and the committee herewith expresses it and also compliments the institute upon the work it has done.

The report of Doctor Lubin, which summarizes the evidence submitted to the committee and comments upon it, is printed at the conclusion of the printed hearings. Anyone who has followed this work or is interested in this subject should read this report.

The committee is likewise indebted to the Industrial Relations Counsellors of New York, another endowed organization which has been interested in the subject of unemployment. This organization contributed to the committee three volumes of a report it has made on the subject of unemployment-insurance plans. Although this report touches on some subjects which had also been reviewed by your committee, we feel that the whole is of such value that it should be printed as a part of the evidence of your committee and this has been done.

Likewise, the committee is indebted to any number of business men who gave, unstintingly and willingly, of their time and services.

Your committee was interested, primarily, in the worker who desires to work, who is seeking an opportunity for gainful employment, and who is unable to find it. There are others who might be listed as "among the unemployed" but those who are not employed because they do not choose to be employed, hardly constitute a problem for this committee.

The evidence taken shows the causes or the types of unemployment might be divided into three classes, cyclical, seasonal, and technological.

Little necessity exists for describing these three classifications. Cyclical unemployment has been like the plague; it has come and gone at regular intervals until it has been accepted as a necessary evil by some who should know otherwise. We do not believe, any more, that it is necessary for the baby to have the diphtheria and rickets and other "diseases of childhood." We have found and are finding methods of preventing these diseases. We should recognize also that there is an obligation on all society to attack, unceasingly, the problem of unemployment.

Cyclical unemployment can be best attacked through the control of credit, according to the experts who testified before your committee. It was the expressed view of these students that the Federal reserve system has done and is doing a great deal toward this end.

We all know the story of progression and retrogression in industry as told in the history of all cyclical unemployment. Although there may be different causes and although no student seems to be able to lay down a dogma as to causes which is universally accepted, the results are much the same. We have the first evidence of increased business, development of "better times" psychology, increased orders and increased production, plant extensions, increased stocks on shelves, extensions of credit, and then the swing downward, a swing which is merely accelerated.

And for labor, we have the inculcation of the practices of inefficiency which are definite marks of every period of overdevelopment and overexpansion and then—unemployment.

As Dr. John R. Commons put it in his testimony before your committee, "We first demoralize labor and then we pauperize it."

We desire to call the reader's attention to the statement of Doctor Lubin in the report of the Institute of Economics, which reviews the incidents of cyclical unemployment at greater length and with more pointed facts.

Seasonal unemployment is of more immediate interest because here we have a daily problem, year in and year out, which confronts the industrial leader and society in general. If the business men of the country will solve this problem to the extent it is possible of solution, will eliminate this waste, the saving to industry will be two billions of dollars a year, according to the testimony of Mr. Sam O. Lewisohn, a leader in many industries, who appeared before your committee. Seasonal unemployment can be attacked in many ways. It is being successfully attacked in many industries as the evidence will show. Discussion of these methods of attack will be found in other sections of this report.

Technological unemployment covers that vast field where, through one device or another, and chiefly through a machine supplanting a human, skilled workers have found that their trades no longer exist and that their skill is no longer needed. What becomes of these men? What can be done about these thousands of individual tragedies? What do these individual tragedies mean to society as a whole?

It is an imponderable thing. Some of the experienced witnesses who appeared before your committee stated that new industries absorb the labor turned adrift by machine development. The automobile, the airplane, the radio, and related industries were suggested as examples. Undoubtedly there is much truth in these statements, but nevertheless we are not relieved of the individual problem. It offers little to the skilled musician to say that he, who has devoted his life to his art, may find a job in a factory where radio equipment is manufactured. Then there is the delay, that inevitable period of idleness when readjustments are being effected, the suffering, the loss, the enforced change in environment. True, this may all be "the price of progress" but society has an obligation to try, at least, to see that all this "price" does not become the burden of the worker.

This subject also will be discussed more fully under other chapters of this report.

There is one other field of unemployment, the field wherein we find the crippled, the superannuated, the infirm. This field constitutes a problem for industry and for society. It is a growing field, we believe. The man of mature years is not so successful when competing with a machine as is a younger man. The problem of these men will also be touched upon in other chapters of this report.

Your committee is required by Senate Resolution 219 to make a report on the causes of unemployment. So many inquiries have been made on this subject, so many conferences have been held, so many reports made, so many volumes written, that it would seem impossible to contribute anything additional of great value.

However, your committee feels that it has accomplished something. We have striven to obtain an understanding of some of the conditions which cause unemployment, of the machinery now had to detect when and where unemployment exists, and of the existing facilities

for the treatment and the relief of the condition, once it is known to exist.

It is probable the survey could have been more comprehensive and that the report of your committee might be more dogmatic, but we emphasize that this is a so-called short session of Congress, and that it is most difficult to accomplish a great work like this at a short session. Senators are beset with two or more conflicting committee meetings and they must choose between them. Because of this condition, it was impossible to obtain the constant attendance of all members of the committee at all meetings.

Notwithstanding, your committee feels that it has contributed toward an aroused interest in the subject, that another effort has been made to interest leaders in industry in the problem of stabilizing employment, that the evidence collected and printed in the hearings will provide an opportunity for a better understanding of the whole situation, and that as a result of this survey another advance has been made in the effort to solve the difficult problem of unemployment.

Regardless of what may be said in derogation of conferences and investigations, this survey shows conclusively that the unemployment conference, which was convened in 1921 under the leadership of Herbert Hoover, did accomplish something. That conference aroused the interest of some employers in the subject of stabilization. They returned to their plants and began an effort to stabilize employment in their industries. They attained some success and then more, and as they succeeded and realized what they had gained, they became missionaries in the field. Now, they have appeared before your committee and their testimony speaks for itself.

Before proceeding with a detailed discussion of the evidence, your committee wishes to voice the opinion that the unemployment problem can only be solved through constant struggle on the part of all members of society. When your committee uses the word "solved," it merely means that an opportunity will have been given to everyone who really desires work. No one will question that every man is entitled to the opportunity to provide for himself and his family. That is a fundamental right and society can not consider itself successfully organized until every man is assured of the opportunity to preserve himself and his family from suffering and want.

If we consider the question from the viewpoint of duty alone, every member of society has an obligation to assist in solving it. The employer, undoubtedly, has the greatest duty and the greatest responsibility. He is using labor to make a profit for himself and if he is going to take the advantages of this system of society, he must assume the obligations likewise. The laborer, or worker, or employee has a duty to assist also because there is nothing more certain than that, as every step forward is made in the solution of this problem, the individual laborer or worker will gain tremendously.

It is an interesting thing in this connection that the man who must labor inevitably thinks most of steady employment, as the evidence presented by the Industrial Relations Counsellors shows. The fear of being "out of a job" is one of the most demoralizing factors in all the relations of man to his job and employee to his employer.

And it may as well be remembered that society is going to solve this problem, is going to provide an opportunity for man to sustain

himself, or is going to sustain man. Society is going to provide an opportunity for man to pay his own way or is going to pay for him. Society may as well make every effort to do the job constructively, because no society can be strong in which its members are encouraged or forced to adopt the position and the place of those seeking charity, and secondly, because when society pays the bill through charity or through the cost of crime, the payments offer little possibility of any advance for mankind.

Mr. Daniel Willard, president of the Baltimore & Ohio Railroad Co., put the whole story rather pithily. In the first place, he described the old days of intensive individualism where goods were produced, largely, in individual shops and by hand labor. Now we have the tremendous factories, the mass production, and the wealth pouring from machines and moving on for the benefit of society. If society is going to take this benefit, then society must also accept the burdens, Mr. Willard suggested. A man out of work, discontented, and suffering, constituted a danger for society, he added. As he put it, a man is going to steal before he starves, and the word "steal" may cover a multitude of other crimes—crimes perhaps of the man who steals but crimes of far greater magnitude for that society which permits a condition which induces or invites men to steal.

Your committee will now proceed with the detailed demands of the resolution and will discuss the subjects in the order in which they are presented in the resolution.

(A) The Relation Had by the Continuous Collection and Interpretation of Adequate Statistics of Employment and Unemployment to the Relief of Unemployment

The testimony of Commissioner Ethelbert Stewart, of the Bureau of Labor Statistics of the Department of Labor; the testimony of Dr. John R. Commons; of Mr. Bryce M. Stewart; of Mr. Morris E. Leeds, and of a number of other witnesses, shows the necessity of having adequate statistics of employment and unemployment. To know there is a problem, that there is unemployment, and how severe it is, is necessary before a successful attack on it can be made. That seems so obvious it is hardly worth stating.

We have absolutely no figures as to the number of persons unemployed at any definite time. Commissioner Stewart explains that situation in his testimony. He has made estimates on the "shrinkage" of employment. The unemployment conference of 1921, after deploring the fact that there were absolutely no data obtainable on the subject made its "best guess." Just last year, one dispute after another arose in Congress over the number of men out of work. True, the discussion was open to the charge of being largely political, but political or otherwise, it should have served to have driven home the point that here was a government without any machinery for knowing whether it was afflicted with a disease to which might be added the cancer that destroys government.

If we do not have accurate information on this subject, we may rest assured we are going to have plenty of inaccurate information. The subject is one which is very articulate in itself. Our experience should be convincing that all this is so. And in this connection it might be well to reflect on the truth that facts will permit sound

thinking and that an absence of facts produces a condition of fear and panic which may be far more costly to the country than would be the cost of maintaining a system of obtaining these statistics.

As to the method of gathering information, and as to what should be gathered, there is cause for question and study. Statistics, to be of any immediate value, must be gathered quickly, must give a true picture and must permit of proper and correct appraisement. Inaccurate statistics are of no value, and statistics which are months and years old are of about the same value as is the result of a post mortem to a physician and no more so. They may have value in dealing with the problem as a whole, but have no use in relieving immediate necessity.

Commissioner Stewart proposes to develop statistics as to unemployment by measuring the shrinkage and the increase of employment and unemployment in a considerable number of industries and by applying to the norm the factors thus obtained. This should permit a fairly accurate measurement of conditions to be obtained with sufficient rapidity to meet any demand. But the norm must be first established and Commissioner Stewart proposes to have it established by an accurate census.

The Bureau of the Census should obtain the information that Commissioner Stewart desires and should obtain it at the next census in 1930. The Bureau of the Census may say its other duties would be delayed in this effort, but this work of building an efficient system of measuring unemployment is far more important, in the opinion of your committee, than a great deal of other information obtained through the census.

As to supplementary statistics, these might and perhaps should be obtained in any number of ways. However, it is the testimony of witnesses before your committee that until we get a system of unemployment exchanges established in the various cities and States, it is doubtful that we shall get a report more valuable than that proposed to be obtained by Commissioner Stewart.

(B) The Organization and Extension of Systems of Public Employment Agencies, Federal and State

The Government now appropriates $200,000 for the work of the United States Employment Service. The director of that service, Mr. Francis I. Jones, appeared before your committee, and his testimony will be found in the hearings.

Your committee also directs attention to the testimony of Mr. Bryce M. Stewart, to that of Dr. John R. Commons, and to the report of Doctor Lubin, of the Institute of Economics.

As is shown by Doctor Lubin, the Employment Service is a result of war experiences. When the country was mobilized for war purposes and the necessity existed to find a man for every place more than a place for every man, a war unemployment machine was developed. And, being regarded as an instrument of war, the machinery was scrapped in time of peace. Funds were not appropriated, offices were abandoned, personnel dismissed, and of even more importance, the employers in private life who had maintained an active interest in the unemployment exchanges permitted that interest to wane.

The result is we have an unemployment service which functions as a Federal organization only in the matter of placing farm labor and which endeavors to function through grants of money, out of the Federal appropriation, to assist in the manitenance of State or city employment exchanges. The situation is one not conducive to building interest in the organization as it now exists.

As is shown by Doctor Lubin in his report, recommendations for the establishment of public employment exchanges have been made for two decades whenever a program for relieving conditions of unemployment was given consideration. As far back as 1916 recommendations were made that the country must first organize a national system of labor exchanges in order to deal with the unemployment problem, as Doctor Lubin shows. In 1921 the President's conference on unemployment recommended the formation of a national system of employment exchanges and later this recommendation was indorsed by the committee which prepared for Mr. Hoover a special report on business cycles and unemployment. The conclusion of the committee was that "the greatest promise seems to be in the development and raising to a high standard of efficiency of a national system of employment bureaus."

The "pinch" of unemployment is rarely appreciated until it becomes personal. Epidemics of disease may afflict one section of the country and arouse tremendous interest and even concern in the other sections, but until unemployment becomes local and personal it seems to arouse little fear. The man at work appears to have little realization of how he is affected by the fact that his fellow man is out of a job. The organization to handle the disease in this form should be local also, it seems to your committee. It should be one which would be responsible to local conditions and one which is responsible also to local officials, to local employers, and to local employees.

Doctor Commons advised your committee that the States and cities should establish and operate the unemployment exchanges and that the Federal Government should merely establish an organization of experts to coordinate the work of the local exchanges and "to bring up the standard" of those offices. Your committee is in accord with the idea that the Federal Government should remain as far away from the operation of those local offices as is possible. The employment exchanges should be local, we repeat.

To be successful, in fact to be of any great value, public employment agencies or exchanges must have the confidence of those for whom the exchanges are established, in other words for the employer and the employee immediately interested. This confidence can only be established through efficient operation of such offices. The personnel must have the ability to invite and induce and then to assemble information as to the needs of the employer and, having done this, must perform the next function of making the contact between the employer and the man who wants a job. If the office is efficiently operated and deserving of the confidence needed for success, the endeavor will not only be to find a job for the man and a man for the job, but will be to find the right man for the right job, to effect a placement where both the employer and the employee will be pleased and likely to remain so.

As Doctor Commons said in his testimony, "the best employment agencies in the United States are not the public employment agencies but they are the employers themselves." He added that he "did not believe that we can have public employment offices in this country until the employers are willing to support those offices."

In other words, the employers who have the most intimate touch with the opportunities for labor, must have sufficient confidence and interest in the employment exchanges to make use of them. The labor or unemployment exchange must become to the employer for labor purposes just what his bank is for purposes of obtaining capital.

Discussing the organization of employment exchanges, Doctor Commons offers the example of the Milwaukee office, which is conducted and maintained by the local governments, State and city. There, he testified, we had for years the experience connected with an employment exchange which existed for itself and for jobs for the personnel. Then the personnel was placed under civil service rules, candidates for positions were graded in accordance with educational qualifications and experience and then an advisory committee, representing organized employers and organized labor, selected the best candidate for director of the office. This man was appointed. To the criticism that the unorganized worker is not represented in this plan, Doctor Commons replies that the organized employer always takes care of the unorganized worker and adds that "the plan has worked."

Aside from the Wisconsin offices, there are efficient exchanges in some other States, although the number is so small that it does not even offer the skeleton of a national system. Thirteen States, as Doctor Lubin shows, have no employment offices whatsoever. In 11 States there is only one office and in other States the number of offices vary up to the point where 17 offices are found in the State of Illinois. The amounts appropriated by the States also vary tremendously. In Wyoming, for example, $900 is granted for the work, and from that point the State expenditures for this purpose increase to the point where $231,360 is spent in Illinois. The total appropriations of all the State governments aggregate only $1,203,906.

Aside from these general services on the part of the Government of the United States and upon the part of State governments, the United States Employment Service conducts a farm-labor division which has temporary offices at important points in the agricultural States. Critics who have studied the work of the service concede that this is an important task and that it is well done.

In view of this very limited service throughout the country, in view of the few offices conducted and the apparent lack of interest, is there any cause for amazement in the fact that private employment exchanges thrive in many cities, and thrive despite the manner in which some of the private exchanges are conducted—not always to cast credit on the business?

The burden of assisting the unemployed to find work should be borne by organized society through the maintenance of efficient public employment exchanges. Efficient public employment exchanges should replace private exchanges. Private employment exchanges which merely attempt to make contact between a worker and a job, which are operated for profit and solely for profit, present

a situation where there are conditions conducive to petty graft. Such practice at the expense of the unemployed is a crime which should not be tolerated.

Your committee might summarize its views on this subject in this manner:

1. The existing United States Employment Service should be reorganized.
2. The director and every employee of the service should be selected and appointed after a rigid civil-service examination.
3. The administrative features of the civil-service examination should permit the cooperation of organized industry and organized labor in weeding out the candidates for these places, at least the place of the executives.
4. The service should become an organization of experts whose duties would be to coordinate the work of the States.
5. Aside from compiling statistics and endeavoring to arrange a plan which would permit the Government to be advised promptly and accurately of conditions throughout the various State exchanges, the Federal service should not be active. In other words, the Government should remain as completely detached from the operation of exchanges throughout the States as it is possible for it to be.

There has been some question of the plan now in vogue whereby the Government contributes financial assistance to the State offices. Witnesses before your committee insisted unemployment anywhere in the country was of national concern and therefore should be treated to some extent with the aid of the Government. But it is certain that some definite system or plan should be devised under which the Government should grant this money to the States if the Government assistance is to continue. The Government expert should make certain that the Government was not contributing to inefficiency in the service.

(C) The Establishment of Systems of Unemployment Insurance or Other Unemployment Reserve Funds, Federal, State, or Private

In connection with this subject your committee recommends the reading of the testimony of Dr. John R. Commons, of the Institute of Economics, and the Industrial Relations Counselors, as well as the testimony of the business men who discussed conditions in their own industries.

We think it is generally agreed by the witnesses that at the present time the following conclusions would be drawn from the evidence:

1. Government interference in the establishment and direction of unemployment insurance is not necessary and not advisable at this time.
2. Neither the time nor the condition has arrived in this country where the systems of unemployment insurance now in vogue under foreign governments should be adopted by this Government.
3. Private employers should adopt a system of unemployment insurance and should be permitted and encouraged to adopt the system which is best suited to the particular industry.

Until an opportunity or some cause such as this survey is had to focus attention on the industrial developments in this country, little consideration is given to the accomplishments such as we find in the field of stabilizing employment.

Undoubtedly there are not sufficient industrial leaders who are interested as yet, but there is cause to believe they will be, and simply because of economic pressure. It seems reasonable to assert, from the testimony taken during this survey, that the employer who does not stabilize his employment and thus retain his experienced workmen is the employer who is going to fail.

Just as the efficient business man is stabilizing the return for capital invested, by building up reserves for dividends, so shall he establish a reserve for return to labor in the hours of adversity, according to the well-founded arguments advanced by business men. And why? The testimony from witness after witness stresses the point that there is no suggestion of charity in this effort, no idea of being philanthropic, no desire to have industry to become paternalistic. True, in most cases the plans were started because an industrial leader became conscious of some of his obligations to society. But there is general accord on the proposition that the plan is "good business," that it has increased profits.

One witness asked, "Shall the business man who expands his business without consideration for future requirements escape his responsibility?"

Mr. Morris E. Leeds, of Leeds & Northrup, described his theory as follows:

> I was convinced a good many years ago of the element of unfairness and social wrong that modern industry had gotten into by freely hiring people and with equal freedom, firing them.

Mr. Daniel Willard said:

> It seems to me that those who manage our large industries, whatever the character of their output may be, whether it be shoes, steel, or transportation, should recognize the importance and even the necessity of planning their work so as to furnish as steady employment as possible to those in their service. Not only should that course, in my opinion, be followed because it is an obligation connected with our economic system, but I fully believe that such a course is justifiable from the standpoint of the employer because it would tend to develop a satisfied and contented body of workmen which of itself would improve efficiency and reduce costs.

The testimony speaks for itself and everyone interested should read it. At this time there is nothing that can be recommended on this score in the way of legislation. However, your committee can express the hope that organizations of capital and of labor and that officials of the Federal and State Governments shall never lose an opportunity to inspire thought and discussion on this question of the necessity and the advisability of stabilizing employment within the industries themselves.

Stabilization has been sought and obtained in various ways. One employer has placed practically all his workers on a salary basis, has assured them of a continuous wage throughout the year, and has place upon them the responsibility of making the industry succeed. Others have established reserve funds and have so arranged them that executives and workers strive to prevent them from being drained. Others have so ordered their production that it is spread throughout the year. Others have begun the production of articles which are related to the general business plan but which can be produced in periods which formerly were marked by idleness.

The testimony is fairly convincing that stabilization can be accomplished in industries which were once regarded as being seasonal in their every aspect.

Fifteen bills dealing with unemployment insurance have been introduced in six State legislative bodies since 1915, and none of them has been successful. Probably the so-called Huber bill, introduced in the Wisconsin Legislature, came nearest to adoption, and its author, Doctor Commons, advised your committee that it "was as dead as anything could be."

In many industries, as the evidence will show, a reserve fund for unemployment which offers protection in the form of insurance has been adopted. The testimony of Doctor Commons as to the practice in the Chicago clothing industries is important as well as the reports of the Industrial Relations Counselors.

Whatever legislation is considered on this subject, your committee is convinced, should be considered by the States. The States can deal with this subject much better than can the Federal Government. But in any discussion of legislation, your committee thinks consideration should be given to the arguments of Doctor Commons—that the plan of reserve funds or insurance confined to one company or plant rather than to all industries, should be adopted.

Doctor Commons stresses the fact that the insurance idea as practiced in the Chicago market follows the experiences gained from the adoption of disability compensation plans in various States. Employers were moved to adopt every precaution against accidents when they realized that accidents were costly under the plans for disability compensation. In the same way, employers and employees will be more likely to fight the causes of unemployment within their industries when they have seen tangible evidence of the cost of unemployment, according to the arguments advanced in this evidence. On the other hand, Doctor Commons insists that, "the paternalistic and socialistic" schemes adopted in foreign countries, penalize success in that the employer who stabilizes his employment does not escape the burden of paying for unemployment in other industries.

Your committee can not leave this subject without suggesting that consideration be given to the benefits of stabilized production—the finer morale of the workers, the better workmanship, the increased production, the lowered costs of production, and the elimination of the cost of training the unskilled recruits. The testimony proves conclusively that the workers who cooperate with their employers and who are given a chance and encouraged, contribute tremendously to the success of the enterprise.

(D) Curtailed Production, Consolidation, and Economic Reconstruction

This subject covers so vast a field that it also immediately becomes imponderable. To exhaust it seems impossible. A committee of Congress could proceed with a study on this one phase of the unemployment problem and could continue indefinitely.

The general opinion given your committee on this score is that undoubtedly just at this time we are experiencing a program and a problem which are no different from those occurring since the advent of machines in industry. The difference is, however, that undoubtedly

at this time the developments are far more extensive and far more intensive than they have ever been in our history.

Of course there is going to be individual suffering, for example, the suffering of the musician who discovers that a machine is forcing him to forego his life work and to seek employment in new fields. How to answer the many questions which arise with every minute of consideration for this topic, is what makes the subject imponderable. The printed evidence contains suggestions of the shortened working day and the reduced working week, has contentions that new industries are arising constantly out of the graves of departed trades and the workers are thus absorbed. Your committee is convinced, however, that it is the duty of society to provide for these workers during the period of readjustment, as many employers are now doing.

Conflicting opinions are offered as to the effect of the vast consolidations of wealth. One side contends that the day of the small business man is passing, that the individual merchant can no longer compete with the national chain, while another will contend that no nationally organized chain can overcome the personal effort put into a business by the individual business man.

However, in the time your committee had for this subject no opportunity presented itself for the consideration of legislation on this subject, and your committee has nothing to suggest at this time.

(E) The Planning of Public Works with Regard to Stabilization

Another committee of Congress, the Committee on Commerce, has considered this subject and has reported legislation which is now before the Senate. The legislation is commonly referred to as the "Jones prosperity reserve bill." Your committee would suggest that the evidence submitted with reference to that bill should be read in connection with this study.

There is some testimony of interest on this subject in these hearings, but your committee did not devote a great deal of time to this topic, because no one disagreed with the suggestion that the Government and all other public agencies should so order their public works that they would offer a buffer in time of unemployment.

The evidence is very clear that the Federal Government may set a valuable example to the States in the adoption of a practical scheme for the planning of public works. Of course, the States and the other divisions of Government will have the greatest opportunity to provide this buffer because the expenditures by the Federal Government for public works are not large as compared with the expenditures by the States and other civil divisions. There should be no delay upon the part of the various Governments, Federal, State, city, and other minor subdivisions in the adoption of such plans.

There are minor objections to this scheme but your committee is convinced they can be overcome without difficulty.

(F) The Feasibility of Cooperation of Federal, State, and Private Agencies with Respect to all These Subjects Related to the Unemployment Problem

Your committee has discussed this phase of the survey as it has proceeded with this report and there is little to add. In general, it is the opinion of your committee that the responsibility should be

kept as "close to home" as is possible. Private agencies should make the first effort and should do everything they can for themselves. The States should contribute only that service that private agencies would find impossible and the Government should merely coordinate the work of the States and supply any effort which is entirely and purely of national character.

Unemployment in Europe in December, 1928

THE following table on unemployment in 18 countries in Europe in December, 1927 and 1928, has been compiled from the February, 1929, issue of the Monthly Bulletin of Statistics of the League of Nations (pp. 76–77).

It will be noted that in 8 out of the 18 countries listed below the unemployment figures are higher for December, 1928, than for December, 1927, and in 4 of these countries very much higher. For example, in Germany the percentage of trade-unionists reported is 16.7 in December, 1928, as compared to 12.9 in the same month in 1927, while the unemployed persons reported in receipt of benefit is 1,702,342 or over half a million more than at the earlier date. In the United Kingdom (Great Britain and Northern Ireland) the number of persons compulsorily insured reported unemployed in December, 1928, is 1,333,611, or over 139,000 more than in the corresponding period in the preceding year. In the Scandinavian countries where the numbers of trade-unionists reported unemployed were not so great in December, 1928, as in December, 1927, the percentages of the unemployed among these trade-unionists were still very large at the later period—25 per cent in Denmark, and over 17 per cent, respectively, in Norway and Sweden.

UNEMPLOYMENT IN EUROPE IN DECEMBER, 1927, AND DECEMBER, 1928

Country and class of unemployed	1927		1928	
	Number	Per cent	Number	Per cent
Austria: Persons registered	238,075	------	237,661	------
Belgium: Wholly unemployed members of unemployment insurance societies	22,526	3.6	11,912	1.2
Czechoslovakia: Persons in receipt of benefit	14,334	1.3	19,698	------
Denmark: Trade-unionists[1]	87,116	31.6	[2] 67,900	[2] 25.0
Estonia: Persons registered	4,437	------	7,770	------
Finland: Persons registered	2,152	------	2,868	------
France: Persons in receipt of benefit	13,221	------	895	------
Germany:				
Trade-unionists wholly unemployed[1]	519,573	12.9	748,760	16.7
Persons in receipt of benefit	1,188,274	------	1,702,342	------
Hungary: Trade-unionists	14,368	------	15,187	------
Irish Free State: Compulsorily insured persons	[3] 28,586	[3] 11.6	[3] 27,724	[3] 9.9
Italy: Persons registered as wholly unemployed	414,283	------	363,551	------
Latvia: Persons registered	6,399	------	14,030	------
Netherlands: Members of unemployment insurance societies	[4] 44,848	[4] 14.9	[4] 42,472	[4] 13.0
Norway:				
Trade-unionists (10 unions)[1]	9,285	28.0	[3] 6,171	[3] 17.4
Persons registered	28,532	------	24,223	------
Poland: Persons registered	[5] 165,268	------	[5] 126,429	------
Sweden: Trade-unionists	50,655	18.6	49,663	17.2
Switzerland: Persons registered—wholly unemployed	----------	4.5	----------	4.0
United Kingdom:[6] Compulsorily insured persons	1,194,305	9.8	1,333,611	11.2

[1] Includes only unions paying unemployment benefits.
[2] Provisional figure.
[3] November.
[4] Calculated from weekly average.
[5] First of following month.
[6] Great Britain and Northern Ireland.

STABILITY OF EMPLOYMENT

Provisions in Trade Agreements for Stabilizing Employment

MANY labor unions seek, through the medium of trade agreements with their employers, to stabilize or equalize employment for their members. No such arrangements can, of course, increase the amount of work to be done, but there are many ways in which a given amount of work can be so distributed as to improve greatly the regularity of employment.

One of the most common provisions directed to this end is the prohibition of all overtime work during slack seasons or when members of the trade are idle. Also in a number of cases overtime work is prohibited if there is available space in the shop or factory for an additional worker, and in some of the trades overtime is limited to a certain number of hours a day or a week.

Another method of stabilizing employment is the provision, which occurs in several agreements, for equal distribution of the work available among all employees during the slack seasons. A number of agreements also provide that during the dull season there shall be no discharge of an employee who worked during the busy season, but such employees shall be given an equal share of whatever work is available.

Lay-offs during slack seasons are arranged for in a number of the agreements, it being provided that lay-offs are to be in rotation so that all employees shall share equally in the work, and in some cases are limited to one day a week, while in others each employee may be laid off for a week at a time.

Provision for a reduction in the number of hours to be worked in a day or a week before any employee shall be laid off or discharged constitutes another method for equalizing such work as is available.

A guaranteed period of employment for regular employees is provided for in a number of agreements. In some cases employment for a certain number of weeks during the year is guaranteed, while in others a full week's work is guaranteed if the employee works any part of the week.

Unemployment insurance is provided for in certain of the clothing-trade agreements. According to provisions in some of these agreements the unemployment fund is contributed to by both employers and employees, while in others the employees are not required to contribute to the fund.

A more detailed discussion of these trade-agreement provisions for stabilizing employment is given below. It is based on an analysis of trade agreements, covering 229 locals, received by the bureau from 1926 to 1928.

Regulation of Overtime

THIRTEEN locals of bakery workers either prohibit or limit overtime work; two of these permit no overtime work by regular employees at any time; four permit overtime work only when substitutes are unavailable; one limits the overtime work to two hours per day if substitutes are unavailable; six will permit not more than two hours per week overtime by regular employees if extra men are available.

Two locals of brewery workers prohibit all overtime work while employees are on part time or when members are unemployed.

One local of broom makers permits overtime work only when the factory is working full time—44 hours per week; one permits overtime work when the union can not furnish extra help.

In the building trades one local of bricklayers and masons provides: "When 50 per cent of the trade is unemployed no overtime work shall be permitted where it is possible to employ more men during regular working hours." One local of carpenters provides: "Members not to work more than 8 hours in 24 hours when local can furnish carpenters, except in case of emergency and then not more than one week in any one month"; another provides: "No member shall work overtime except when the district council is unable to supply the required number of men, or to save life or property." One local of lathers provides: "On all overtime work unemployed members shall have the preference if qualified." Three locals of operative plasterers prohibit overtime work when members are out of employment. Two locals have the following provision: "When continuous overtime is worked on any building, such overtime, as far as is possible, shall be given to unemployed members." One local of plumbers provides: "Overtime on new work shall not be permitted while members of local are out of work." One local of sign painters provides: "The union reserves the right to prohibit members working overtime during the slack seasons."

Cloth Hat, Cap, and Millinery Workers' Union in one agreement provides:

> No overtime work shall be performed during any part of the months of June, July, and August. During the rest of the year overtime work may be performed only with the consent of the union.

The International Ladies' Garment Workers' Union, in agreements covering eight locals, has the following provision:

> No overtime shall be permitted so long as there are vacant accommodations in the shop for additional workers, and workers can be supplied by the union within a reasonable time.

Six locals provide: "No overtime permitted unless union is unable to furnish sufficient help to do the required work in regular hours"; and eight locals provide: "No overtime work shall be exacted or permitted between November 15 and December 31, nor between May 1 and July 15."

Fur workers' agreements covering four locals prohibit overtime except in four months of the year—August, September, October, and November—when overtime not to exceed two hours daily five days a week is permitted; and two locals provide: "Overtime work not exceeding three hours a day shall be permitted between the second

Monday of September and second Monday of December on the first five working days of the week, and four hours on Saturday." One local provides as follows: "No overtime shall be permitted while there are any members of the union unemployed and who can be furnished to the firm by the union."

The Typographical Union in one agreement has the following provision:

> If employee accumulates a full day's overtime in 30 days he shall take a day off within the next financial week and put on a substitute.

Equal Distribution of Work

TRADE-AGREEMENT provisions for the protection of the regular employees during the dull periods or slack seasons are many and varied. The one calling for equal distribution of work is the one most generally used.

Three locals of broom makers stipulate that sufficient material shall be furnished to all employees to work steadily during the time shops are running; one of these provides that no new help shall be hired until all old employees are working full time. One local provides that if one journeyman waits for material all the journeymen in the shop shall stop work until all are furnished with material.

One local of sign painters provides that during slack periods all work shall be distributed equally among regular employees.

The agreements of 13 locals of cigar makers stipulate that in dull seasons all employees shall be placed on equal limit, and that no new help shall be hired until that limit is removed. Two of these also provide: "When men are limited to a stipulated number each week they shall not be required to report every day provided the stipulated amount can be made in less time."

The following is the provision of one local of cleaners, dyers, and pressers: "During dull periods employer agrees to divide as much as possible the work equally amongst all employees. New employees with less than six months' service shall be laid off before the division of work."

Three locals of boot and shoe workers provide for an equal distribution of work during the slack season; two of these also provide that there shall be no lay-off during the slack season.

Four locals of cloth hat and cap makers provide for an equal distribution of work among all the workers during slack seasons.

Amalgamated Clothing Workers' agreements covering seven locals have a provision for an equal distribution of work during slack seasons, and that all workers shall be given an equal opportunity for a share of whatever amount of work there may be, without discrimination.

The International Ladies' Garment Workers' agreements, covering 26 locals, provide for an equal distribution of work during slack seasons; 7 of these locals also provide that workers shall not be required to report for work every day during the slack season and remain in the shop when there is no work for them; 19 locals also stipulate that workers required to come into the shop during the dull season shall be given at least one-half day's work.

The United Garment Workers' agreements provide: "During slack seasons no new employees will be hired and no work will be divided with any employee who has been a member of the local union for less than nine months."

The Fur Workers' agreements, covering 11 locals, provide for an equal division of work during the slack season; eight of these locals provide as follows:

> Equitable division of work shall be carried out wherever possible during the months of June, November, and December for those who have worked with the firm not less than seven consecutive weeks prior to the period when equal division of work is begun in each establishment.
>
> In the event of the union claiming that an emergency affecting unemployment prevails in the industry, the matter shall be referred to the conference committee to establish whether or not such alleged emergency exists and upon finding the existence of such an emergency, ways and means for mitigating this condition shall be devised. In the consideration and action of such matter the chairman of the conference shall act only in the capacity of mediator.

The journeymen tailors' agreements, covering 11 locals, provide for equal distribution of work during slack seasons and that no employee who worked during the busy season shall be discharged during the dull season.

The Glass Bottle Blowers' Association agreement covering stopper grinders provides: "When work becomes slack in any shop, each man, including apprentices, shall receive an equal share of work.

Two locals of machinists stipulate that in case of depression there shall be an equal division of work in order that all men shall have a share of the work; one of these also stipulates that the company shall not discharge regular employees during the depression.

The International Pocketbook Workers' agreement has the following provision:

> It is agreed that during the slack season all work shall be distributed and divided equally among the workers in the factory. In case when and where it is absolutely necessary for an employer to reorganize his working force he shall bring such matter for adjustment before the association and the union. The union will be given a reasonable time to place in other employment such workers as are affected by the reorganization. Equitable distribution of work shall be practiced during the period of reorganization.

The National Brotherhood of Operative Potters' agreement provides as follows:

> Manufacturers are requested when work is short to instruct foremen to divide work as equally as possible, and not to prefer some man over others in the distribution.

Five locals of upholsterers stipulate: "When there is not sufficient work for all employed to put in full time, the work shall be divided equally among those employed." One of these also provides for equal distribution among the apprentices at the same time.

Lay-offs During Dull Season

SIX LOCALS of bakery workers provide that during dull seasons men shall be laid off for one to three days in rotation; one of these provides that if the employee is not notified on evening before of lay-off the next day he shall be paid for the day; one also provides that there shall be no discharge of regular workers during the dull season.

Thirteen locals of brewery workers stipulate that during the dull season the employees shall be laid off in rotation; five of these stipulate that the lay-off shall be for one week and never by the day or hour; two, that the lay-off shall be not more than one week nor less than one day at a time; three, that the lay-off shall be for one day per week for each employee; and one, that if the employee is off sick such time shall be considered as his lay-off time.

One local of coopers stipulates that "Men shall not be discharged on account of slack work; they shall be laid off in rotation for not longer than one week nor less than one day."

In the agreements of two locals of bookbinders is the following provision:

> When through lack of work it is necessary to lay off any of the regular force, phalanxes shall be formed so that every employee shall take a day off in turn.

Two locals of stereotypers and electrotypers stipulate that if men are to be laid off on account of a depression a definite schedule must provide an equal time off for journeymen and apprentices.

Two locals of typographical workers have the following provisions:

> If necessary to lay off any regulars through lack of work, phalanxes must be made so that every employee (except foreman) shall take a day off in turn.
>
> If owner or stockholder is a member of the union and employed as workingman, other employees must not be laid off during slack season.

The agreement of one local of teamsters and chauffeurs provides that in dull seasons each member shall lay off for one week, and if necessary may lay off another week in the same order. The provision by one local is as follows:

> During the winter months when work becomes slack no regular union man shall be discharged, but may be laid off; lay-off to take place impartially and no man to be laid off for less than one day.

Reduction of Hours

THE AGREEMENT of one local of structural-iron workers provides as follows:

> In case of depression, work shall be reduced to seven hours a day and five days a week. Should a further reduction become necessary, the force shall be reduced and seniority shall govern.

One local of hotel and restaurant workers provides: "This local may for reason of unemployment institute a 5-day week, with wages to be paid pro rata."

One local of leather workers stipulates that in case there is not enough work, the hours of work shall be cut in order to give work to all employees.

The following provisions are found in the agreements of three locals of machinists:

> If business falls off there shall be no lay-off until working hours have been reduced to seven hours a day and then those last employed shall be the first laid off.
>
> In case of depression in trade, hours shall be shortened all that is necessary to keep normal force employed.
>
> In case of depression in trade the hours shall be shortened on Saturday before reduction in force takes place.

Two locals of photo-engravers stipulate as follows:

> Should it become necessary to reduce the working hours, the employer shall designate the hours of work, provided such reduction shall be equal on each day of the week and shall affect the entire working force. Such reduced schedule shall be operative for not less than one complete week.

The Maintenance of Way Employees' agreement with the Chicago, Burlington & Quincy Railroad Co. has the following provision:

> When it is necessary to make a reduction, a full force may be retained and the hours of service reduced to 40 hours per week before the force is reduced, when mutually agreed upon with the majority of the men directly affected.

Three locals of upholsterers provide: "When work is scarce the hours shall be reduced to 40 hours per week from May 1 to Labor Day in order to provide employment for a larger number of workers."

Guaranteed Employment

THE AGREEMENT of one local of brewery workers guarantees at least one-half time employment to all employees during the winter months; that of three locals provides that the average number of employees in April and May shall be the minimum number of employees for the succeeding year and that extra men may be employed during July, August, and September.

Two locals of sign painters stipulate in their agreement as follows: "All regular employees shall be guaranteed 40 hours' employment for each successive week. Regular employees whose services will not be needed must be notified one week previous." The agreement of one local of scenic and pictorial painters provides: "All regular employees shall be guaranteed 44 hours' employment for each successive week. When services are not required the following week, they shall be notified not later than the preceding Saturday."

The agreement of one local of the International Ladies' Garment Workers' Union guarantees designers 26 full and consecutive weeks' work, after a trial period of two weeks.

One week's work to all old employees except when they lose time of their own volition is guaranteed by the agreement of one local of laundry workers.

One local of typographical workers has the following provision:

> In an office where only one journeyman is employed, such journeyman must be employed for five days in the week. If not enough work, he must be paid for five days.

The agreement of one local of street-railway employees provides that extra men who answer the roll call shall be guaranteed a rate of $20 per week; another guarantees all extra men an average of 7 hours each day for 26 days if they are available for work; a third guarantees welder and grinder helpers, bridge and building carpenters, and truck drivers 42 hours per week, provided they report for work.

Two locals of teamsters and chauffeurs provide that steady drivers and helpers shall be paid a full week's wages, unless they are discharged for cause.

Three locals stipulate that week workers shall be guaranteed a full week's pay whether work is provided or not, except for a week with a holiday on which they do not work.

The agreement of the United Wall Paper Crafts, covering machine printers, color mixers, and print cutters, contains the following provision:

The manufacturer guarantees to the machine printers, color mixers, and print cutters subscribers hereto 50 weeks' employment, 45 weeks at full pay, and half pay for any time subscribers hereto shall be idle up to 50 weeks.

Unemployment Insurance

ONE AGREEMENT of dyers, cleaners, and pressers contains the following provision:

Employer agrees to pay in addition to wages agreed upon an additional sum equal to 1 per cent of the total pay roll of the union employees for the first year, 1½ per cent for the second year, and 1½ per cent for the third year of this agreement, said sum to be remitted weekly to the office of the union to be used for nonemployment fund.

Agreements of cloth hat, cap, and millinery workers, covering nine locals, provide for unemployment insurance. Agreements for eight locals provide as follows:

The employer agrees that he will pay to Local No. — of the Cloth Hat, Cap, and Millinery Workers' Union on each and every pay day during the life of this agreement a sum equal to 3 per cent of the pay roll of that particular week, covering all the workers coming under the terms of this agreement. These payments shall be by check payable to the order of Local No. — of the Cloth Hat, Cap, and Millinery Workers' Union, shall be forwarded to the said local, and shall be accompanied by a statement on a form supplied by the union setting forth a list of the workers, the amount of wages paid to each, and the total sum of wages paid for that week, thereby supplying the data on which the 3 per cent payment for the week in question is being made.

The sums of money thus received by Local No. — shall become its absolute property, to be used at its discretion in such ways or forms as it may deem necessary for the payment of unemployment benefit to the members of Local No. — of the Cloth Hat, Cap, and Millinery Workers' Union.

The agreement covering one local has the following provision:

Employers and employees engaged in the cap trade and business in large industrial centers realize the duty and corelative right of workers to protection against periods of economic stress and unemployment; that the employees are not responsible for slack seasons and depressions in the trade; that the trade owes the employee a livelihood in slack as well as in busy seasons. Therefore it is agreed and understood that in the event that party of the first part fail to employ party of the second part or members of party of the second part, for a full period of 48 weeks, then and in that event party of the first part shall be liable for and pay to party of the second part for the use and benefit of its members employed by party of the first part a sum of money equal to 5 per cent of the total wages paid to said employees during the current year in the following manner: In the event that said employment is less than 48 weeks and more than 43 full weeks, 1 per cent of the sum equal to 5 per cent as herein stated shall be paid to party of the second part for each week less than said 48 weeks; in the event that said employment is equal to 43 full weeks or less for the current year, the whole of said 5 per cent as hereinabove described shall be paid by the party of the first part to party of the second part, which latter party shall equitably divide and distribute same among those of its members employed by party of the first part as and for an unemployment insurance. Said 5 per cent to be paid in cash equal to weekly pay roll with verified statement to chairman of party of second part; and in the event members of party of the second part shall be employed 48 weeks or more during the current year, said total insurance will be returned to party of the first part, and for each week less than 48 weeks 1 per cent will be deducted and balance returned.

Three agreements of the Amalgamated Clothing Workers provide for unemployment insurance. In one agreement the employer con-

tributes 3 per cent of the weekly pay roll and the employees contribute 1½ per cent. One agreement provides for equal contributions from employer and employee—1½ per cent of the weekly pay roll. Under the terms of this agreement the contribution of 1½ per cent by the employers begins May 1, 1928, the date the agreement became effective, while the employees do not begin contributing to the fund until May 1, 1929. In the other agreement the employees are not required to contribute to the unemployment insurance fund, but it is to be maintained by a weekly contribution by the employers amounting to 1½ per cent of the total labor cost of all clothing manufactured for the employers, whether in their own inside shops or in contract shops making up work for them.

Three agreements of the International Ladies' Garment Workers' Union provide for an unemployment insurance fund. One of these agreements provides that the employer, while making no actual cash payment to the fund, shall give a surety bond for an amount equal to 7½ per cent of his direct labor pay roll. The workers are guaranteed 40 weeks' employment; those workers having more than 12 weeks' unemployment during the year are entitled to benefits, from this amount, to one-half their weekly wage for each week in excess of the 12 weeks. The two other agreements have the following provisions:

> The employer agrees to cooperate with the union in maintaining an unemployment insurance fund for the benefit of the members of the union. The fund shall be made up of contributions from the employer and the individual members of the union. The contribution of the employer shall be equal to 2 per cent of the weekly pay roll and that of the workers to 1 per cent of their weekly wages. The employer agrees at the end of each and every week to forward to the union the total contributions of both the total pay roll and that of the individual worker.
>
> The employer hereto hereby agrees to establish a fund to be known as the unemployment insurance fund, to which both the employer and the employees are to pay a stipulated amount. The employer is to pay 1½ per cent of his total weekly pay roll, and the employees to pay three-quarters per cent of their total weekly wages; said fund is to be administered by a board of trustees constituted and elected as hereinafter provided, and which said fund is to be maintained for the purpose of rendering relief to workers in the industry, who are unemployed and who are members of the union.

Miscellaneous

THE FOLLOWING provisions are not included in the foregoing classification, but seem to have the same end in view—a more equal distribution of work among union employees.

Two agreements of waiters, members of the Hotel and Restaurant Employees' Union provide: "Members working steady shall not be permitted to accept extra work under any consideration." One agreement of street railway employees provides: "Regular employees not allowed to perform extra work when extra men are available."

Two agreements of paving cutters have the following provisions:

> The company shall not employ any more men than they can keep going with steady work.
>
> In periods of depression the employer shall confer with a committee of paving cutters to discuss conditions before laying off men.

One agreement of lathers provides: "No employer shall hire men from another shop while there are members idle."

Stability of Employment in the Silk Industry

THE present study of the silk industry was made by the Bureau of Labor Statistics for the purpose of measuring the degree of regularity of employment and to ascertain whether regularity of employment has improved during recent years. The plan of analysis is the same as that employed in similar studies of various industries previously published in the Labor Review, as follows: Railroad industry, in August, 1928; iron and steel industry, in November, 1928; men's clothing industry, in January, 1929; automobile industry, in February, 1929; leather industry, in March, 1929; boot and shoe industry, in March, 1929; slaughtering and meat-packing industry, in April, 1929; paper and pulp industry, in April, 1929.

The basic data for the study are derived from the monthly reports made to the Bureau of Labor Statistics by most of the important silk mills as part of the general employment survey made monthly by the bureau and covering almost 12,000 manufacturing plants in various lines of industry. As these reports give only the number of employees of all kinds without separation by occupational groups, the present analysis must disregard occupational differences and treat the employees of a plant as a unit.

The method here employed for the measurement of stability is that of the relationship of average monthly employment during the year to the number of employees in the month of maximum employment. Thus, if during 1927 a particular plant had a monthly average of 90 employees and the maximum number in any month was 100, then the stability of employment may be fairly said to be 90 per cent. In other words, if the 100 men needed to fill the positions at the busiest season had no other opportunity for work, then each man would have an opportunity of 90 per cent of full-time employment. Of course, this is rarely quite true, but it is often substantially true; and, in any case, the method offers a fairly accurate measure of the degree in which a particular establishment has attained a condition of stable employment. On the other hand, failure of an establishment to obtain a good level of stability in one or all occupations must not necessarily be attributed to faulty management. Many factors over which the management has little or no control may affect the stability of employment. Nevertheless, an employment stability of or very near to 100 per cent is the desirable goal.

Results of the Study

THE PERCENTAGES of full-time employment (computed as described above) are presented for each of the years 1923 to 1928 for 104 silk mills whose main products are silk thread and woven materials.

The study indicates that employment in the silk industry as a whole is rather unstable and has shown no improvement in recent years, but that a few plants maintained a very good rate of stability for the six years (Nos. 6, 8, 19, 30, and 38).

The establishments are arranged in the table in descending order according to the favorableness of their showing in 1928.

PER CENT OF FULL-TIME EMPLOYMENT IN THE SILK INDUSTRY

Plant number	Location [1]	1923	1924	1925	1926	1927	1928
1	Paterson, N. J	76.1	73.0	81.6	85.7	97.6	98.1
2	Pennsylvania	94.2	85.0	94.4	95.0	100.0	98.0
3	Watertown, Conn	97.8	83.8	95.7	90.4	94.6	97.8
4	Wilkes-Barre, Pa	95.7	96.5	98.2	93.9	89.4	97.2
5	Paterson, N. J	89.0	83.8	90.5	86.6	93.2	97.1
6	Bethlehem, Pa	99.3	93.9	96.7	96.4	96.4	96.7
7	Pennsylvania	91.4	85.5	94.7	81.1	90.5	96.7
8	New York	98.3	96.1	90.4	95.8	95.6	96.5
9	Massachusetts	85.7	96.7	96.6	93.3	93.5	96.4
10	Easton, Pa	88.8	92.6	80.9	80.9	94.5	95.7
11	Pennsylvania	94.9	90.3	93.0	92.2	77.4	95.7
12	Wilkes-Barre, Pa	88.4	80.2	82.8	96.9	85.6	95.3
13	Norwich, Conn	93.9	93.1	93.6	91.0	95.0	95.2
14	Paterson, N. J	84.8	59.6	79.4	64.6	90.4	95.2
15	Pennsylvania	95.5	95.5	97.2	96.4	80.0	95.2
16	New Jersey	91.7	92.7	90.6	75.7	86.3	95.1
17	do	94.0	85.7	94.2	92.5	92.3	95.0
18	Wilkes-Barre, Pa	83.6	81.8	76.3	82.0	77.6	94.9
19	Massachusetts	94.0	91.4	97.7	97.1	99.1	94.8
20	New York	96.7	92.2	86.3	93.2	87.1	94.7
21	Binghamton, N. Y	83.9	88.6	93.2	83.1	77.6	94.7
22	Massachusetts	95.8	67.9	88.5	91.4	96.0	94.6
23	Kingston, Pa	88.1	94.6	96.3	91.5	91.9	94.3
24	Paterson, N. J	92.5	76.1	81.8	82.8	90.4	94.1
25	Norwich, Conn	82.4	67.1	95.2	100.0	86.7	94.0
26	Massachusetts	90.0	75.5	76.8	94.9	96.8	93.9
27	Hazleton, Pa	95.3	92.6	98.6	89.7	97.5	93.8
28	Pennsylvania	90.3	91.2	94.9	87.3	91.9	93.8
29	Scranton, Pa	98.0	88.5	92.4	72.6	86.9	93.7
30	Connecticut	97.4	94.8	97.9	94.0	94.6	93.6
31	Rhode Island	90.7	87.8	95.6	91.8	93.8	93.6
32	Pennsylvania	96.8	88.9	93.0	88.5	85.7	93.3
33	Virginia	92.3	95.7	85.3	93.1	93.5	93.2
34	Paterson, N. J	95.4	70.9	87.1	98.2	94.3	93.1
35	New York	89.4	95.1	89.6	77.9	91.4	93.1
36	Massachusetts	87.5	88.6	90.2	94.8	94.9	92.8
37	New Jersey	97.5	91.4	95.9	90.8	94.7	92.8
38	do	96.9	93.2	96.1	94.3	95.6	92.6
39	Connecticut	95.2	83.7	81.1	80.8	85.7	92.3
40	Norwich, Conn	96.5	94.8	91.8	97.4	93.3	92.2
41	Wilkes-Barre, Pa	91.8	94.0	73.9	90.0	94.3	91.9
42	Michigan	93.4	94.3	96.4	86.8	93.9	91.8
43	Maryland	90.0	62.6	90.5	72.9	69.9	91.4
44	Connecticut	92.4	93.3	67.9	96.0	96.0	91.2
45	New York City	87.8	84.3	92.8	87.9	95.1	91.2
46	do	95.2	88.0	89.1	89.2	91.0	91.1
47	New Jersey	89.3	90.9	80.5	92.8	90.5	91.0
48	Wilkes-Barre, Pa	82.7	87.9	89.4	95.1	93.5	90.9
49	Allentown, Pa	80.4	77.4	91.4	80.3	87.4	90.5
50	Rhode Island	99.8	95.3	96.6	96.7	85.6	90.4
51	Bethlehem, Pa	77.2	61.7	84.1	76.6	92.2	90.0
52	Connecticut	89.3	84.7	92.1	95.2	95.7	89.6
53	Massachusetts	82.7	91.6	93.9	88.3	95.1	89.6
54	Kingston, Pa	95.2	89.3	84.5	78.8	95.3	89.5
55	Hazleton, Pa	87.3	94.1	86.6	93.1	92.9	89.4
56	New York	93.4	83.6	92.6	90.4	86.6	89.3
57	Massachusetts	88.9	83.0	91.4	78.3	85.3	89.3
58	Watertown, Conn	79.6	89.1	91.5	82.9	91.1	88.8
59	Pennsylvania	91.8	94.2	88.1	95.6	79.0	88.8
60	Bethlehem, Pa	88.6	90.4	92.1	79.9	87.4	88.5
61	Paterson, N. J	90.2	82.4	84.0	84.6	85.1	88.2
62	Pennsylvania	86.8	82.4	89.1	88.2	87.8	87.7
63	New York	90.8	93.7	89.5	84.8	91.4	87.6
64	Pennsylvania	87.7	90.1	87.4	92.7	84.9	87.6
65	Scranton, Pa	79.3	83.1	87.4	83.2	90.7	87.3
66	Paterson, N. J	87.0	89.1	90.6	91.4	78.5	87.2
67	New York City	87.9	85.5	89.0	83.8	82.6	87.1
68	Rhode Island	93.1	97.1	94.2	96.0	88.3	86.6
69	New York	80.4	87.7	94.5	91.7	89.7	86.5
70	Pennsylvania	88.0	86.0	90.2	92.5	77.4	86.1
71	Bethlehem, Pa	79.3	71.2	91.4	80.9	89.0	85.6
72	Pennsylvania	85.1	80.5	85.4	88.0	82.0	85.5
73	Connecticut	90.0	86.0	89.1	92.7	96.1	85.2
74	Wilkes-Barre, Pa	69.0	66.4	81.0	85.7	86.3	85.1
75	Pennsylvania	89.3	88.2	90.5	88.7	81.0	85.0
76	Paterson, N. J	85.5	89.8	96.2	87.8	85.6	84.8
77	New York City	92.6	77.7	78.6	80.1	87.0	84.6

[1] In cases where the name of the city might identify the plant, only the State is given.

PER CENT OF FULL-TIME EMPLOYMENT IN THE SILK INDUSTRY—Continued

Plant number	Location	1923	1924	1925	1926	1927	1928
78	Easton, Pa	96.8	94.1	95.3	93.5	86.0	84.3
79	Pennsylvania	91.9	94.1	86.3	88.6	93.0	84.0
80	Paterson, N. J	85.2	79.4	90.5	90.3	81.2	83.6
81	Scranton, Pa	94.8	95.3	98.0	96.9	80.6	83.4
82	Paterson, N. J	83.0	91.8	87.9	82.5	90.1	82.5
83	Pennsylvania	91.4	90.8	64.8	91.5	88.8	82.4
84	do	91.3	86.5	93.9	85.6	83.3	81.8
85	Connecticut	87.9	94.5	93.2	93.9	84.7	81.7
86	Watertown, Conn	93.0	95.9	95.8	86.6	93.5	81.1
87	Central Falls, R. I	94.2	82.3	95.3	96.9	80.5	81.0
88	Pennsylvania	93.8	90.7	97.7	91.0	95.7	80.9
89	Central Falls, R. I	88.8	72.5	81.2	95.7	81.8	78.9
90	Massachusetts	64.3	91.8	69.5	86.0	97.4	77.7
91	New York City	93.9	78.9	75.6	74.4	90.7	76.9
92	Allentown, Pa	91.0	86.2	89.5	81.8	84.9	76.4
93	Connecticut	89.9	84.7	88.1	81.5	70.9	76.4
94	Pennsylvania	75.9	68.1	82.2	77.6	69.7	75.8
95	Paterson, N. J	78.3	67.3	81.4	81.4	88.7	75.4
96	Virginia	85.7	64.7	65.1	76.7	75.1	74.6
97	New York	91.2	73.0	83.4	83.8	90.5	70.9
98	Pennsylvania	81.2	88.5	91.1	80.8	61.4	70.9
99	Paterson, N. J	74.0	93.8	83.6	83.3	63.8	69.0
100	Pennsylvania	94.5	81.3	85.1	85.3	87.1	68.9
101	Massachusetts	83.3	78.5	75.3	81.1	65.3	68.9
102	Pennsylvania	83.5	74.7	85.1	89.1	89.1	68.8
103	Binghamton, N. Y	78.9	68.8	88.4	85.3	84.5	65.7
104	Rhode Island	88.8	89.0	89.5	82.1	79.0	65.7
	Average	89.1	85.6	88.6	87.9	88.0	87.8
	Highest	99.8	97.2	98.6	100.0	100.0	98.1
	Lowest	64.3	59.6	64.8	64.6	61.4	65.7
	Per cent of plants with employment stability of—						
	95 per cent and over	19.2	9.6	20.2	17.3	17.3	16.3
	90 to 94.9 per cent	32.7	30.8	31.7	28.8	31.7	32.7
	85 to 89.9 per cent	26.0	22.1	23.1	20.2	25.0	23.1
	80 to 84.9 per cent	11.5	15.4	13.5	22.1	12.5	12.5
	Under 80 per cent	10.6	22.1	11.5	11.5	13.5	15.4

Survey of Employment Stabilization in New England

THE EXTENT to which research is applied by industrial establishments in the effort to stabilize employment was the subject of a recent study [1] by the Metropolitan Life Insurance Co. The investigation was made for the New England Council [2] for the purpose of demonstrating the extent to which research has served to stimulate the adoption of improved management, manufacturing, and marketing methods. The products manufactured in the plants studied included shoes, textiles, machinery, toys, paper, silverware, etc., and the number of employees in these plants ranged from 100 to 8,000. Plant conditions such as location, remoteness from raw material or a dependable labor supply, business competition, and other difficulties were such that real handicaps had to be overcome by these companies in stabilizing employment, so that the fact that research was employed by them in their efforts at stabilization is considered to be especially significant.

The study deals with the methods followed by individual companies and recounts the results attained by these companies in securing more stable employment conditions as a result of systematic research studies designed to show the weak places in their operating policies.

[1] Metropolitan Life Insurance Co. Policyholders Service Bureau. The Use of Research in Employment Stabilization. New York [1929?]. 32 pp.
[2] See Labor Review, September, 1927, pp. 45, 46.

A company manufacturing paper products with a highly seasonal demand employs a research staff which, by means of market, production, and economic studies, worked out several ways of regularizing employment, but as these did not entirely meet the situation the company established an unemployment fund from which permanent employees are paid a percentage of their regular wages during periods when the company is unable to furnish employment. The fund, which is administered by a small committee on which the firm and the employees have equal representation, was created out of the profits of the business accumulated over a 5-year period. The fund is not regarded as a charity nor does it constitute an unlimited guaranty either of employment or of the maintenance of the regular wage rate, but up to the present time it has operated successfully in connection with the other measures of stabilization. The six stability measures inaugurated by the company include the reduction of seasonal orders by persuading customers to order at least a part of their needs well in advance of the season; increase in the proportion of nonseasonal orders with a long delivery time; planning for holiday and other stock items more than a year in advance, as well as planning ahead for interdepartmental needs, manufacturing of products of securely staple nature for stock during dull seasons; and the distribution of the long-time orders and out-of-season items through the calendar year in such a way as to fill the periods when work on quick delivery products is normally slow.

A firm manufacturing textile machinery established a research laboratory 10 years ago which deals with materials and manufacturing methods, using its own technicians as well as experts from outside the company called in for advice and council. As part of the work, labor turnover and working conditions are studied, and great stress is laid upon training of the foremen so that they may be qualified to contribute toward maintaining the earnings and the quality of the working force on a level to insure both efficiency and stability.

Production control and elimination of waste are achieved by certain of the companies through comprehensive fact-finding investigations carried on by their research departments, and the policies of other companies which contribute toward steady employment and a stable force include job analysis, the careful selection and placement of employees, and the carrying out of various personnel policies which make for a healthful and contented working force.

Selling Research Results to Employees

To SECURE the best effects from any system of stabilization, however, the results of the research which involve any change in system must be sold to the employees. In one case where it was essential that production costs should be cut the reorganized production methods were explained to the workers at a mass meeting and they were assured that the new methods were experimental and that the employees would be kept informed of the progress being made. As a result the system was successfully installed, the effects brought about by the use of research and cooperation being full-time operation during the dull summer months, greater output per employee, an improved product, and an increase in the earnings of the skilled employees.

A metal manufacturing company keeps its employees informed of the operation of the business through the agency of a joint plant committee. Through this body the executives "keep in touch with the men, answer all interrogations and take up questions involved in the conduct of a successful business. There is practically no limit to the range of pertinent facts discussed. The representatives of the men bring up such matters as plant working conditions and their effect on the success of the company; transportation to and from work; the elimination of waste; factory schedules and a great variety of other conditions which affect the workman at home or in the shop. The representatives of the executives in their turn have an opportunity to present the attitude of the management on any question which arises."

Labor Turnover Control Through Research

WHILE the problem of industrial stabilization in its broadest aspects is beyond the control of the individual employer the problem as it affects the individual company can be met to a certain extent by means of economic research which reveals the weak places in the management and organization policies. The measurement of labor stability by means of labor turnover indexes reflects the influence of economic conditions on stability. Thus the comparison of labor turnover indexes constructed by several organizations for different New England manufacturers with that for the United States as a whole shows that while the quit rate for New England was consistently lower than the national average, the same underlying forces are at work everywhere in the country and "that a thoroughgoing program for the stabilization of labor involves the economic problem of stabilizing business as a whole."

A case is cited of a steel manufacturer who found that his quit-rate experience showed much more violent fluctuations than the national index up to 1925, but that from that year, when a new sales policy was inaugurated which resulted in a more even flow of orders, the rate showed greater stability even than the average for the country. In this case, therefore, business stabilization had apparently resulted in labor stabilization.

CARE OF THE AGED

Church Pension and Relief Plans for Ministers

[This article forms part of a study recently made by the Bureau of Labor Statistics on the general subject of the provision for the care of the aged in the United States. Articles on homes for the aged maintained by fraternal and by religious organizations and on the present status of old-age pension systems appeared in the March, 1929, Labor Review, and articles on homes for the aged maintained by various nationality groups and on private benevolent homes appeared in the April, 1929, Labor Review]

INQUIRY was made of 31 national churches as to whether or not provision is made by them either for aged ministers or for aged members of the church. Replies were received from 26. Of these, 16 reported having a pension or relief plan for aged ministers, and data were secured concerning 11 of these. The 11 organizations from which data were obtained were the Seventh-Day Adventists; Northern Baptists; Congregationalists; Methodists, North and South; Moravian Church (Northern Province); Presbyterians, North [1] and South; [2] Episcopalians; Reformed Church of the United States; and the Unitarians. Three other organizations (the United Brethren, the Anglican Universal, and Universalist Churches) have adopted pension schemes, but these are not yet in operation. The Reorganized Church of Jesus Christ of Latter-Day Saints has no regular pension system, but continues the salary of its ministers as long as they live.

The Northern Baptists, Congregationalists, Northern Presbyterians, Reformed Church, and Unitarians have both a pension fund and a system of relief for cases of special need.

The system in the Roman Catholic churches is different from that of the Protestant churches. The Church has no general retirement system; the care of the aged priest is left to the particular diocese in which he has served. In case of absolute incapacity he is cared for in one of the Catholic hospitals or he may receive an allowance from the general diocesan funds. In general, the aged priests continue in service until death, being usually assigned to light duties in the parish or to an easy position (such as chaplain) in one of the church institutions. In about two-thirds of the dioceses from which the bureau received data there is a "clergy relief fund," to which the priests belong and from which retirement or disability allowances are paid. These funds may be supported entirely by the priests, jointly by the parishes of the diocese and the priests, or entirely by the dioceses.

The basis upon which pensions of the Protestant churches are granted varies. In those cases in which the system is contributory, the annuitant receives his allowance as a matter of right, and in at least one case (Congregational) retirement is not required, the

[1] Presbyterian Church in the United States of America.
[2] Presbyterian Church in the United States.

annuity beginning on reaching a specified age. Where the allowance is paid for entirely by the church or where the whole system is one of "relief," the need and means of the applicant are more likely to be taken into consideration. Thus, the Adventists, the Southern Presbyterians, and the Reformed Church (relief plan) take into consideration the need of the pensioner and whether or not he has private means. The Adventists, however, state that the pension is not to be regarded as charity, but as a just reward for service. The Moravian Church states that need is not a prerequisite for the receipt of the pension, and the Unitarian Church that the pensions "are not a charity; those qualified receive them as a right."

Age and service requirements.—Sixty-five years is the most usual age set for the retirement of ministers, the Baptists, Congregationalists, Presbyterians, and Unitarians having this provision. The age of retirement is set by the Episcopalians at 68 and by the Reformed Church at 70.

Service requirements vary rather widely. For ordinary retirement the Moravian Church requires 10 years' service, the annuity increasing in amount with additional years of service and the maximum being reached after 30 years' employment. The Unitarians set the years of service at 20; and the Northern Baptists, the Congregationalists, and the Northern Presbyterians require that the clergymen shall have been in the employ of the church for 35 years (though in the latter case retirement at a proportionally reduced rate may be allowed for fewer years of service).

For permanent total disablement while in the service of the church, the Congregationalists and Northern Presbyterians allow retirement at any time, and the Reformed Church after five years' service, the allowance in all three cases being proportioned upon the number of years of active service at the time of disablement. If, however, the disablement proves to be only temporary, the minister may resume his membership in the pension fund. The Seventh-Day Adventists allow retirement for disability after 10 years' service.

Amount of age annuity or pension.—The sustentation allowances of the Adventist Church vary with the marital status of the pensioner and his state of health, a greater amount being granted where continuous medical treatment is necessary. The allowances vary from $10 per week for single persons not requiring medical treatment to $17.50 for man and wife, one of whom is undergoing constant treatment. These are maximum rates and may be decreased if the beneficiary has means of his own.

The Northern Baptists set the annuity at one-half the average salary during the years of membership.

In the "expanded" pension plan of the Congregational Church it is calculated that the pension for a man retiring at 65 after 35 years' service will be equal to half his average salary for the 35 years.

Under the system now in force in the Methodist Episcopal Church (North), the rate of pension varies from conference to conference but may not fall below 1 per cent of the average remuneration for every year of "effective" service.

The Northern Presbyterian Church fixes the pension at 1¼ per cent of the salary for each year of contribution, using $1,200 as a minimum

annual salary. The pension may not fall below $600 per year nor exceed $2,000 per year, after 35 years of service.

Under the pension plan of the Episcopal Church the annuity is fixed at 1¼ per cent of the average salary for each year for which contributions have been paid, subject to a minimum of $600 and a maximum of 50 per cent of the average income.

The maximum pension in the Reformed Church is $500 per year; in the Unitarian Church it is $700 per year, receivable at 65 after 20 years' service.

Amount of disability pension.—Under the pension plan of the Congregational Church a disabled minister receives as annuity the amount purchasable by the accumulations to his credit in the fund at the time of disablement. The Northern Presbyterians and the Episcopalians allow 40 per cent of the average annual salary for the previous five years, but the allowance may not be less than $600 nor more than $2,000 per year. The Reformed Church allows $100 a year if the minister becomes disabled after five years' service, increasing this amount $10 for every additional year of service.

Provision for widows and children.—The amount in the fund to the credit of a deceased minister of the Congregational Church is used to pay an annuity to his widow, or if there is no widow, to the minor children or other dependents.

Widows of Moravian ministers (Northern Province) receive up to $430 per year, and those of Northern Presbyterian and Episcopalian ministers one-half the service pension, subject in the latter case to a minimum of $300 per year.

In the Adventist and Presbyterian Churches a widow's pension ceases upon remarriage.

The Moravian and Presbyterian Churches of the north pay to children of deceased ministers $100 per year, and the Episcopal Church from $100 to $300 per year, according to the age of the child.

The plans of the Presbyterian (North) and Episcopal Churches provide that the sum of the grants to widow and minor children may not exceed the amount of the father's service pension.

In the Reformed Church a widow receives from the sustentation fund three-fifths of the amount to which her husband would have been entitled, and this goes to the minor children in case of her death.

The Adventist, Methodist (North and South), and Unitarian Churches also make some provision for widows or children or both, but the reports do not state upon what basis this is done.

Since the priests of the Roman Catholic Church are celebate, the problem of the care of the family does not arise there.

The table below shows the experience of the churches under the various plans. As is seen, the relief plans are uniformly noncontributory, while the pension plans for which this point is known are about evenly divided between contributory and noncontributory. The contributory plans are generally on an actuarial basis. Two of the churches having noncontributory pension plans are now considering the adoption of actuarial contributory plans. Although the system in the Roman Catholic Church is different from that of the Protestant churches, it is included for the sake of completeness.

As the table shows, the various religious denominations are spending several millions of dollars every year for the care of their aged

ministers. Of those which do this through the medium of a pension or retirement system, the most liberal in its allowances is the Protestant Episcopal Church, while of those which make "relief" allowances, the Southern Presbyterian Church is the most liberal. For those denominations which reported both number of beneficiaries and amounts disbursed in benefits the average pension allowance is $373 and the average relief allowance is $225.

PENSIONS AND ALLOWANCES PAID TO MINISTERS OF SPECIFIED RELIGIOUS DENOMINATIONS

Religious denomination	Year established	System contributory	Number in receipt of benefit	Amounts paid		Average allowance for age, per year
				Last fiscal year	Whole period of operation	
Adventist, Seventh-Day: Sustentation	1911	Yes	[1] 840	[1] $470, 689	[1] $3, 953, 992	[1] $575
Baptist (North):						
Pension	1913	Yes	[2]	74, 946	[2]	
Relief	1913	No	2, 268	326, 963	[2]	144
Congregational:						
Pension	1914	Yes	[3] 373	[3] 129, 458	[1] 385, 900	[4] 487 [5] 41
Relief	[2]	No	1, 044	300, 000	[2]	287
Latter-Day Saints: Pension	[2]	[2]	45	[6] 29, 145	[2]	[6] 648
Methodist (North):						
Pensions, regular service	1908	No	[7] 8, 530	[1] 3, 069, 343	[1] 38, 251, 000	554
Pensions, supply service	[2]	No	120	10, 505	[2]	88
Relief	[2]	No	[2]	171, 266	[2]	[2]
Methodist, South: Pension	[2]	[2]	2, 573	857, 128	[2]	428
Moravian (Northern Province): Pension	1734	[2]	49	23, 448	[2]	570
Presbyterian (North):						
Pension	1927	Yes	[1] 400	[1] 176, 000	[1] 176, 000	[1] 440
Relief	[2]	No	[1] 2, 050	[2]	[2]	
Presbyterian (South): Relief	1867	No	[1] 472	[1] 188, 319	[1] 1, 988, 925	560
Protestant Episcopal:						
Retiring fund	1874	Yes	[1] 297	[1] 29, 026	[2]	[1] 99
Pension fund	1917	No	[1] 1, 503	[1] 678, 642	[1] 4, 749, 764	736
Reformed:						
Pension	1917	Yes	14	[1] 3, 132	12, 598	89
Relief	1753	No	74	[1] 54, 659	[8] 359, 856	[1] 267
Roman Catholic: Relief	[9]	[9]	[10] 287	[11] 90, 980	[2]	[11] 827
Unitarian: Pensions	1907	No	62	43, 400	[2]	700
Total:						
Pensions			14, 806	5, 594, 862	47, 516, 656	[12] 373
Relief			6, 195	1, 132, 187	1, 988, 925	[12] 225

[1] Includes children.
[2] No data.
[3] Includes 3 orphans.
[4] Age; original plan.
[5] Age; expanded plan.
[6] Continued salary.
[7] Includes 917 orphans.
[8] Since June 11, 1920; earlier records not available.
[9] Varies from diocese to diocese.
[10] 40 dioceses.
[11] 11 dioceses.
[12] Computed on basis of those reporting both beneficiaries and benefits.

Seventh-Day Adventists

THE GENERAL conference of Seventh-Day Adventists established a "sustentation" fund January 13, 1911.

Those eligible to the allowances include "all laborers under the direction of conferences and mission fields, including colporteurs, nurses, and church school-teachers, who have devoted their lives to continuous service in the work," and employees in the church institutions. Sustentation allowances may also be paid to workers of

the above classes who become permanently disabled after having been employed for at least 10 years. Persons entering the employ of the church after reaching their fortieth year of age are not eligible to benefit until they have served 15 years. Widows and orphans of deceased workers are also eligible to allowances from the fund. Only members of the immediate family and children under 16 are "ordinarily" considered as dependents.

The sustentation cases are reviewed annually to determine "whether support should be continued and whether the rate paid in each case is proper in view of all the circumstances and conditions of the beneficiary." In the case of widows and single women the benefits cease upon their marriage.

Cases of temporary sickness or disability are not eligible to benefits from the sustentation fund. The local conferences and church institutions provide care in such cases for a period of six months. After the expiration of that period application may be made to the sustentation fund.

Rates of allowance.—The maximum allowances payable from the sustentation fund are as follows:

1. To man and wife one of whom is sick and undergoing medical treatment, $17.50 per week.
2. To man and wife not undergoing treatment, $14.50 per week.
3. To single persons undergoing treatment, $12 per week.
4. To single persons not undergoing treatment, $10 per week.

The above are maximum rates which are correspondingly reduced in cases where the beneficiary has private means.

The average amount of pension per week paid in 1927 amounted to $11.06. Payments are made direct to the beneficiary by the central committee every four weeks.

Administration.—The fund is administered by a central sustentation committee at the denominational headquarters in Washington, D. C. Application is made to the local or State conference which passes upon the merits of the case. If its decision is favorable to the applicant, the case is referred to the central committee.

Source of funds.—The funds consist of a certain proportion of the tithes paid into the local and union conference treasuries. Union and local conferences pay into the fund 7 per cent of the tithe; publishing houses and sanitariums 3 per cent of the tithe, and tract societies 1½ per cent on their net sales.

The pension plan is a contributory one in the sense that a part of each church member's tithe goes to the fund. Also beneficiaries of the fund must continue the payment of their tithes.

Emphasis is placed upon the fact that "in no case is the person receiving such allowance a subject of charity, but that this arrangement has been made for the definite purpose of providing a just and necessary support for those laborers who have given their lives and means for the building up of this cause, but have made no provision for sickness or age, and to supplement such private incomes of our laborers as prove insufficient for their needs."

Payments from the fund.—During the year ending December 27, 1927, the payments from the sustentation fund amounted to $470,689, and during the whole period since 1911 to $3,953,992.

On August 23, 1928, there were 840 persons in receipt of the pension.

Northern Baptist Convention

THE Northern Baptist Convention established its Ministers and Missionaries' Benefit Board in 1913. The board has two lines of activity: It makes grants on the basis of need, and "cooperates in the preparation of a pension for men who are now in active service upon which they may draw after attaining age 65."

On April 30, 1928, there were 2,268 persons receiving "relief," and the amount so disbursed during the year ending on that date amounted to $326,963.

Under the pension plan the pastors, or their churches on their behalf, contribute 6 per cent of their salaries the first year. The second year the board undertakes to pay 70 per cent of the pastor's contribution, the latter therefore being required to contribute only the remaining 30 per cent, or 1.8 per cent of his salary.

Pastors entering at the age of 30 years and remaining in the fund for 35 years become entitled to an annual pension of one-half the average salary during the years of membership.

On April 30, 1928, there were 2,241 members of the pension plan. Contributions by the board on behalf of members amounted to $172,501 during the year, and disbursements for pensions to $74,946.

Congregational Church

Pension Plan

THE ANNUITY fund for Congregational ministers was put into operation in May, 1914, and operated until December 31, 1921. At that time the basis of the scheme was changed, persons who had taken an annuity under the original plan being allowed the option of continuing it or of transferring to the new plan. Both plans are contributory, the dues in the original plan being based upon age and in the so-called "expanded plan" being based upon salary.

Operated in conjunction with the annuity plan is the Pilgrim Memorial Fund, amounting in 1927 to nearly $5,000,000, the income from which is used to help defray the payments under the original plan and to assist the members of the "expanded plan" to meet their dues after the first year. The credit from this fund in 1928 is $90 per member, "which takes care of a very considerable portion of the dues of the member after the first year of membership. During the first year the full dues must be settled for by, or on the account of, the member."

Those eligible for membership in the annuity fund include (1) pastors of Congregational churches; (2) secretaries of church organizations, and missionaries; (3) editors of denominational literature; (4) professors in theological seminaries; (5) teachers in school and college whose work could be considered parallel to that of a Congregational minister; and (6) pastors of community or federated churches. Others engaged in undenominational work may also be admitted, each case being determined on its own merits.

Kinds of annuities.—Under the original plan annuities were paid at age 65, 68, or 70, without requiring retirement. The premium payments were met by the minister himself and the Congregational churches, he paying one-fifth and the church four-fifths. The

premium rates were set at an amount sufficient to produce an annuity of $500 after 30 years' service. The maximum annuity payable to the widow or minor children under the plan was $300.

The annuity was also payable for total disability to perform the ministerial duties. If the disability proved to be only temporary, the member could begin the payment of premiums and resume his standing in the fund.

Under the "expanded plan" the rates are fixed at 6 per cent of the salary of the member (the free rent of a parsonage, where furnished, being regarded as 15 per cent of the salary). It is intended that the local church shall contribute to the payment of the dues, on a 50-50 basis. Up to December 31, 1927, however, only 624 had done so, a number which the 1927 report of the fund characterizes as "far below what it ought to be."

It is calculated that the above dues for a man entering the plan at 30 years of age will be sufficient to provide a single-life annuity at age 65 equivalent to one-half the average salary for the 35 years, or a joint life and survivorship annuity of approximately 80 per cent of the single-life annuity.

Retirement is not a requisite for the receipt of the annuity.

If the member becomes permanently and totally disabled before beginning to receive the annuity, he may use the entire amount accumulated to his credit to purchase a disability annuity to continue for the rest of his life. As in the original plan, if he becomes able to assume his duties, he may resume his membership in the fund without prejudice.

If the member dies before receiving the annuity, the entire amount to his credit is used to pay an annuity to his widow, or if there is no widow, to his minor children until they become of age, or failing these, to other dependents.

In case of withdrawal from the fund the amount to the member's credit, including the supplement from the Pilgrim Memorial Fund, remains at interest until he reaches the annuity age, when it becomes payable on the basis of the amount available. Interest on credits is computed at the rate of 4 per cent, but is adjusted each year to the earnings of the investments.

The fund will also receive from members additional payments which it places to their credit to receive interest at the same rate as the premium payments. In this way the minister may increase his final annuity considerably. All such deposits are subject to the rules of the fund and are not withdrawable.

Administration.—The fund is administered by a board of nine trustees elected by the membership of the fund from a list of eligibles approved by the national council of the church. They may be either clergymen or laymen, but must be male citizens, over 21 years, and in ecclesiastical relationship with the Congregational churches in the United States. A majority must be citizens of New Jersey, the State under whose laws the fund is incorporated.

Statistics of the plan.—At the end of 1927 there were in the original plan 1,383 members, of whom 350 were receiving annuities. Of these, 234 were receiving the age annuity, 17 were receiving the disability annuity, 96 were widows receiving their husband's benefits, and 3 were orphans.

The average annuity paid in 1927 for age amounted to $487.24 per person, and that for disability to $331.63. The widows received an average annuity of $205.54. The total amount paid in annuities during the year was $129,336, of which $119,834 was for age. Total payments made under this plan since its inauguration amount to $385,707.

The expanded plan had a membership at the end of 1927 of 997. Of these, 23 were in receipt of the annuity—3 for age, 2 for disability, and 18 because of widowhood.

Payments for annuities under this plan in 1927 amounted to $121.76, an average of $40.59 per annuitant. So far, $193.46 has been paid in annuities under the expanded plan.

The amount in the annuity fund—both classes of plan—at the end of 1927 was as follows:

Pilgrim Memorial Fund	$4, 926, 910
Profit reserve	132, 980
Assets—annuity fund	3, 132, 841
Total	8, 192, 731
Income from Pilgrim Memorial Fund	231, 213
Supplementary fund	37, 105

Relief Allowances

Along with the annuity fund is operated a relief fund, administered by the Congregational Board for Ministerial Relief. From this fund provision is made for sick or aged ministers, their widows, and orphans, who are known to be in need and for whom no other provision has been made.

Amounts paid in relief average up to $500 per year. In 1927 there were 1,044 such grants made, the total so expended aggregating about $300,000.

In addition to the annuities and relief for ministers, it is stated that "practically all Congregational churches of any size have small funds for the relief of the needy, varying in amount according to the local situation."

Latter-Day Saints

AS ALREADY noted, the Reorganized Church of Jesus Christ of Latter-Day Saints has no regular pension system. The report from that organization states that the church pays its ministry "on the basis of lifetime service." When a minister becomes too old for service, he is retired and his salary is continued until death, if he "continues worthy." The family of a minister dying in active service is provided for until the children are able to care for themselves.

There are now 45 superannuated ministers on the retired list. Their salaries last year amounted to $29,145.

Methodist Episcopal Church (North)

THE PENSION plan of the Methodist Episcopal Church (North) was put into operation in 1908. Ministers, their widows and orphans, and other persons in the employ of the church or its institutions are eligible to the benefit.

Statistics of the System

The report of the secretary of the board for the year ending December 31, 1927, showed that there were in receipt of the pension 8,530 persons, of whom 3,516 were ministers, 4,097 were the widows of ministers, and 917 were ministers' orphan children. A total of $3,069,343 was disbursed in pensions during the year.

Under the present system the rate of pension may not be less than 1 per cent of the average salary (including free house rent as 15 per cent of the salary) for every year of "effective" service. The local conference may increase the above rate if it pleases. The average salary paid to ministers varies from conference to conference, falling below $500 per year in 2 conferences and exceeding $2,000 in 18 conferences. The pensions therefore vary just as widely. In 1927 there were 20 conferences where the average annual pension was $50 or less, while 27 conferences paid pensions of more than $1,000. The average pension in all conferences combined is about $14.50 per year of service. In 1927 the average pension paid to ministers was $554, to widows $297, and to children $67.

Since 1908, when the plan was started, $38,251,000 has been disbursed in pensions. The statement below shows the growth of the pension plan, by 4-year periods since 1900:

	Pensions paid
1900–1903	$1, 183, 000
1904–1907	1, 473, 000
1908–1911	3, 171, 000
1912–1915	4, 431, 000
1916–1919	5, 497, 000
1920–1923	9, 849, 000
1924–1927	12, 647, 000
Total	38, 251, 000

In some cases where the pension is inadequate it is supplemented by additional grants. Such grants amounted to $171,266 in 1927. The amounts so disbursed are decreasing year by year as the regular annuities increase.

A special committee deals with the retirement of supply pastors. A yearly appropriation of $10,000 is made for this purpose, but, according to the report, "five times that amount is needed." The number of beneficiaries from this fund in 1927 was 120 and the total distribution $10,505.

Basis of Plan and Substitute Proposed

At present the fund operates largely on a current revenue basis. There are no actuarial reserves, though approximately $20,000,000 is held in permanent funds.

The actuarial stability of the fund has been causing some concern, and the General Conference of 1924 directed that the whole matter be referred for study to a special committee. That committee has recently recommended a plan which, if adopted, will place the whole scheme on an actuarial basis, and make the fund a contributory one.

Under the plan each conference will contribute to the fund an amount equal to 8 per cent of the minister's salary, and each minister will contribute 2½ per cent of his salary (subject to a maximum annual payment by him of $200).

The claimant will have the right of retirement at 68 years, but the conference may, at its option, retire him three years earlier.

Service retirement.—The annual benefits are to consist of a "service annuity," payable out of the funds contributed by the annual conference, and an "income annuity" payable out of the contributions of the annuitant, the whole to be termed the "pension."

In case the minister dies while still in service his widow shall be entitled to the annuity provided by her husband's contributions plus two-thirds of his accumulated service annuity. If this falls below $300 per year, the amount may be increased to that amount, in the discretion of the board. In case of her remarriage her annuity ceases, but she is to receive any sums remaining from her husband's contributions to the fund. Each minor child of a deceased member is entitled to an annuity of $75 until reaching age 16, unless schooling continues beyond that age, in which case the annuity may be increased $150 to continue until age 21.

The total annuities to the widow and minor children of a deceased annuitant may not exceed the pension received by him. If a member dies before retirement the combined pension may not exceed his average annual salary for the three preceding years.

Disability benefit may be granted to members less than 65 years of age if disability "has been plainly evident" for not less than 180 days, if it is certified by a physician's report, and if it is such as to incapacitate him permanently and totally from performing his duties. This benefit may be equivalent to 40 per cent of his average annual salary, subject to a maximum of $800 per year. In case of a member disabled between 60 and 65 years of age, the total disability payment shall not exceed the pension which his income and service annuities would purchase at age 65, assuming the same rate of contribution as that prior to the disablement.

Payment of benefits for the waiting period of 180 days is left to the discretion of the board.

If the disabled pensioner recovers his health he may return to the employ of the church and reenter the fund.

Methodist Episcopal Church, South

Pension Plan

THE 48 annual conferences of the Methodist Episcopal Church, South, levy an annual assessment upon the local churches of the conference for the support of retired ministers and their widows. The church at large has a superannuate endowment fund the interest of which is used as annuities, and many of the annual conferences also have funds raised for the purpose. During the past four years a special effort has been made to reach a goal of $10,000,000 in the endowment fund. The 1927–28 report of the church board of finance shows that on March 31, 1928, the general endowment fund amounted to $3,110,584 and the conference funds on deposit with the board to $1,790,795.

During the year 1926–27 there were on the pension rolls of the church 2,573 persons, of whom 1,090 were superannuated ministers and 1,483 were widows of ministers. A total of $857,128 was paid

for their support, of which $718,014 came from the conference boards and $139,114 from the general board. In many cases the superannuated minister is given the use of a house, rent free.

Poor Relief

All the well-organized congregations of the church, it is stated, have a monthly collection called the "social service offering," which is used for the relief of the poor in the community.

Moravian Church (Northern Province)

Pension Plan

FROM the very beginning of the Moravian Church in America—about 1734—the church has made provision for its superannuated ministers.

All who have served the church in its ministry, in either the home field or foreign field, are eligible for the retirement annuity after 10 years' service. The amount of the annuity is graduated with the years of service, the maximum, $700 per year, becoming payable after 30 years of service. Need is not a prerequisite for the receipt of the pension. The treasurer of the sustentation fund states that the pension "goes into effect automatically upon retirement without application having to be made."

In addition to the pension certain pensioners also are allowed the use of a dwelling, rent free.

The widow of a minister may also receive a pension, the maximum amount being $430 per year. The rules of the fund provide that children between the ages of 13 and 17 shall receive an allowance of not to exceed $100 per year when the condition of the fund will allow it. Such allowances were paid for the first time in 1927–28, to 28 children.

During the year ending April 30, 1928, pensions were paid to 22 retired ministers and 27 widows, the amounts paid totaling $23,448. The allowances to the children amounted to $2,600.

At the end of the fiscal year the sustentation fund of the church amounted to $370,658.

Relief Work

Many of the older congregations have "poor funds" from which aid is given to aged and needy members.

Presbyterian Church (North)

Annuity Plan

THE ANNUITY system of the Presbyterian Church in the United States of America was established April 1, 1927.

The plan allows retirement at the age of 65 (or earlier if disabled) after 35 years of service. Retirement is also allowed after a shorter period of service, but at a proportionally reduced rate.

In calculating the pension $1,200 is taken as the minimum salary. (If a manse is furnished, its rental is calculated as 15 per cent of the salary.) The pension equals 1¼ per cent of the salary for each year

of contribution. The minimum pension is $600 per year and the maximum $2,000 per year, after 35 years of service.

The disability pension equals 40 per cent of the average salary for the previous five years, subject to the same minimum and maximum as above. If granted before the age of 60, the allowance may not exceed the earned service annuity (subject to a minimum of $600).

Pensions paid to widows of ministers who were retired members of the fund may not exceed half the service pension. A pension to a widow of a minister who was still in service may not exceed one-half the service credits earned by him. Her pension ceases upon remarriage. Minor children are entitled to an annuity of not to exceed $100 per year during their minority, but the sum of the grants to widow and the minor children may not exceed the amount of the father's service pension.

Funds are secured by a contribution of 2½ per cent of the salary by the minister himself and 7½ per cent by the employing church. On March 31, 1928, the fund had to its credit $5,473,064.

On that date it had 7,500 contributing members and 400 pensioners. The amount paid in annuities during the year ending March 31, 1928, was $176,000.

Relief Department

The board of pensions also administers a relief department. In 1927–28 there were 2,050 persons assisted through this department. No data are available as to the amount available.

Presbyterian Church (South)

SINCE 1867 the Presbyterian Church in the United States has been making provision for its aged and infirm ministers and their widows. In that year the home missions committee of sustentation was authorized to appropriate 5 per cent of all contributions for this purpose. Several other schemes of relief were tried as years went by, but did not prove satisfactory

In 1902 the endowment fund of ministerial relief was started, the income of which has been used for relief purposes. In granting relief "service to the church, age, need, number of dependents, and other sources of supply are all taken into consideration."

During the year 1927–28 those on the rolls of the fund included 165 ministers, 251 widows, 52 orphans, and 4 unordained missionaries—a total of 472. The average amount paid to each of the retired ministers was $559.55, to the widows $338.89, to the orphans $190.25, and to the missionaries $259.50. The total amount expended in pensions during the year was $188,319. Since 1903 the church has spent a total of $1,988,925 for the relief of aged ministers and their widows and orphans.

The endowment fund now amounts to $1,564,381.

The church has a reciprocity agreement with the Presbyterian Church in the United States of America by which each gives credit for the time spent by a minister in the service of the other.

New Plan

Since the present arrangement is not sound from an actuarial standpoint, an annuity plan is to be put into effect. This fund will provide, for each member retiring at the age of 65 years, an annuity of one-seventieth of his salary for each year of service during which contributions have been made. For permanent total disability after one year's membership in the fund, an annuity will be paid amounting to 40 per cent of the average salary of the member for the five years previous.

The minimum retirement allowance will be fixed at $600 a year. Provision will also be made for the widow and minor children of a deceased minister.

Funds will be provided by joint contributions from churches and ministers. A sum will be raised from the whole membership of the church sufficient to cover the accrued liability for service rendered prior to the inauguration of the plan, each local church or agency employing a minister will contribute an amount equal to 7½ per cent of his salary, and the minister himself will contribute 2½ per cent of his salary.

It is estimated that approximately $3,000,000 will be needed to cover the accrued liability, and it is hoped to accumulate this amount by 1930.

Protestant Episcopal Church

Retiring Fund Society

In 1874 the Clergymen's Retiring Fund Society of the Protestant Episcopal Church was organized. Its membership was open to all clergymen of the church. Rates were $12 per year per share taken, payable until reaching 60 years of age. Funds so accumulated were also increased by income from investments, legacies and gifts, offerings from the parishes, etc.

The annuity purchased began at 60; its amount was left to the discretion of the trustees but usually amounted to 25 per cent of the member's payments.

In 1917, however, a general pension system for the whole church was adopted. Since that time no new members have been admitted to the society and former members have been forbidden to increase their holdings. The society is therefore declining and gradually going out of business.

On October 31, 1927, there were 119 contributing members and 297 annuitants. The average annuity paid to these amounted to about $99. During the year ending with the above date $29,026 was disbursed in annuities.

Church Pension Fund

The Church Pension Fund started operations on March 1, 1917. Its plan covers all clergy ordained and in the active service of the church after that date. Under the scheme four classes of provision are made:

(1) For age, 1¼ per cent of the average salary for each year of paid assessments, subject to a minimum pension of $600. The retirement

age is fixed at 68 years. No pension may exceed 50 per cent of the average salary.

(2) For disability, 40 per cent of the average salary for the previous five years, subject to a minimum of $600 and a maximum of $2,000.

(3) For widows, one-half of the pension to which the husband would have been entitled at the time of his death, subject to a minimum of $300 per year.

(4) For minor children, fixed amounts graduated according to age, ranging from $100 for children below seven to $300 for children from 14 to majority.

The combined allowance to widow and minor children may not exceed the annuity to which the husband would have been entitled.

The funds are secured by contributions from each employing church of a sum equal to 7½ per cent of the pastor's salary. The minister himself contributes nothing.

As noted above, the scheme contemplated pensions for only clergy entering the service of the church on or after March 1, 1917. But there were many who had been in its service long before that date and who had to be taken care of. The pension fund, upon its formation, took over liability for all of the grants of the general clergy relief fund and the various diocesan relief funds. On December 31, 1926, the fund was carrying, on these accounts, an annual expenditure of $51,993 not provided for under the rules of the pension system. Permission was obtained from the general convention to use a fund of $450,000 which had been raised previously for the general relief fund. When this fund was exhausted the trustees began to use the surplus income in the pension fund to pay assessments for these prior-service ministers and to grant pensions on the basis of these assessments.

This action, which means an attempt completely to wipe out the accrued liabilities, was to be done in the order of the ordination of the clergy who were in active service when the pension system started. In order that all might have an equal chance of sharing in this improvement in the pension system, such back assessments were not to be paid all at once for any given clergyman, but only at one time sufficient to produce the next step in the amount of the pension; and the clergy were to be grouped, by order of ordination, in hundreds, with one more hundred always in each step in the pensions than in the step immediately higher.

On September 1, 1927, the pension fund had by this means been able to pension 319 of these prior-service ministers.

The condition of the funds proving to warrant such action, the trustees took a further step in adding to the widows' pension of $300 a year, a lump sum of $1,000 payable immediately upon the death of the husband.

On December 31, 1927, there were 1,503 persons on the pension roll, to whom a total of $678,642 was paid during the year. The average allowances per year for the four classes of pensioners are as follows: Age annuitants, $735.68; disability annuitants, $603.22; widows, $369.52; and orphans, $137.95.

Since the inception of the pension plan a total of $4,749,764 has been disbursed.

Reformed Church in the United States

THE Reformed Church in the United States has two funds from which provision is made for retired ministers and their widows—the relief fund and the sustentation fund. The first grants for ministerial relief were made in 1752. The first organization for ministerial relief was known as the "Widows' Fund," and was established in 1755. Out of this society grew the "Society of Guardians for the Relief of Widows of the German Reformed Clergymen Being Members of the Society," chartered on March 26, 1810, and the "Society for the Relief of Ministers and their Widows," established February 28, 1865. The present Board of Ministerial Relief was created by the General Synod of the Reformed Church in the United States in May, 1905. The sustentation fund was established in 1917.

Benefits from the relief department vary, according to the need, from $50 to $700.

The sustentation fund is a contributory one. The maximum benefit payable for superannuation (at 70 years of age) is $500 a year. For disability the allowance varies according to the years of service, beginning with $100 a year for five years' service, $10 being added for each additional year. A widow receives three-fifths of the amount to which her husband would have been entitled, and this amount goes to any minor children in case of her death. Since the sustentation fund has not yet been completed, at present only 40 per cent of the maximum rates are being paid; these range from $24 to $164 per year.

At the end of 1927 there were 205 annuitants on the roll of the relief fund, of whom 74 were ministers and 131 were ministers' widows. A total of $54,659 was expended for relief during the year, an average of $266.63 per person. Many of the early records of the church have been lost, and therefore no data are available as to the total amount of ministerial relief paid by this church. Since June 1, 1920, however, $359,856 has been disbursed.

Pensioners on the sustentation roll at the end of 1927 numbered 35, of whom 14 were ministers and 21 were widows. Sustentation payments amounted to $3,132, an average of $89.48 per person. Since 1922, when the fund began the payment of benefits, these have totaled $12,598.

Roman Catholic Church

THE PROBLEM of the care of aged and infirm priests in the Catholic Church is much simpler than that faced by the Protestant churches. In the first place, the Catholic clergy being celibate, there are no families to care for. Again, in the Roman Catholic Church the priests who are members of religious orders or communities are cared for in their old age by the order. The matter of the care of aged priests in charge of parishes, however, is left to the various dioceses, and the provision made varies from diocese to diocese. In the attempt to ascertain just what is done for superannuates, the Bureau of Labor Statistics addressed an inquiry to each of the more than 100 dioceses of the church in the United States. Replies have been received from 71 of these.

In general these indicate that the great majority of the parish priests continue "in harness" to the end of their days. As one diocesan chancellor expresses it:

> The nature of a parish priest's work is such that he can go on with it at any age, provided his health is fairly good. Even when his health fails, if it does not utterly fail, some of the lighter forms of a priest's work in the diocese are found for him. In the event that his health fails in a degree that incapacitates him, he is looked after in our hospitals suited to the illness from which he suffers.

However, all but five of the dioceses reporting make some provision for the care of the aged priests, though 18 report that no cases are being cared for at present.

A number of dioceses report that their practice, when a priest becomes too old or too infirm for active parish work, is to secure for him a position with very light duties, such as that of chaplain in a religious institution. In such cases he receives board and lodging in the institution and often an allowance from the diocese in addition.

In about two-thirds of the dioceses reporting there is a special relief or pension fund from which allowances are made to superannuated priests. In some instances the clergy relief fund, as it is usually called, is maintained entirely by an assessment upon the priests who are members of the fund; this is the situation in 13 of the dioceses reporting, although in 2 of these if the funds so collected are not sufficient the difference is made up by the diocese from the general funds. In these cases the contribution of the priest varies from $5 to $30 per year. In 7 cases the relief fund is formed from the dues of the priests plus a certain contribution from the parishes; the latter may be raised by an assessment upon the parish of a certain amount per priest or through an annual church collection taken for the purpose, or through appropriation of a certain proportion of the general income of the diocese. In 19 cases the cost of the fund is met altogether from the diocesan funds or by the parishes. Eleven other dioceses report having a clergy retiring fund but do not state how it is supported.

The allowances made vary considerably from diocese to diocese. One diocese pays an allowance of $40–$45 per month, one of $40–$50, one of $45, one of $40–$70 per month, one of $40–$75, four of $50, and one of $100 per month. In one diocese the pensioner receives $20 per month from the funds raised by a levy upon the parishes plus $25 per month from the fund of the priests themselves, while in another the allowance is $50 from each of these sources. One diocese each pays $400 per year, $400–$600, $400–$800, and "$600 and up," and two pay $1,000 per year. Several others have no specified pension amounts, but allow whatever amount the circumstances require.

Some of the provisions made are most liberal. One diocese reports that a retired priest is generally assigned to a chaplaincy in a religious institution which gives him his living expenses; in addition he receives $1,000 per year from the parish. Another reports as follows:

> The policy in this diocese for superannuated and sickly members of the clergy is to deal with each case individually. In other words, it is our desire to have each priest write his own ticket. When his desires are made known to us, then we make every effort to meet them.
>
> Thus far we have had no trouble in giving satisfaction.

At this time we have four members of the clergy who are receiving an annual pension. We correspond with them regularly in order to see if any new situation has developed that would suggest a change one way or the other.

On several occasions it has been discussed as to the advisability of building homes. After mature deliberation it was generally agreed that the clergy would prefer to be free and spend their declining days as they themselves choose. Ordinarily they pick a sanitarium, a hospital, one of our many homes for the aged, and have even been invited to share the hospitality in the bishop's house. In other words, there are so many different angles to the solution of the individual case that we prefer to leave them free to make their own decision.

In some instances the aged priest remains as "pastor emeritus," in the parish where he has served, being supported by the parish and living in the local clerical residence. In one diocese the aged priest remains as before, but is given an assistant.

The bishop of one diocese takes the stand that "priests should provide for themselves by saving some money for days of sickness and old age; but if they can not do it or have neglected to do so, the diocese will help when it becomes necessary." Another, however, states that "From their rather meager salary during their producing years the priests of our diocese can save very little. * * * We have a fund for infirm and indigent priests. This represents a small amount of money contributed annually by each parish. The fund is woefully small and far from meeting the many demands on it." The priests have therefore formed a relief fund of their own which pays a disability or old-age allowance after the third month of disability or after reaching 65 years of age.

Altogether, 40 dioceses reporting are paying retirement allowances to 287 superannuated pastors, in addition to those who are being cared for in hospitals or other institutions of the church or who have been assigned to some light duties. Data as to the annual amounts spent for retirement allowances are available in only 11 cases; these are expending $90,980 per year for the care of 110 priests, making an annual average pension of $827.

Of those which make no provision for the aged pastors, one reports that the priests are urged to carry health insurance but otherwise the matter is "left to the charity of the people," and another that a plan is under advisement.

Unitarian Church

THERE are several aid and relief associations in the Unitarian Church. These include temporary aid in case of pressing financial emergency, special continued relief for unusual cases of necessity among ministers not yet retired, relief funds for clergymen's widows, and a service pension (in operation since 1907) for ministers of retiring age.

The service pension of $700 per year is payable to Unitarian ministers, 65 years of age or over, who have served at least 20 years. "These pensions are not a charity; those qualified receive them as a right."

On April 30, 1928, there were 62 ministers in receipt of the pension. The amount paid in pensions during the year ending with this date was $43,400.

The amount in the permanent pension fund in 1926 was $440,096.

Church of United Brethren in Christ

A MINISTERIAL pension plan has been adopted by the church of the United Brethren in Christ, but its operation is postponed until a sufficiently large endowment ($1,000,000 is estimated as necessary) is obtained. It is hoped that this can be had by 1930.

Several of the annual conferences of the church have endowments for the relief of their ministers and their widows.

Other Churches Having Pension Plans

THE Congregational Methodist Church reports that it has a superannuation fund from which small annual amounts are paid to ministers, and the Universalist and Anglican Universal Churches report that they are just starting a pension plan. No details are available for any of these plans.

A number of other church organizations reported having pension plans, but the Bureau of Labor Statistics has been unable to obtain any data concerning these plans. These include:

African Zion Methodist Episcopal Church.
African Methodist Episcopal Church.
United Presbyterian Church.
United Lutheran Churches in America.
Christian Reformed Church.
Evangelical Synod of North America.

The General Conference of Seventh-Day Baptists has no pension plan, but has a ministerial relief fund, the interest on which is used in aiding aged ministers. Some of the regional conferences of this church have similar funds.

Recent Old-Age Pension Legislation [1]

SINCE the beginning of the current year three States—Wyoming, Minnesota, and Utah—have enacted old-age pension laws, closely similar in terms. In Minnesota the pensionable age is 70, in Utah and Wyoming, 65; in Minnesota and Wyoming the maximum pension payable is $30 a month, in Utah, $25. All three States require 15 years' residence before a claimant may be considered eligible. All three plans are on a county basis, but in Wyoming and Utah adoption is mandatory on the counties, while in Minnesota it is optional.

The addition of these three States brings the number having old-age pension laws up to nine, in addition to the Territory of Alaska. Pension legislation is pending in a number of other States, and in several favorable action before the adjournment of the legislatures is confidently expected.

[1] Bulletin of the American Association for Old Age Security, April, 1929.

INDUSTRIAL RELATIONS AND LABOR CONDITIONS

Age Limits on Employment by American Manufacturers

THE National Association of Manufacturers recently completed a survey of the extent to which manufacturing establishments of the United States have set maximum age limits for employment. The text of the findings as given out on March 31 is in full as follows:

"Seventy per cent of the manufacturing plants of the United States have no set maximum age hiring limits, the great majority stating that they disregard age and hire only on a basis of physical fitness of the applicant and ability to perform work satisfactorily. A considerable number declare that they prefer older employees because they are steadier and have acquired valuable skill which younger employees lack. We know of no companies which discharge employees when they reach a given age.

"Thirty per cent of the manufacturing plants do have maximum hiring-age limits, because they refuse to hire new employees beyond certain fixed ages, but many of them make exceptions in the case of former employees. Among this 30 per cent of the plants with a hiring limit the limits range from 25 years to 70 years for unskilled and semiskilled workers and from 35 years to 70 years for skilled workers.

"The most frequent limits are 45 for the unskilled and semiskilled and 50 for skilled. In employing semiskilled and unskilled workers about 25 per cent of the companies with hiring-age limits (or about 8 per cent of the total) use the 45-year limit, with 50 per cent setting the maximum age higher and 25 per cent putting it lower than 45. The benefit of skill and craftsmanship is seen by the fact that in companies having maximum hiring limits for skilled employees only 18 per cent place the limit below 45; 63 per cent use either 45 or 50 years, and 19 per cent put the limit somewhere about 50 years.

"The majority of companies having maximum hiring-age limits set such limits for a number of different reasons. An analysis of the reasons given for the establishment of such limits reveal that 22 per cent relate to physical condition of the workers or the work, such matters, for example, as sickness, irregular attendance, eyesight requirements, steadiness of hand, and the heavy type of work in the foundries and some other manufacturing operations. The efforts of industry to take care of aging employees in plant pension plans, which usually limit benefits to those in the company employ 15 to 20 years, and a feeling that industrial concerns have a special obligation to provide steady employment to individuals already in their employ for many years, is given as the cause for 21 per cent of the establishment of maximum age limits. The cause of third importance—19 per cent—responsible for maximum hiring limits is given as the

tendency of older employees to slow up at their tasks. The heavy cost of workmen's compensation insurance, the liability of older employees to injuries, and added danger to other employees when working with older men is given as the cause in 14 per cent of the cases where such limits exist. The existence of group life-insurance plans is the cause for 11 per cent of the maximum age hiring limits, since the addition of large numbers of aged employees would heavily increase the cost of insurance premiums."

Great Britain and the Eight-Hours Convention

AT THE recent session of the governing body of the International Labor Office, held in Geneva during March, Sir Arthur Steel-Maitland, British Minister of Labor, urged a revision of the eight-hours convention, and gave an explanation of Britain's objections to its present form considerably more definite than has yet been made public. At the session in February, 1928, the British delegate had asked for revision, and had stated that the "British Government no longer considers ratification of the convention in its present form as a possibility." (See Labor Review, April, 1928, p. 126.) He did not, however, define the changes his Government wished to see made, and Sir Arthur's statement was expected to clear up this matter.

The basis of Great Britain's objection, according to Sir Arthur, is that the convention in its present form is ambiguous, that each nation will naturally interpret dubious terms according to its own ideas, and that therefore the several signatories would be pledging themselves to varying degrees of strictness in the matter of hours, a situation which would be very likely to lead to charges of bad faith and create friction. In the interests of all concerned revision before adoption was desirable. He cited 15 points in regard to which amendment was needed. Prominent among these were the need of precise definitions for such terms as "hours of work," "week," and similar expressions; clearer definition of the processes in which a 56-hour week is permitted, and of conditions under which overtime may be required; provision for more elasticity in the daily hours so long as the weekly hours are not exceeded; a closer consideration of the position of the transport industries, and of the treatment to be accorded mixed establishments, partly industrial and partly commercial. If the points mentioned were cleared up, Great Britain would be ready and glad to ratify.

There was a sharp division of opinion over the British proposal. The employers' delegates as a group supported it, the workers' delegates as a group opposed it, and the Government delegates were divided. The Belgian and Italian Governments were opposed to any revision, the French and German Governments were willing to incorporate the conclusions of the London Conference but not to go further, the Spanish Government opposed a total revision but was willing to consider a partial revision on definite points, while the Swedish Government spoke in favor of revision and stated that the other Scandinavian Governments took the same position. The

delegate of the Polish Government suggested a compromise, presenting a resolution for the appointment of a mixed committee of nine members to examine further the British proposals for revision; with this, he coupled an express declaration that the passage of this resolution should not be taken as indicating, directly or indirectly, any undertaking whatsoever as to revision.

The matter was hotly debated, and several other amendments were proposed and rejected. Finally the Polish compromise was put to the vote but failed of passage, six of the workers' delegates and the Belgian and Italian Government delegates voting against it, while eight other Government delegates voted in its favor. The French Government abstained from voting, and the Argentine Government delegate was absent. The result of the whole debate was therefore entirely negative, the British proposal having been neither accepted nor rejected nor held for further consideration.

In view of this result, M. Thomas, Director of the Labor Office, stated that the revision of the convention would take place automatically on the expiration of the 10 years—namely, in October next—but that he would not wait till then but would submit proposals to the Governments for a solution of the difficulty.

Creation of Bureau of Social Welfare in Mexico

A COMMUNICATION from the American ambassador to Mexico, Dwight W. Morrow, dated February 15, 1929, contains the text of a presidential resolution organizing a bureau of social welfare under the Mexican Department of Labor.

The bureau shall have jurisdiction throughout the country and shall endeavor by every possible means to obtain for all classes of unemployed, work in industrial, commercial, agricultural, and mining enterprises. The personnel of the bureau shall consist of a chief, two inspectors, two stenographers, and two clerks who shall be selected from various branches of the Ministry of Industry, Commerce, and Labor.

The executive will establish new industries to aid the employment situation.

According to the report it is expected that the bureau will have been organized by March 1 of this year.

CHILD LABOR

State Laws Regulating Children in Street Trades as of January 1, 1929

THE Children's Bureau of the United States Department of Labor has published Chart No. 15 presenting the "State laws and local ordinances regulating the street work of children." In a foreword it is pointed out that street work of children in the United States is regulated by means of a number of types of legal provisions which may be classified as follows:

1. Regulations, either State laws or municipal ordinances, that apply specifically to children engaged on their own account in newspaper selling or other street work; and

2. Regulations, either State laws or local ordinances, that have an indirect effect upon street work or that apply only to certain groups of street workers. These include (*a*) State child-labor laws regulating general employment which cover employment in certain street occupations, such as bootblacking; (*b*) State laws prohibiting the employment or use of children in certain mendicant or "wandering" occupations, including peddling; (*c*) State laws restricting the sale or distribution of newspapers or magazines devoted to criminal or obscene subjects; (*d*) State juvenile-court laws that class as dependents or delinquents children under certain ages found selling articles on the street; and (*e*) municipal curfew ordinances.

The regulations generally regarded as most effective are those which apply specifically to work done by children on their own account. It has been found that most street work can not be regulated by a general child-labor law, which usually applies only to "employment" of labor under certain conditions, as most street workers are not working for an employer and the word "employ" in the latter type of law is ordinarily construed to mean the purchasing of the services of one person by another.

REGULATION OF CHILDREN ENGAGED ON THEIR OWN ACCOUNT IN STREET TRADES

State laws.—The State laws that most effectively regulate street work by children are usually broad enough in application to cover all kinds of such work—at least all those in which any considerable number of children engage—and provide a minimum age for work, a prohibition of night work, and some system of enforcement. In the administration of any child-labor regulation some sort of work-permit system has been found necessary to keep children from going to work without fulfilling the age and other requirements of the law and to make possible supervision of the child while at work; in street-trades regulation a badge is usually substituted for the permit or is used in addition to it. Administrative provisions usually found in good laws include a requirement that before he receives a badge a child should present reliable evidence that he is of the legal age for such work, is in good physical condition, and is undertaking the work with the knowledge and approval of his parent and his school principal. Such laws require the street worker to attend school regularly, provide for revocation of the badge if he fails to comply with the law, and make provision for enforcement through street inspections and through the imposition of penalties applicable not only to the employer and the parent but also to the child and sometimes to the person who furnishes him with the papers or other merchandise to be sold. Badges under most of the laws are issued by some school authority—usually the officer issuing employment certificates for work in industrial establishments—and enforcement is placed most often in the hands of the same

officials, with general supervisory powers given in some instances to the State department responsible for the enforcement of labor laws. Under some laws, however, police officers, truant officers, or probation officers are given coordinate authority.

Municipal ordinances.—Municipal street-trades ordinances follow the same general lines as the State laws; but their standards on the whole are lower, and their application is often confined to the work of newsboys, not covering newspaper carriers and other street workers. Though obviously the same type of administrative machinery is needed for the effective carrying out of an ordinance as for the enforcement of a State law, the provisions for this purpose in local ordinances as a rule are worked out much less carefully than in the better State laws.

OTHER REGULATION OF STREET TRADING

State child-labor laws of general application.—In many States the child-labor laws regulating general industrial employment apply to certain specific kinds of work done in the street or are so broad in application as to include all such kinds of employment. These laws are generally interpreted, however, to apply only to the child who receives wages or other return from an employer.[1]

State laws penalizing employment in peddling.—Laws somewhat different in scope are those which penalize an employer or other person who employs or exhibits a child under a specified age in certain vocations or exhibitions such as rope or wire walking, begging, peddling, or other "wandering occupations," and which penalize also the parent who "sells or otherwise disposes of" the child to engage in these vocations.

State laws prohibiting sale of criminal news.—A type of legislation which because of its narrow scope and lack of enforcement machinery does not bear effectively upon the street-trades problem, though it deals with a certain phase of street selling, is found in the laws of 12 States which prohibit the distribution or sale by minors under 16, 18, or 21 years of age of pamphlets, newspapers, and magazines principally made up of criminal news, police reports, pictures and stories of deeds of crime, bloodshed, etc.

State laws relating to dependency and delinquency.—Thirteen States and the District of Columbia have juvenile-court or other laws providing for the care and commitment of dependent, neglected, and delinquent children, which include in their definitions of such children any child under a specified age who is found peddling or selling articles—some of them specifying selling newspapers—or accompanying or assisting any person so doing.

Local curfew ordinances.—Curfew ordinances, declaring it unlawful for any child under a given age (usually under 14 or under 16) to be on the streets at night unless accompanied by his parent or having his parent's written permission, have sometimes been used with a degree of success to prevent children from selling on the streets after a certain hour in the evening. Such ordinances, on the other hand, have been held in some places not to apply to the street worker, as he has been considered a "merchant" pursuing his own business, with a right to be on the street. Some ordinances of this type, moreover, apply only to children "loitering" on the streets or exempt specifically a minor whose "employment" makes it necessary for him to be upon the street after the prohibited hour.

The pamphlet contains two large tables, one giving the State laws and legal regulations affecting child labor in street trades and the second giving city ordinances regulating child labor in street trades. There is reproduced below a summary based on the first table and containing a few of the most important facts found therein.

[1] Child-labor laws applicable to the employment of children in all gainful occupations or in all gainful occupations during school hours are summarized in Standards of Child Labor, Children's Bureau, Chart No. 1.

SUMMARY OF STATE LAWS REGULATING CHILD LABOR IN STREET TRADES[1]

State	Age of child[2] M.	Age of child[2] F.	Locality	Occupation	Prohibited hours	Citation
Alabama	12–16	18	State	Distributing, selling, exposing, or offering for sale newspapers, magazines, periodicals, handbills, or circulars; any other trade or occupation performed in any street or public place.	8 p. m.–5 a. m.	Code 1923, vol. 2, Criminal, ch. 99, secs. 3503, 3506, 3512, 3513, 3515–3519, 3524.
	10–16			Distributing newspapers and periodicals on fixed routes in residential districts.		Do.
Arizona	10	16	Any city	Selling, exposing, or offering for sale newspapers, magazines, periodicals, or other merchandise in any street or public place; work as bootblack in any street or public place.		Rev. Stat. 1913, Civil Code, Title 14, ch. 2, pars. 3110, 3133–3135; Rev. Stat. 1913, Civil Code, par. 2697 (amended by 1925, ch. 69); Stat. 1925, ch. 83, sec. 12.
	10–14		State	Selling papers or engaging in other work outside school hours.		Do.
California	10	18	Cities of 23,000 or over	Selling or distributing newspapers, magazines, periodicals, or circulars; peddling; bootblacking; any other occupation pursued in any street or public place.		Stat. 1919, ch. 259, secs. 3½, 7 (amended by 1925, ch. 123), 8; 1911 ch. 688.
			State	Vending or selling goods, or engaging in or conducting any business. (Unlawful for minor to perform these acts.)	10 p. m.–5 a. m., for all minors under 18.	Do.
Colorado		10	Any town or city	Selling or distributing newspapers, periodicals, or other publications, or any article of merchandise in street or alley. Engaging in any other business or occupation in street or alley.		Comp. Laws 1921, secs. 4200, 4210, 4221, 4223, 4224.

[1] States whose laws have no special sections on street trades and consequently do not appear in this summary are: Arkansas, Connecticut, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maine, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Dakota, Ohio, Oregon, South Carolina, South Dakota, Tennessee, Texas, Vermont, Washington, West Virginia, and Wyoming.

[2] Where a single age is given it indicates prohibition of street trading under that age in the localities and occupations specified. Where a minimum and a maximum age are given they indicate prohibition under the minimum age and regulation between the ages specified.

SUMMARY OF STATE LAWS REGULATING CHILD LABOR IN STREET TRADES—Continued

State	Age of child		Locality	Occupation	Prohibited hours	Citation
	M.	F.				
Delaware	12–16	14–16	Cities with population of over 20,000 according to 1920 census (Wilmington only).	Delivering, selling, exposing, or offering for sale newspapers, magazines, periodicals, or any other articles or merchandise of any description in any street or public place.	7 p. m.–6 a. m. During school hours. (Apparently child 14 or over satisfying requirements for regular employment certificate may engage in such work during school hours.)	Rev. Code 1915, ch. 90, sec. 3160A, sec. 60A (added by 1923, ch. 204), sec. 3168 (amended by 1917, ch. 232).
District of Columbia	12–16	18	District of Columbia	Selling, exposing, or offering for sale newspapers, magazines, or periodicals, or other articles of merchandise of any description, or distributing handbills or circulars, or exercising trade of bootblack or any other trade, in any street or public place.	7 p. m.–6 a. m. During school hours (unless child is 14 or over and has employment certificate).	Act of May 29, 1928, 45 Stat. 998, ch. 908, in effect July 1, 1928.
Florida	10	16	Cities of 6,000 or over	Distributing, selling, exposing, or offering for sale newspapers, magazines, or periodicals in street or public place. *Exemptions:* Male children employed in delivery of newspapers to regular subscribers outside school hours.		Rev. Gen. Stat. 1920, secs. 4018, 4029, 4035, 4037, 4040, 5751.
Iowa	11–16	18	Cities of 10,000 or over	Street occupations of peddling, bootblacking, distribution or sale of newspapers, magazines, periodicals, or circulars, or any other trade carried on in any street or public place.	7.30 p. m.–4 a. m. (8.30 p. m.–4 a. m. during school vacation.) During school hours (but it would appear that boy 14–16 might work during school hours upon satisfying requirements for regular employment certificate).	Code 1924, ch. 76, secs. 1531–1535, 1537, 1538, 1540, 1541.
Kentucky	14–16	18	Cities of first, second, and third class	Peddling, bootblacking, distributing or selling newspapers, magazines, periodicals, or circulars, or any other occupation pursued in any street or public place. [The word "newspapers" is not included in section of law requiring badges and prohibiting night work. These provisions of the law have been interpreted by Court of Appeals of Kentucky not to apply to newspaper selling or distributing (Commonwealth *v.* Lipginski, 279 S. W. 339).]	8 p. m.–6 a. m. (See note under "Occupation.")	Carroll's Stat. 1922, secs. 331a.3, 331a.4 (amended by 1920, ch. 152), 331a.15, 331a.16.

Maryland	12–16	16	Cities of 20,000 or over (Baltimore, Cumberland, Hagerstown).	Distributing, selling, exposing, offering for sale newspapers, magazines, or periodicals in any street or public place.	8 p. m.–6 a. m. During school hours (unless child has employment certificate, not issued to child under 14).	Annotated Code 1924, art. 100, secs. 13, 14, 18, 28–32, 34, 36, 40, 41, 49, 51.
	10–12		do	Distributing newspapers on regular routes between 3.30 and 5 p. m.	do	Do.
	14–16	16	do	Trade of bootblack or any other trade or occupation performed in any street or public place or distribution of handbills or circulars or any other articles except newspapers, magazines, or periodicals.	do	Do.
Massachusetts	12–16	16	State	Selling, exposing, or offering for sale newspapers, magazines, or periodicals or any other articles of merchandise of any description or exercising the trade of bootblack or scavenger, or any other trade in any street or public place.	8 p. m.–6 a. m. (boy under 14) 9 p. m.–5 a. m. (boy 14–16)	Gen. Laws 1921, ch. 149, secs. 69 (as amended by 1921, ch. 410), 70 (amended by 1921, ch. 410), 71–73, 76, 77, 78, 80–83, 87.
	12–16	18	Cities of 50,000 or over		During school hours (boy 12–14, or boy 14–16 without employment certificate).	
Minnesota	12–16	18	Cities of first, second, or third class (i. e., cities of 10,000 population or over).	Peddling, bootblacking, distributing or selling newspapers, magazines, periodicals, or circulars, upon streets or in public places. *Exemptions:* Regularly employed newspaper carriers or persons distributing newspapers, magazines or periodicals to regular subscribers at residences or established places of business.	8 p. m.–5 a. m., except that boy having permit and badge may sell extra editions of daily newspapers after 8 p. m., provided this shall not violate curfew ordinance of any city. During school hours, unless child is 14 or over and has complied with all requirements for employment certificate.	Gen. Stat. 1923, secs. 4096, 4097, 4106, 4107, 4109–4111.
New Hampshire	10–16	16	State	Selling, exposing, or offering for sale newspapers, magazines, periodicals, or other merchandise in street or public place, or working as bootblack in any street or public place.	[For general prohibition of night work, between 7 p. m. and 6.30 a. m., for children under 16 which would apply to street trades, with an exemption providing that boy 12 or over may deliver newspapers between 4 p. m. and 8 p. m. and that boy 14 or over may deliver newspapers after 5 a. m., see Public Laws 1926, ch. 118, sec. 23.]	Pub. Laws 1926, ch. 118, secs. 21, 23, 35–40, 48.
New York	12–17	18	Cities of 20,000 or over	Carrying, delivering, selling, exposing, or offering for sale newspapers or periodicals or work as bootblack.	7 p. m.–6 a. m. During hours when child is required to attend school. (Child 14 or over may be exempted from school attendance if he has regular employment certificate and is actually at work.)	Laws 1921, ch. 386 (amended by 1922, ch. 464, and 1928, ch. 646). (Education law, secs. 627, 630–643.)

SUMMARY OF STATE LAWS REGULATING CHILD LABOR IN STREET TRADES—Continued

State	Age of child		Locality	Occupation	Prohibited hours	Citation
	M.	F.				
North Carolina	12–16	16	Entire State. (Law has been put into effect in eight of larger cities, according to information received from State child welfare commission, February, 1928.)	Any form of street trades	7 p. m.–6 a. m. Work for more than 8 hours per day, 48 hours per week, or 6 days per week prohibited for all children under 16 except those between 14 and 16 who have completed 4th grade.	Consolidated Stat. 1919, vol. 2, ch. 90, secs. 5031–5038 (amended by 1923, ch. 136; 1924, extra session, ch. 74, 1927, ch. 251.) Rulings of State child welfare commission, May 27, 1925.
Oklahoma		16	Any city	Selling, exposing, or offering for sale newspapers, magazines, or periodicals in any street or out-of door public place.		Comp. Stat. 1921, secs. 7210, 7221, 7226.
Pennsylvania	12–16	21	State	Distributing, selling, exposing or offering for sale any newspaper, magazine, periodical, or other publication, or any article of merchandise of any sort in any street or public place.	8 p. m.–6 a. m.	1915, Pamphlet Laws 286, act 177, secs. 1, 7, 23, 24.
	14–16	21	do	Scavenger, bootblack, any other trade or occupation performed in any street or public place except those listed above.	do	Do.
Rhode Island	12–16	16	Cities of over 40,000 population (i. e., Providence, Pawtucket, and Woonsocket).	Selling or offering for sale newspapers, magazines, periodicals, or any other articles; trade of bootblack or scavenger.	9 p. m.–5 a. m. During school hours, unless child is 14 or over and has employment certificate.	Code 1923, ch. 143, sec. 1–5, 1928, ch. 1231.
Utah	12–16	16	Cities of first or second class (i. e., cities of over 5,000 population).	Selling, exposing, or offering for sale newspapers, magazines, periodicals, or other merchandise, or bootblacking, in any street or public place.	After 9 p. m.	Comp. Laws 1917, secs. 1868, 1869, 1871, 1873, 1874 (amended by 1919, ch. 35), sec. 3027.

Virginia	12–16	18	State	Bootblacking; distributing and selling newspapers, magazines, periodicals, or circulars (which are permitted by law to be sold); running errands and delivering parcels. *Exemptions:* Boy 12 or over may distribute newspapers, magazines, or periodicals to regular subscribers at their residences or places of business without obtaining badge. (This work, however, is held to be subject to general provisions of child labor law, requiring employment certificates for all children under 16 employed, permitted, or suffered to work in any gainful occupation; requirements for this certificate and person issuing are same as in case of street-trades badge.	7 p. m.–6 a. m. During school hours (boy 14 with employment certificate may work during school hours). Work for more than 8 hours per day, 44 hours per week, or 6 days per week prohibited. Act shall not permit violation of curfew ordinance of any city.	Stat. 1922, ch. 489, secs. 4–6, 7, 15–18.
	14	18	do	Peddling or engaging in any gainful occupation in a street or public place except as specified above. (This work is held to be subject to general provisions of child labor law applying to all children under 16 employed, permitted, or suffered to work in any gainful occupation.		Do.
Wisconsin	14–17	18	Entire State. (Law applies to cities of first class, i. e., Milwaukee, and same provisions apply also to all other parts of State until industrial commission makes other regulations.) In districts other than cities of first class, industrial commission has power by general or special orders: (1) To fix terms and conditions of permits of minors engaged in street trades; (2) to provide for their issuance by board of education or school board of place where he resides; (3) to provide for revocation of permits; (4) to make any other reasonable regulations.	Any business or occupation of distributing, soliciting, selling, displaying, or offering for sale of any articles, goods, or merchandise, handbills, circulars, newspapers, magazines, or periodicals, or employment as bootblack, in any street, alley, court, square, or other public place, or any other street or public trade.	7.30 p. m.–5 a. m. (Boy 14–17 who has permit and badge, and is mentally and physically able to do so in addition to school work may deliver newspapers 4 a. m.–6 a. m.) During school hours. (Child 14 or over having regular employment certificate may engage in such work during school hours.)	Stat. 1923, ch. 103, secs. 103.21–103.26, 103.28–103.34, 103.36.
	12–17		do	Distribution or sale of newspapers and periodicals.	do	Do.

Child Workers in Oklahoma

A STUDY recently published under this title by the National Child Labor Committee brings out the apparently paradoxical fact that the most serious child labor problem in Oklahoma is the labor of school children—children who are attending school regularly but who work before or after school hours.

According to the law of Oklahoma, 14 years is the earliest age at which a child may work in factories, but there are many other types of employment, equally harmful, where they may work at any age, and these are practically unregulated by law. The work of children, even as young as 8 and 10 years, before and after school hours, often at night, often for several hours a day, is a phase of child employment to which little attention has been paid. Not only the facts discovered in Oklahoma, but in all the States studied, bespeak the need for more stringent regulation to protect such children.

The study covered the three largest cities of Oklahoma—Enid, Lawton, and Oklahoma City. More than three-fourths (77.9 per cent) of the children between 14 and 17, as given in the school census, were found in the schools, 7.3 per cent could not be located, 8.7 per cent were not attending school for various reasons—marriage, death, removal from the locality, physical or mental incapacity, and so on—2.5 per cent were out of school but not working, and only 3.5 per cent were at work. As far as these full-time workers were concerned, the situation was not unsatisfactory. Relatively few children were at work, and while some violations of law were found, they were for the most part in the small types of business where there is the greatest difficulty in locating illegal employment, and which, owing to the limited number of inspectors, can not easily be kept under observation. In the larger and more important places of employment there were practically no violations of the child labor law.

Where part-time employment was concerned, the conditions were much less satisfactory. In the three cities 2,313 children were engaged in working before or after school, on Saturdays and other holidays, as against 355 whole-time workers. A large number of these were in occupations for which the law provides no regulation except that the children may not work more than 8 hours a day or 48 hours a week. Among these occupations were selling and distributing newspapers and magazines, which employed 812 part-time children; selling goods in stores, with 409 part-time children; caddying, with 130; work around yards and gardens, with 67, and various forms of office work, with 108.

Apparently none of these jobs are regulated except with respect to the daily and weekly hours. There is no age limit; the children may work at night; and no age and schooling certificate is required.

As a consequence of this lack of law, the children were often employed under conditions which though unfortunate were not illegal. Many of them were not yet old enough to be employed in the more protected occupations, many were employed at night, and many of them were working for periods which, added to their school attendance, gave them too long a day.

More than two-fifths of the part-time children were 13 years of age or less, and this figure represents over 1,000 children in the three places. These children average 13.5 hours a week, with one-fourth of them working more than 18 hours, a week, in addition to their attendance at school. More than one-fourth of their

work, measured in time, was done at night. These facts can not be passed over lightly; their import is too great. These children are young and many of them are putting more time at work and school combined than is expected of an adult; much of their work is done at a time when it could hardly be said to be conducive to their best interests from the viewpoint of health and morals.

As a result of the study several changes in the child-labor law are recommended. The age limit might well be extended to cover all employment, making it illegal to employ a child under 14 at any gainful occupation. A possible exception might be made to allow children over 12 years of age to deliver newspapers on regular routes after school, the work not to exceed two hours. A second recommendation is that the regulations concerning work permits should be applied to part-time as well as to whole-time work. Night work should be prohibited for all children under 16, and part-time work should be so restricted that the total time of school and employment should not exceed eight hours in any one day. Also, attendance should be made compulsory for the entire school term instead of, as at present, for only two-thirds of the time.

HEALTH AND INDUSTRIAL HYGIENE

Chrome Poisoning

CHROMIUM plating has largely displaced plating with nickel on account of the relative hardness and nontarnishing qualities of the surface of articles plated by this process. Its use, however, has resulted in an increase in the number of cases of poisoning from chromium compounds, and as a result a great deal of attention has been directed recently to the use of these compounds in industrial processes. An investigation [1] was made by the United States Public Health Service in 1928 of the extent of the hazard in six plants in which the process of chromium plating was used, and the National Safety Council has recently published a summary [2] of the available information regarding the hazard. The report lists the following 10 industries or processes in which chromates are used: Manufacture of chromium preparations and chrome colors; color photography; match manufacture; the tar-color industry; manufacture of wet batteries; bleaching of fats, wax, and oils; textile printing; chrome tanning; staining of wood; and chrome plating.

The following statement is given in the report as to the effect of chromium compounds on health, the remedial measures recommended, and the measures to be taken for the prevention of poisoning:

The effect of chromium compounds on health

The injurious effects of chromium exposure may be summarized as follows:

1. The occurrence of large, rapidly spreading ulcers of the skin of the hands and of the mucous membrane of the nose and throat. Not uncommonly there is a perforation of the nasal septum. These ulcers are difficult to heal and are sometimes rather painful.
2. Skin irritation manifested by eruption.
3. Irritation of the conjunctiva, the outer membrane of the eye, shown by definite congestion of this structure.
4. Occasionally there is seen a slight bronchial catarrh; this is a rarer effect.
5. It is doubtful that systemic poisoning occurs.

Remedial measures

Various methods have been recommended for the treatment of chrome ulcers:

1. Use of zinc or borax ointment on a gauze dressing. Over this is placed a sufficient amount of adhesive tape to keep the bandage firm.
2. Washing the ulcer with a 5 per cent solution of sodium bisulphite on the ground that this treatment renders the chromic acid radical inert.
3. Frequent checking up to see that the lesions are healing; or
4. Removal of affected workman from exposure to chromates.
5. The treatment of severe skin irritation with equal parts of calamine and boracic acid lotions.
6. Secure the advice of a competent physician.

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[1] See Monthly Labor Review, November, 1928, pp. 61–63.
[2] National Safety Council. Chicago. Chromium, Health Practices Pamphlet No. 1, Series II.

Preventive procedures

Past experience with chrome compounds in different industries has suggested the following types of preventive procedures:

1. The use of inclosed machines for grinding raw material.
2. Efficient local exhaust ventilation.
3. Where such means of handling dust and fumes are not available, the use of the efficient respirators.
4. Impermeable rubber gloves.
5. The anointment of face, hands, and arms with a mixture of petrolatum, three parts, and lanolin, one part. This should be done after cleansing hands, arms, and face with soap and warm water, rubbing in the ointment while the skin is still moist.
6. Proper change of working clothes and caps.
7. Adequate washing and bathing facilities.
8. Most important of all is frequent medical inspection which will accomplish (*a*) the prompt treatment of the slightest skin affections, (*b*) the exclusion of persons having abrasions on the hands or arms, and (*c*) change of work for those individuals who possess ulcers which are extremely slow in healing.

INDUSTRIAL ACCIDENTS

Need of More Far-Reaching Statistics for Accident Prevention

By Ethelbert Stewart, United States Commissioner of Labor Statistics

THE more we analyze our accident statistics in relation to their use or applicability to accident prevention the more we become impressed with the fact that until such statistics go one step farther their utility for accident prevention purposes is very greatly curtailed.

In our study of causes of accidents what we really get is the cause of the injury. We do not, except in rare cases, get the cause of the accident at all. In nearly 50 per cent of both industrial and home accidents the cause of the injury is accredited to slips and falls. What the accident prevention man wants to know is what caused the slip, what caused the fall. In a very few of our reports we get, let us say, such a report as this: Broken hip; cause, slipped and fell. Then follow the words "greasy floor," or "wet floor." Here we have not only the cause of the injury but the cause of the accident; we have the material that the safety man needs—greasy floor, wet floor.

But in 99 per cent of the cases we simply get: Broken hip; cause, slipped and fell. Here we have the cause of the injury but not the cause of the accident. A man has an eye put out; the report states: "Flying object." That is entirely satisfactory as a cause of the injury, but why a flying object? New York State reports 478 accidents, ranging all the way from broken arm to death, in which the cause is given as "ladder slipped." For a safety man this is entirely too vague. He wants to know why the latter slipped or the cause of the ladder slipping.

To render the greatest service to accident prevention and to safety men, statistics of accidents will necessarily have to go one step farther than they are now going, and the questionnaires of the States, insurance companies, and all people to whom accidents are reported should include one more question, one which will bring out the ultimate cause of the accident rather than merely the cause of the injury.

Coal-Mine Fatalities in the United States, 1927

IN 1927 the loss of life per ton of coal mined in the United States was lower than in any other year except 1920, and the total number of men killed in the coal-mining industry in 1927 (2,224) was smaller than in any other year since 1922, when there were 1,984 fatalities, according to the annual report on coal-mine fatalities in the United States published by the United States Bureau of Mines.[1] It was not known at the time the report was prepared whether the fatality rate per thousand men employed had also declined,

[1] United States. Department of Commerce. Bureau of Mines. Bulletin 293: Coal-Mine Fatalities in the United States, 1927. Washington, 1928.

owing to the lack of complete returns from operators showing the number of employees.

The estimated death rate per million tons of coal mined in 1927 was 3.70, as compared with a rate of 3.83 in 1926. The Bureau of Mines points out, however, that the 1927 figure might be slightly increased later due to some of the more serious injuries resulting fatally, although it was believed that later returns would not increase the rate beyond 3.73. Considering the fatality rates in bituminous and anthracite mines separately, the rate in bituminous mines per million tons of coal mined decreased from 3.60 in 1926 to 3.34 (estimated) in 1927, but in anthracite mines it increased from 5.36 in 1926 to 6.06 (estimated) in 1927.

The lowering of the cost in lives for coal production in the mines as a whole has been brought about not only by the adoption of safety measures but also by the mechanization of the mines, which allows a larger average output per man employed and consequently lowers the fatality rate per ton. Improvements in haulage and other equipment and in working methods, which followed the increased use of coal-cutting machines, have also had their effect in reducing the death rate per ton and increasing the output of coal per man. Therefore the reduction in the cost of coal in lives, the Bureau of Mines comments, "does not imply that persons employed in the mines are finding their work less hazardous than before. * * * The individual workman measures his personal safety more by the number of chances he has of doing a year's work without being injured or killed than by the number of tons of coal represented if he is killed. These chances are usually measured by figures showing the number of injuries or deaths during a year among each thousand employees."

Table 1 shows the number of workers, average days of operation, number of men killed, fatality rates per thousand 300-day workers, and production in coal mines, by 5-year periods from 1906 to 1925, and by years from 1921 to 1927, with certain omissions for 1927.

TABLE 1.—COAL-MINE FATALITIES AND PRODUCTION OF COAL, 1906 TO 1927

Year or period	Men employed		Average days active	Men killed		Production per death (short tons)	Average production per man		Deaths per million tons
	Actual number	Equivalent in 300-day workers		Number	Rate per 1,000 300-day workers		Tons per year	Tons per day	
1906–1910 [1] (average)	675,067	484,454	215	2,658	5.49	169,719	668	3.10	5.89
1911–1915 (average)	739,169	541,489	220	2,517	4.65	210,253	716	3.26	4.76
1916–1920 (average)	760,381	599,781	237	2,419	4.03	258,944	824	3.48	3.86
1921–1925 (average)	811,803	484,071	179	2,215	4.58	252,346	689	3.85	3.96
1921	823,253	474,529	173	1,995	4.20	253,832	615	3.56	3.94
1922	844,807	405,056	144	1,984	4.90	240,399	565	3.92	4.16
1923	862,536	560,646	195	2,462	4.39	267,223	763	3.91	3.74
1924	779,613	499,896	192	2,402	4.80	237,974	733	3.81	4.20
1925	748,805	480,227	192	2,234	4.65	260,461	777	4.04	3.84
1926	759,033	559,426	221	2,518	4.50	261,241	867	3.92	3.83
1927	[2] 757,000	-------	-------	2,224	-------	[3] 269,989	793	-------	3.70

[1] Figures for 1906–1909 included in the average relate only to States under inspection service, and figures for 1909 as to average days active were estimated by the Bureau of Mines.
[2] Based on estimates of State mine inspectors.
[3] Estimated.

Table 2 shows the total number killed and the death rate per million tons of coal produced, in 1926 and 1927, by cause of accident.

TABLE 2.—NUMBER KILLED AND DEATH RATE PER MILLION TONS OF COAL PRODUCED, 1926 AND 1927, BY CAUSE

Cause	Number killed		Death rate per million tons	
	1926	1927	1926	1927
Underground:				
Falls of roof or face	1,214	1,145	1.84	1.91
Mine cars and locomotives	433	352	.66	.58
Explosions of gas or coal dust—				
Local explosions	74	92	.11	.15
Major explosions	348	155	.53	.26
Explosives	96	110	.15	.18
Electricity	96	100	.15	.17
Mining machines	26	28	.04	.05
Mine fires	1	4	(1)	.01
Miscellaneous	77	87	.12	.14
Total	2,365	2,073	3.60	3.45
Shaft	35	29	.05	.05
Surface:				
Haulage	50	46	.08	.07
Machinery	9	10	.01	.02
Miscellaneous	59	66	.09	.11
Total	118	122	.18	.20
Grand total	2,518	2,224	3.83	3.70

[1] Less than 0.005.

Death rates (per million man-hours worked) for 1921 to 1926, by cause of accident, are shown in Table 3. The figures for 1927 were not available.

TABLE 3.—DEATH RATES IN COAL MINES (PER MILLION MAN-HOURS WORKED), 1921 TO 1926, BY CAUSE OF INJURY

Cause of injury	Average, 1921–1925	Average, 1922–1926	1922	1923	1924	1925	1926
Underground:							
Falls of roof or coal	1.078	1.076	1.123	1.038	1.053	1.111	1.069
Haulage	.372	.377	.422	.367	.351	.372	.381
Gas or dust explosion	.347	.393	.385	.331	.531	.355	.372
Explosives	.113	.100	.115	.102	.098	.105	.085
Electricity	.081	.081	.092	.067	.079	.086	.085
All other underground	.108	.100	.096	.103	.103	.104	.091
Total	2.099	2.127	2.233	2.008	2.215	2.133	2.083
Shaft	.038	.036	.051	.041	.029	.035	.031
Surface	.692	.673	.803	.681	.694	.673	.543
Grand total	1.894	1.915	2.025	1.816	1.989	1.925	1.861

Table 4 gives death rates for bituminous and anthracite mines separately and for both types of mines combined, by 5-year periods from 1891 to 1925 and by years from 1921 to 1927. The figures for 1927 are subject to revision.

TABLE 4.—DEATH RATES IN COAL MINES BY 5-YEAR PERIODS, 1891 TO 1925, AND BY YEARS, 1921-1927, BY KIND OF MINE [1]

Year or period	Death rates in—								
	Bituminous mines			Anthracite mines			Both types of mines		
	Per 1,000 employed	Per 1,000 300-day workers	Per million tons mined	Per 1,000 employed	Per 1,000 300-day workers	Per million tons mined	Per 1,000 employed	Per 1,000 300-day workers	Per million tons mined
1891–1895	2.69	4.02	4.84	3.27	4.99	8.12	2.91	4.38	5.87
1896–1900	2.90	4.06	4.46	3.03	5.58	7.94	2.95	4.50	5.34
1901–1905	3.49	4.81	5.17	3.36	5.38	7.69	3.45	4.95	5.67
1906–1910	4.01	5.57	5.50	3.70	5.25	7.67	3.94	5.48	5.89
1911–1915	3.37	4.75	4.31	3.52	4.37	6.95	3.40	4.65	4.76
1916–1920	3.05	4.03	3.48	3.70	4.06	6.07	3.18	4.03	3.86
1921–1925	2.70	4.87	3.67	2.83	3.71	5.80	2.73	4.58	3.96
1921	2.18	4.38	3.48	3.43	3.80	6.05	2.42	4.20	3.94
1922	2.45	5.16	3.99	1.91	3.81	5.49	2.35	4.90	4.16
1923	2.77	4.65	3.46	3.23	3.62	5.45	2.85	4.39	3.74
1924	3.08	5.39	3.94	3.10	3.39	5.64	3.08	4.80	4.20
1925	3.12	4.79	3.53	2.50	4.12	6.47	2.98	4.65	3.84
1926	3.48	4.86	3.60	2.74	3.37	5.36	3.32	4.50	3.83
1927 [2]	2.91	----------	3.34	3.05	----------	6.06	2.94	----------	3.70

[1] Prior to 1910 certain States did not maintain records of accidents. The above rates are based exclusively on tonnage and men employed in States for which accident records are available.
[2] Subject to revision.

Nine major coal-mine disasters occurred in 1927, the number of lives lost in the individual occurrences ranging from 6 to 97. All but one of these disasters were due to explosions, and all but two of the 49 which occurred from January, 1924, to December, 1927, inclusive, were due to this cause.

Metal-Mine Accidents in the United States in 1926

THE report of the United States Bureau of Mines on metal-mine accidents in the United States during the calendar year 1926 (Bulletin No. 292, published in 1928) showed an increase over 1925 in the number of such accidents resulting in death. The number of fatalities in 1926 was 430 as compared with 371 in 1925, and the fatality rate per thousand 300-day workers was 3.47 as compared with 2.99 in 1925. The 1926 death rate would have been only 3.06 had it not been for a single disaster—a cave-in—which killed 51 men.

The nonfatal injury rate per thousand 300-day workers showed a decrease from 283.53 in 1925 to 245.01 in 1926. Of the 30,350 nonfatal injuries which occurred during 1926, 20 resulted in permanent total disability, 557 in permanent partial disability, 7,681 in temporary disability lasting more than 14 days, and 22,092 in temporary disability lasting more than the remainder of the day on which the accident occurred but not more than 14 days.

The principal causes of death were falls of rock or ore, explosives, falls of persons, haulage, and skips or cages. The leading causes of nonfatal injuries were falls of rock or ore, loading of rock or ore, haulage, timber or hand tools, and drilling.

The total number of men employed in metal mines in 1926 was 127,823 and the average number of days worked per man was 291, as

compared with 126,713 men employed and 293 days worked per man in 1925.

The amount of time lost in metal mines in 1926 due to accidents which involved a loss of time beyond the day or shift on which the injury occurred was estimated by the Bureau of Mines at 9.5 per cent of the aggregate number of days worked by all employees at the mines.

The report also includes data on accidents in nonmetallic mineral mines in 1926. The mines included in this group are those that produce asbestos, asphalt, gypsum, mica, phosphate rock, or any other minerals of a nonmetallic nature except coal. The total number of men employed in these mines in 1926 was 13,523 and the average number of days worked per man was 279. Thirty-three men were killed in the nonmetallic mineral mines in 1926 and 2,403 injured, the fatality rate being 2.62 and the injury rate 191, per thousand 300-day workers, as compared with a fatality rate of 1.71 and an injury rate of 165 in 1925.

Table 1 shows the number of men employed, days of work performed, number of men killed and injured, and fatal and nonfatal accident rates per thousand 300-day workers in metal mines for the years 1911 to 1926. Table 2 gives similar figures for the different types of metal mines and for nonmetallic mineral mines for the years 1925 and 1926.

TABLE 1.—EMPLOYMENT, NUMBER KILLED AND INJURED, AND FATAL AND NONFATAL ACCIDENT RATES IN METAL MINES IN THE UNITED STATES, 1911–1926

Year	Average days active	Men employed		Total shifts	Number killed		Number injured	
		Actual number	Equivalent in 300-day workers (calculated)		Total	Per 1,000 300-day workers (calculated)	Total	Per 1,000 300-day workers (calculated)
1911	282	165,979	156,088	46,826,573	695	4.45	26,577	170.27
1912	287	169,199	161,663	48,498,510	661	4.09	30,734	190.11
1913	288	191,276	183,594	55,077,855	683	3.72	32,971	179.59
1914	271	158,115	142,620	42,785,840	559	3.92	30,216	211.87
1915	280	152,118	141,997	42,599,015	553	3.89	35,295	248.56
Average, 1911–1915	282	167,337	157,192	47,157,559	630	4.01	31,159	198.22
1916	282	204,685	192,455	57,736,425	697	3.62	48,237	250.64
1917	287	200,579	192,085	57,625,811	852	4.44	46,286	240.97
1918	297	182,606	181,006	54,301,748	646	3.57	42,915	237.09
1919	279	145,262	134,871	40,461,350	468	3.47	31,506	233.60
1920	296	136,583	134,540	40,361,893	425	3.16	32,562	242.02
Average, 1916–1920	288	173,943	166,991	50,097,445	618	3.70	40,301	241.34
Average, 1911–1920	285	170,640	162,091	48,627,502	624	3.85	35,730	220.43
1921	238	93,929	74,509	22,352,702	230	3.09	18,604	249.69
1922	276	105,697	97,138	29,141,293	344	3.54	26,080	268.48
1923	297	123,279	121,866	36,559,805	367	3.01	33,563	275.41
1924	290	123,128	119,113	35,734,008	418	3.51	33,118	278.04
1925	293	126,713	123,908	37,172,359	371	2.99	35,132	283.53
Average, 1921–1925	281	114,549	107,307	32,192,033	346	3.23	29,299	273.04
Average, 1911–1925	284	151,943	143,830	43,149,112	531	3.69	33,586	233.51
1926	291	127,823	123,870	37,160,978	430	3.47	30,350	245.01

TABLE 2.—EMPLOYMENT, NUMBER KILLED AND INJURED, AND FATAL AND NON-FATAL ACCIDENT RATES IN DIFFERENT TYPES OF METAL MINES AND IN NON-METALLIC MINERAL MINES, 1925 AND 1926

Kind of mine and year	Average days worked	Men employed		Killed		Injured (time lost, 1 day or more)	
		Actual number	Equivalent number of 300-day workers	Number	Rate per 1,000 300-day workers	Number	Rate per 1,000 300-day workers
Copper:							
1925	313	33,266	34,736	102	2.94	12,179	350.62
1926	321	32,723	35,040	121	3.45	10,102	288.30
Gold, silver, and miscellaneous metal:							
1925	302	33,230	33,427	128	3.83	10,276	307.42
1926	292	33,940	32,982	108	3.27	9,878	299.50
Iron:							
1925	275	34,339	31,443	80	2.54	5,013	159.43
1926	276	33,158	30,479	129	4.23	4,082	133.93
Lead and zinc (Mississippi Valley):[1]							
1925	280	12,913	12,041	40	3.32	5,636	468.07
1926	265	14,479	12,771	39	3.05	3,885	304.20
Nonmetallic mineral:							
1925	284	12,965	12,261	21	1.71	2,028	165.40
1926	279	13,523	12,598	33	2.62	2,403	190.74
Total:							
1925	293	126,713	123,908	371	2.99	35,132	283.53
1926	291	127,823	123,870	430	3.47	30,350	245.01

[1] Includes fluorspar mines in Illinois and Kentucky.

Safety Specifications in New York Building Construction

THE specifications for safety in building construction prepared by the committee on accident prevention, Building Trades Employers' Association of the City of New York, are given below. In a preliminary statement the committee urges that these safety provisions should be included in all building contracts:

The entire specification should be included in the specifications for all building construction work. In the specifications for work let separately either by the owner or by the architect or engineer acting for the owner, or, in the specifications for work which is sublet by the contractor the following clause should be inserted in addition to the safety specifications:

"*Protection and safety work.*—The contractor for the ——— work shall comply with the requirements of that section of the general specifications entitled 'Protection and safety work' in so far as the provisions of any article or articles thereof are properly applicable to his work."

Safety Specifications in Full

THE OWNER and/or contractor shall install and maintain all of the safeguards enumerated in articles 1 to 15, inclusive, of this specification and shall comply with the requirements of all laws and ordinances in force in the locality where the work is situated relative to the safeguarding of the work to prevent injury to persons. All safeguards shall be constructed in accordance with the requirements of such laws and ordinances. Sizes and other details specified shall be considered

as the minimum requirements and shall be modified and extended to comply with any existing law or ordinance. When a situation arises where two or more of these safety rules may apply, and there is a doubt as to which one should be used, the rule which is the more practicable and which affords adequate protection may be followed. The following rules describe safety measures to be employed for the prevention of accidents:

ARTICLE 1. *First aid.*—Provide and maintain an ample supply of iodine or mercurochrome and aseptic gauze bandages in a suitable cabinet.

ART. 2. *Ladders and temporary stairs.*—Install and maintain ladders or temporary stairs of ample strength to give access from one floor to another after the structural flooring is in place and until the permanent stairs are available. Such ladders or temporary stairs shall be of such size and so located as to give proper facilities to all workmen engaged on the work. The side rails of each ladder shall extend at least 34 inches above the platform or floor it serves and when required, ladders should be made at least 4 feet wide, with three stringers. Temporary stairways, if installed, shall be provided with substantial hand rails.

All intermediate landings shall be substantially constructed without openings between the planks and all intermediate landings and ladder openings in the floors shall be inclosed by a railing and a toe board as described below under heading "Floor openings" so that a person can not step into the ladder shaft except at the openings provided for the ladders.

Also provide similar ladders before the structural floors are started and above the top floor on which the structural flooring has been placed. Each ladder shall be secured against slipping and shall extend at least 34 inches above the floor or platform it serves. At top and bottom of each ladder provide solid wood platforms at least 2 feet longer than the width of the ladder and with an approximate width of 3 feet.

ART. 3. *Permanent stairways.*—Stair wells for permanent stairways shall be guarded on all open sides with railings and toe boards as described below under "Floor openings" and all permanent stairways shall be provided on open sides with substantial temporary planed wood handrails, 36 inches in height, measured from the center of the tread.

Stairways on which treads and landings have to be filled in later with cement or other filling material shall have temporary wooden treads and landings, or other equally suitable material, to the height of the nosing, full width of the tread and landing, firmly fitted in place and replaced when worn below the level of the metal nosing. Where skeleton iron stairs are installed, they shall have wooden treads and landings not less than 2 inches thick. All treads and landings shall be free from protruding nails and splinters.

ART. 4. *Permanent or temporary elevator car used for carrying workmen.*—Where a permanent or temporary elevator car has been installed and is used during construction for carrying passengers, the hoistway shall be completely inclosed in partitions not less than 8 feet high, and all openings therein fitted with doors locked on the hoistway side. The car shall be fully and substantially inclosed on all sides, including the top, except as required for entrances.

ART. 5. *Floor openings.*—All openings in floors (except such as are necessary to be opened for immediate use) shall be protected by guard rails approximately 42 inches high with uprights not less than 2 by 4 inches, spaced not more than 8 feet apart. The top rail shall be not less than 2 by 4 inches or equivalent section and the mid-rail not less than ⅞ inch by 4 inches. Each guard rail shall be provided with a toe board, not less than ⅞ inch by 6 inches, placed on edge. As an alternate, small openings may be planked over in a substantial manner.

ART. 6. *Guarding material hoist shaftways.*—Two sides of all material hoist shaftways shall be inclosed at each floor to a height of not less than 8 feet, with wire netting of not less than No. 10 United States standard gauge and not more than 1½ inch mesh, or expanded metal of equivalent strength, secured to uprights so spaced as to afford a strong and substantial guard. Wood slats laid preferably horizontally may be used instead of wire netting with openings between slats not to exceed 1½ inches. The guard shall extend, if practicable, 2 feet beyond the sides of the shaftway. At two sides of the hoistway used for handling material there shall be bars 3 feet high bolted or otherwise secured at one end to the guard and placed, where possible, not less than 2 feet from the edge of the shaft opening. Such bars shall be not less than 2 inches by 3 inches made of spruce or other approved material of equal strength. A toe board at least ⅞ inch by 6 inches shall be installed on open sides when not being used for handling material.

ART. 7. *Concrete bucket shafts.*—When a concrete bucket tower is located within the building, it shall be inclosed on all the sides which are less than 3 feet from the edge of the shaftway or opening in which it is installed, or on the sides where scaffolds may be erected, by attaching boards, wire netting, or expanded metal to the framework of the hoist tower, or to other suitable supports, leaving suitable openings for the bucket to dump. If wire netting is used, it shall not be lighter than No. 10 United States standard gage with not more than 1½-inch mesh. If expanded metal is used, it shall be of equivalent strength and mesh. If wood slats are used, they may be laid vertically or horizontally, but the spaces between slats shall not exceed 1½ inches.

When shaft is outside of the building, guard rails and toe boards shall be placed on sides of runways to hoist shaft, and side of shaft which faces the building shall be guarded as specified above, except space where bucket dumps.

ART. 8. *Swinging scaffolds.*—Every scaffold, swung from an overhead support, which is 10 feet or more above the ground or floor, shall be of ample strength, not less than 27 inches in width and provided with a substantial railing and toe board along the outer edge. All ropes, cables, and blocks supporting scaffold shall be capable of sustaining at least four times the maximum weight of the material and men to be placed on the scaffold, and means shall be provided to prevent the scaffold from swaying.

ART. 9. *Suspended scaffolds.*—Platforms suspended by steel cables and operated by hoisting machines for the use of bricklayers and for similar use shall be supported by outriggers or other form of support equal in strength to 7-inch I beams having a weight of 15.3 pounds

per foot. Outriggers shall be not more than 9 feet apart. The platform shall be made of sound plank not less than 2 inches thick, properly secured and laid close.

The outside of the platform shall be provided with a substantial railing of iron or wood not less than 42 inches high, and provided with a toe board not less than 9 inches high. The space between the toe board and the railing shall be filled in with wire netting of not more than ¾-inch mesh. An overhead protective covering shall be maintained at such time as the platform is in use, at a height of not more than 9 feet above the working platform.

ART. 10. *Built-up scaffolds.*—All scaffolds shall be of ample strength to support the maximum number of men to be placed on same plus the weight of the material. Scaffolds more than 14 feet in height shall be provided with substantial railings 34 inches high and toe boards 9 inches high on all edges which are not close to the walls. When a scaffold crosses a window or other opening which extends 5 feet or more above the platform of the scaffold, a similar guard and toe board shall be placed across the opening.

ART. 11. *Outrigger scaffolds.*—Outriggers where projecting not more than 6 feet from the face of the wall or building shall be of sound yellow pine or spruce not less than 3 by 10 inches or other approved material of equal strength, and shall be well braced and secured to prevent tipping or turning. The platform shall be of sound yellow pine, spruce, or other approved material of equal strength, not less than 2 inches thick, laid close. The outside of the platform shall be provided with a substantial railing of iron or wood, not less than 42 inches high and provided with a toe board not less than 9 inches high. The space between the railing and the toe board shall be filled in with wire netting of not more than ¾-inch mesh.

ART. 12. *Special scaffolds.*—Construct and maintain suitable scaffolding of sufficient strength as may be required for exterior work on towers, spires, etc., and interior work in churches, theaters, auditoriums, and the like.

ART. 13. *Artificial lighting.*—Install and maintain lighting for the under side of the protection over sidewalk, also for temporary illumination of the building. Suitable feeder lines should be installed extending from the bottom to the top of the building, and of ample capacity to properly provide for all spaces requiring light, and at the same time, service for all motors contemplated to be used. Install and maintain one light at each floor landing in fire tower and stairways and at such other places as may be necessary to properly light the stairway, also in exits to streets, and on all elevator cars used for carrying passengers.

ART. 14. *Planking derrick floor.*—Where structural steel is being erected, the derrick floor shall be entirely planked over.

ART. 15. *Sidewalk and overhead protection.*—Maintain safe sidewalks for the use of pedestrians, including overhead protection for same with its outside columns secured against lateral displacement as required by laws and ordinances in force in the locality. Where an overhead sidewalk bridge is used for the storage of material, it shall not be overloaded.

Fatal Industrial Accidents in Canada, 1928

STATISTICS on fatal industrial accidents in Canada in 1928 as compared with those in 1927, taken from the March, 1929, issue of the Canadian Labor Gazette, are given below:

	1927 [1]	1928
Agriculture	162	193
Logging	164	166
Fishing and trapping	125	43
Mining, nonferrous smelting, and quarrying	168	250
Manufacturing	153	192
Construction	189	246
Transportation and public utilities	322	381
Trade	27	62
Finance	1	-----
Service	104	99
Total	1,415	1,632

[1] Revised figures.

WORKMEN'S COMPENSATION AND SOCIAL INSURANCE

Additional Compensation for Minors Illegally Employed in Illinois

THE December, 1928, issue of the Labor Bulletin published by the Illinois Department of Labor contains an article showing the experience of the State of Illinois in allowing additional compensation to minors injured while illegally employed. The compensation act (p. 497 of Acts of 1927) provides that 50 per cent additional compensation shall be paid to minors injured while illegally employed. The article covered the first year in which this law was in effect, July 1, 1927, to June 30, 1928.

The report indicates that industrial accidents occurred to 83 children under 16 years of age. Of this number 76 lost more than a week's time from work or suffered some serious injury and 7 lost less than one week, the waiting period allowed under the compensation act. Of the 76, 46 children were illegally employed, 27 were legally employed, and concerning 3 the legality of the employment had not been determined. Of the 7 children slightly injured 6 were illegally employed, while 1 was legally employed.

Only 28, or 33.7 per cent, of all the 83 accidents to children (compensable and noncompensable) which occurred in the year discussed are known to have taken place in legal employment.

Of the 28 accidents to children which occurred in legal employment (both compensable and noncompensable) 17 were engaged in occupations regulated by the child labor law and all of the requirements of that law had been met, while 11 were engaged in occupations not regulated by the child labor law and were legal because of the absence of restrictions. Of these 11 children legally employed because not regulated by the child labor law, 5 were newsboys, 3 were golf caddies, 2 were boys on farms, and 1 was a girl engaged in housework, and 2 of these (newsboys) suffered permanent partial injuries.

Educational Effects of Penalty Compensation

CONCERNING the educational effects of the penalty the article contained the following:

> Just how far the provision for 50 per cent additional compensation has deterred employers from employing children illegally or has made them take more seriously the responsibility of investigating age is hard to say. That it has had some effect is beyond dispute, but this has not been determined statistically. Individual employers who have never troubled themselves particularly to find out about the child labor law have done so since they have realized that neglect might cost them money. One employer said cheerfully, after it had been explained why the additional compensation had been assessed, "Well, we thought he was under 16 but didn't pay any attention to it. Next time we'll know."

One of the best educational uses to which the 50 per cent provision has been put is in talking with employers who inquire about the application of the child labor law to their establishments. Many an employer remains unimpressed with the necessity of securing employment certificates until he is told that in case of an accident he will be liable for one and one-half times the regular rate of compensation. At this point he usually sees the light.

Besides its aid in upholding the child labor law, the provision for additional compensation, together with the inclusion under the compensation law of all minors, makes for far more accurate and more complete knowledge of accidents to minors. * * * As study points out the need for legislation, so the enforcement of the legislation develops both the necessity and opportunity for further study in the child labor field.

North Carolina Passes Workmen's Compensation Act

THE Legislature of North Carolina at its 1929 session passed an act to provide a system of workmen's compensation for that State. This act, ratified on March 11, 1929, will become effective on July 1, 1929. This is the forty-fourth State which has enacted workmen's compensation legislation. The only States now without compensation laws are Arkansas, Florida, Mississippi, and South Carolina.

The act is analyzed below, following the method used in previous articles and reports and thus permitting an easy comparison with other acts as well as presenting the substance of the law in convenient form.

Date of enactment.—March 11, 1929; in effect July 1, 1929.

System.—Election presumed unless either party rejects.

Injuries compensated.—Injury by accident arising out of and in the course of the employment, and shall not include a disease in any form, except where it results naturally and unavoidably from the accident. No compensation in case of intoxication or where there is willful intention to injure self or another.

Industries covered.—All public and quasi-public corporations and all private employment in which five or more employees are regularly employed in the same business or establishment, except agriculture, domestic service, railroad employees, Federal employees, convicts, and certain farm-product merchants. Voluntary coverage for certain excepted employments provided for.

Persons compensated.—Private employment: All employees or apprentices except persons whose employment is both casual and not in the usual course of the employer's trade, business profession, or occupation; minors illegally employed. Public employment: All State employees not elected or appointed by the governor and all other public employees not elected by the people or council or other governing body, who act in purely administrative capacity and serve for a definite term of office.

Compensation for death.—(*a*) Burial expenses not to exceed $200.

(*b*) To persons wholly dependent, 60 per cent of the average weekly earnings of the deceased workman; not to exceed $18 weekly nor less than $7, for 350 weeks.

(*c*) If only partial dependents, the same proportion of the weekly payments as the amount contributed by the employee to such partial dependents bears to the annual earnings of the deceased.

(*d*) If no dependents, a commuted sum less funeral expenses. Claim must be filed within one year after death. Maximum compensation $6,000.

Compensation for disability.—(*a*) Such medical, surgical, hospital, and other treatment, including supplies, as may reasonably be required to effect a cure, not exceeding 10 weeks, and such additional time as in judgment of commission will lessen period of disability. Original artificial members to be supplied.

(*b*) For total disability, a weekly payment of 60 per cent of average weekly wages; period, 400 weeks; maximum compensation, $6,000.

(*c*) For partial disability, a weekly payment of 60 per cent of the difference between average weekly wages before and after the injury; period, 300 weeks including period of total disability.

(*d*) For certain specified permanent partial disabilities, a weekly payment of 60 per cent for fixed periods; maximum, 400 weeks and $6,000. Special provision for disfigurement. Payments may not be more than $18 nor less than $7. Waiting period 7 days except for medical aid, but if disability is more than 28 days compensation from date of disability. Claim must be filed within one year after the accident.

Revision of benefits.—So long as injured employee claims compensation, if requested by employer or ordered by commission he shall submit to examination.

Insurance.—Employer must insure in private company or mutual association or furnish to commission satisfactory proof of financial ability to become a self-insurer.

Security of payments.—Claims are not assignable, and are exempt from all claims of creditors and from taxes, compensation to have same preference or priority against assets of employer as is allowed unpaid wages. No agreement by an employee to waive his right to compensation shall be valid.

Settlement of disputes.—Industrial commission hears and determines cases, with right of appeal to the superior court of the county on questions of law.

Recent Workmen's Compensation Reports

Colorado

THE tenth report of the Industrial Commission of Colorado, for the 2-year period, December 1, 1926, to November 30, 1928, contains several tables comparing the Colorado compensation law with the laws of other States and presenting the experience of Colorado for the 2-year period. The following table gives statistics for the two years:

STATISTICS OF ACCIDENTS AND CLAIMS UNDER COLORADO COMPENSATION LAW, 1926–27 AND 1927–28

Item	Dec. 1, 1926, to Nov. 30, 1927	Dec. 1, 1927, to Nov. 30, 1928
Number of accidents	19,571	19,773
Total number of claims	5,751	5,312
Number of fatal claims (deaths)	180	147
Number of nonfatal claims	5,571	5,165
Awards by commission	431	519
Awards by referee	1,866	1,982
Compensation agreements approved	4,448	4,418
Amputations	187	151
Loss of use	98	76
Permanent total	18	23
Permanent partial	147	171
Temporary total	5,406	4,971
Temporary partial	42	39
Facial disfigurement	29	24
Blood poison	45	61
Wholly dependent—fatal claims	98	90
Partial dependent—fatal claims	24	19
No dependent—fatal claims	50	31
Foreign dependent—fatal claims	8	7
Compensation denied	427	462
Fatal (death)	30	39
Nonfatal	397	423
Compensation reduced	9	7
Average weekly wage	$25.49	$24.93
Average weekly rate of compensation	$10.77	$10.79

The claims represented 29.38 per cent of the accidents in 1926–27 and 26.86 per cent in 1927–28. The coal and metal industries were responsible for a large percentage of the claims, accounting for 51.67 per cent of the fatal claims (deaths) in 1926–27 and 38.10 per cent

in 1927–28, and 37.52 per cent of the nonfatal claims in 1926–27 and 30.51 per cent in 1927–28.

Minnesota

THE INDUSTRIAL COMMISSION of Minnesota in its fourth biennial report, for the years July 1, 1926, to June 30, 1928, gives a detailed statistical analysis of workmen's compensation cases closed during the biennial period.

During the 2-year period 50,665 cases were closed, representing a loss in time to industry of 5,093,352 man-days and a combined total of $9,824,073 in compensation benefits, medical benefits, and net wage losses to the injured workmen.

Of the number of cases closed 318 (or less than 1 per cent) were fatals, 17 permanent total disabilities, 2,879 (or 6 per cent) permanent partial disabilities, 29,197 (or 58 per cent) temporary total disability cases in which the disability continued beyond one week, 8,594 (or 17 per cent) temporary total disability cases in which the disability terminated within the 1-week waiting period, and 9,660 (or 19 per cent) were nondisabling cases in which there was medical expense only.

A study of these figures shows that 30 per cent of all accidents were caused by handling of materials, 15 per cent by falls of persons, 14 per cent by hand tools, 9 per cent by machinery, 7 per cent by vehicles, 8 per cent by stepping on or striking against objects, and 17 per cent by other causes. Injuries in the nature of cuts, punctures and lacerations constituted 31 per cent of all injuries; bruises, contusions and abrasions, 31 per cent; sprains and strains, 16 per cent; fractures, 11 per cent; and all other injuries, 11 per cent.

Fatal accidents: 318 cases—23 per cent caused by vehicles; 16 per cent by falling objects; 14 per cent by machinery; 9 per cent by falls of persons; 8 per cent by electricity, explosions and fires; 8 per cent by handling of materials; and 22 per cent by other causes. Injuries in the nature of fractures constituted 63 per cent of all accidents resulting in death.

Permanent partial disabilities: 2,879 cases—32 per cent caused by machinery, 21 per cent by handling of materials, 15 per cent by hand tools, 12 per cent by falls of persons, and 20 per cent by other causes. Injuries in the nature of cuts, punctures, and lacerations constituted 38 per cent of the permanent partial disabilities; fractures, 24 per cent; bruises, contusions and abrasions, 18 per cent; traumatic amputations, 13 per cent; and all other injuries, 7 per cent.

Temporary total disabilities (beyond one week): 29,197 cases—31 per cent caused by handling of materials; 18 per cent by falls of persons; 12 per cent by hand tools; and 39 per cent by other causes. Injuries in the nature of bruises, contusions, and abrasions constituted 31 per cent of these disabilities; cuts, punctures and lacerations, 24 per cent; sprains and strains, 20 per cent; fractures, 15 per cent; and all other injuries, 10 per cent.

Temporary total disabilities (one week or less): 8,594 cases. The same percentages prevail as indicated in preceding paragraph.

Nondisabling: 9,660 cases. Same as above.

Permanent total disabilities: 17 cases.

Missouri

THE FIRST annual report of the Missouri Workmen's Compensation Commission, covering the period from January 9 to December 31, 1927, contains statistics of all accidents, both those under and those not under the act.

The causes of the accidents, by machine, object, or agency, are given as follows:

CAUSE OF ACCIDENTS

Machine, object, or agency	Number of accidents	
	Under act	Total
Miscellaneous	1,636	7,427
Handling objects	7,545	20,942
Hand tools	3,331	10,577
Stepping on or striking against objects	2,586	8,426
Falling objects	3,528	7,454
Falls of persons	4,914	10,171
Animals	301	709
Vehicles (operation, not construction of)	3,025	4,906
Electricity	269	1,594
Explosions, fires, and hot substances	1,146	3,040
Poisonous and corrosive substances	571	1,540
Boiler and pressure apparatus	139	491
Prime movers and power-transmission apparatus	186	707
Cranes, elevators, and hoisting apparatus	641	1,291
Working machines	3,520	10,302
Total	33,338	89,577

Wyoming

THE THIRTEENTH report of the Workmen's Compensation Department of the State of Wyoming, covering the calendar year 1928, is devoted principally to a detailed report of the accounts of individual employers with the industrial accident fund. The report contains, however, several tables presenting the experience of the State during the year under the workmen's compensation law.

Of the $490,569.04 received during the year 1928 on account of premiums on pay rolls and services and for policing charges, $350,136.06 was awarded in 5,267 claims, of which $60,472.10, or 17.27 per cent, was awarded for death claims; $22,707.92, or 6.49 per cent, for permanent total disability; $76,639.96, or 21.89 per cent, for permanent partial disability; $119,426.24, or 34.11 per cent, for temporary total disability; $64,034.69, or 18.29 per cent, for medical and hospital services; $6,277.75, or 1.79 per cent, for investigations; and $577.40, or 0.16 per cent, for witness fees.

A total of 2,375 new accidents was reported during 1928, of which 25 were fatal, 1 was permanent total disability, 63 were permanent partial, 1,208 were temporary total, and 1,078 required medical services only. Coal mining showed the greatest number of accidents, 16 fatal, 25 permanent partial, and 615 temporary total cases being reported in addition to 35 accidents requiring medical services only. Building work had a total of 251 accidents, in which medical services only were required for 188 cases. Oil drilling and oil refining had 213 and 173 accidents, respectively, of which 3 in oil refining were fatal. Steel structural construction showed only 19 accidents, in which medical services alone were rendered.

Amendment to English Unemployment Insurance Act

ON MARCH 13, 1929, the Government brought in an act to amend the unemployment insurance act of 1927 by continuing for another year the so-called "uncovenanted benefits." The act had provided that after a transitional period, ending in April, 1929, no insured person could claim unemployment benefit unless he had paid 30 contributions, or, in the case of disabled ex-service men, 15 contributions, to the insurance fund within two years preceding the date of application. (See Labor Review, February, 1928, p. 101.) The provision was adopted in the belief that by the end of the transitional period unemployment would have sunk to what is regarded as a normal figure, 6 per cent of the insured population, and that it would consequently be possible to reestablish the insurance fund on sound principles.

Unemployment, however, grew worse in 1928 than it had been in 1927, and by the early part of this year it had become apparent that the enforcement of the 30-contributions rule would be impracticable. On March 12, in response to an inquiry in the House as to the probable effect of enforcing the provision, the minister in charge stated that in January a sample analysis had been made of the persons aged 18 and over, numbering in all 1,092,000, with claims for benefit authorized on January 29.

> From this analysis it is estimated that the number of such persons who had paid less than 30 contributions in the two years preceding that date was about 120,000. This represents approximately the number who would have been disqualified by the 30-contributions rule if it had been fully in operation when the analysis was made. (Parliamentary Debates, March 12, 1929, p. 973.)

In view of the situation, there was no objection to the bill, which passed its second reading on March 18, and it is presumed will become law as soon as the necessary stages can be passed through.

Incidence of Prolonged Unemployment

IN CONNECTION with the proposed amendment, the Government presented the following table, based on the analysis referred to, giving the number who, on January 28, 1929, had approved claims for benefit, and showing how many of these would be disqualified if the 30-contributions rule were in effect. The figures which are taken from Parliamentary Debates, House of Commons, March 12, 1929, relate only to Great Britain and deal with insured persons aged 18 to 64.

NUMBER OF INSURED PERSONS HAVING APPROVED CLAIMS FOR BENEFIT ON JANUARY 28, 1929, AND NUMBER THEREOF WHO HAD PAID LESS THAN 30 CONTRIBUTIONS IN PREVIOUS TWO YEARS

Industry	Claims authorized for benefit, current Jan. 28, 1929	Cases where less than 30 contributions had been paid in previous two years [1]
Men:		
Coal mining	171,290	46,980
Pottery	4,700	310
Pig iron	2,980	380
Steel-melting and iron-puddling furnaces, iron and steel rolling mills, and forges	28,330	3,200
General engineering	45,620	4,920
Marine engineering	4,880	540
Construction and repair of motor vehicles, cycles, and aircraft	12,130	800
Shipbuilding and ship repairing	37,860	4,230
Cotton	17,700	1,440
Woolen and worsted	13,020	500
Boot and shoe manufacture	11,940	450
Building	132,340	8,210
Public-works contracting	33,450	5,080
Canal, river, dock, and harbor service	47,760	1,430
All other industries	356,300	33,180
Total, all industries	920,300	111,650
Women:		
Pottery	5,780	140
Cotton	33,320	1,970
Woolen and worsted	16,410	420
Other textile trades	19,250	660
Clothing trades	19,870	320
Boot and shoe manufacture	5,450	90
Distributive	20,250	940
All other industries	51,290	2,630
Total, all industries	171,620	7,170

[1] Estimated.

The figures in the second column are a fairly good indication of the relative length of depression in a given industry, and these present some interesting contrasts. Coal mining and building, for instance, show the largest numbers having approved claims for benefit, and in these industries the percentage of unemployment in Great Britain on January 21 was very similar—19.1 in coal mining and 19.8 in building. (Ministry of Labor Gazette, February, 1929, pp. 64, 65.) The proportion which would be disqualified under the 30-contributions rule, however, differs widely, being 27.4 per cent in coal mining and only 6.2 per cent in building. In other words, in the coal industry the severe depression has been so long continued that more than one-fourth of those drawing benefit at the given date had not had as much as 30 weeks of employment in two years past, while in the building industry this was true of only one-sixteenth. In fact, among the industries showing 25,000 or over in the first column of the foregoing table, only one—canal, river, etc., service—shows a smaller proportion in the second column than building. Among those with approved claims engaged in public-works contracting the proportion in the second column is 15.2 per cent; among those in the heavy metal trades, 11.3 per cent; in shipbuilding and ship repairing, 11.2 per cent; and in general engineering, 10.8 per cent.

HOUSING

Building Permits in the Principal Cities of the United States in 1928[1]

Introduction and Summary

THIS article presents a summary of a study of building permits issued in cities of the United States having a population of 25,000 and over. According to the estimate of the Census Bureau as of July 1, 1928, there were 319 cities in the United States in this population group.

On January 1 of this year schedule forms were mailed by the bureau to all of these cities except those in States where local bureaus are collecting like information. In these States the information is collected by the State and mailed to the Federal bureau. Schedules were received from 310 cities and data for these cities are shown herein. The States of Illinois, Massachusetts, New Jersey, New York, and Pennsylvania are now cooperating with the bureau in this work.

The city building officials are also heartily cooperating with the work of the bureau. In 1922 it was necessary to send agents to 33⅓ per cent of the cities from which data were collected. In 1927 only 7½ per cent of the cities were visited by the bureau's agents and in collecting the 1928 information it was necessary to send to only 6.1 per cent of the cities.

The costs shown in the following tables refer to the cost of the building only, land costs not being included. The costs are estimated by the builder at the time of applying for his permit to build and are recorded on the application. There is probably a tendency in many cases to underestimate. Some cities are stricter than others in making applicants state a true cost.

Table 1 shows the total number of new buildings and the estimated cost of each of the different kinds of new buildings for which permits were issued in the 310 cities from which schedules were received for the year 1928, the per cent that each kind forms of the total number, the per cent that the cost of each kind forms of the total cost, and the average cost per building.

[1] Earlier reports concerning building permits issued in the United States are published in Bulletins Nos. 295, 318, 347, 368, 397, 424, 449, and 469 of the Bureau of Labor Statistics; also in issues of the Labor Review for July, 1921; April, 1922; July and October, 1923; June and October, 1924; June, September, and October, 1925; June, July, and October, 1926; May, June, July, October, and November, 1927; May, June, October, and November, 1928.

TABLE 1.—NUMBER AND COST OF NEW BUILDINGS AS STATED BY PERMITS ISSUED IN 310 CITIES DURING CALENDAR YEAR 1928, BY KIND OF BUILDING

Kind of buildings	New buildings for which permits were issued				
	Number of buildings	Per cent of total	Estimated cost		
			Amount	Per cent of total	Average per building
Residential buildings					
1-family dwellings	145,322	37.7	$715,317,535	23.1	$4,922
2-family dwellings	19,963	5.2	153,157,386	4.9	7,672
1-family and 2-family dwellings with stores combined	2,625	.7	26,702,412	.9	10,172
Multifamily dwellings	12,070	3.1	776,520,458	25.1	64,335
Multifamily dwellings with stores combined	1,528	.4	90,754,524	2.9	59,394
Hotels	235	.1	114,928,650	3.7	489,058
Lodging houses	37	(1)	780,576	(1)	21,097
All others	209	.1	35,559,169	1.1	170,140
Total	181,989	47.2	1,913,720,710	61.8	10,516
Nonresidential buildings					
Amusement buildings	950	.2	84,914,600	2.7	89,384
Churches	1,009	.3	49,059,444	1.6	48,622
Factories and workshops	3,973	1.0	152,649,534	4.9	38,422
Public garages	3,839	1.0	70,690,699	2.3	18,414
Private garages	156,457	40.6	55,140,483	1.8	352
Service stations	4,520	1.2	14,913,812	.5	3,300
Institutions	304	.1	65,080,263	2.1	214,080
Office buildings	1,353	.4	256,101,159	8.3	189,284
Public buildings	243	.1	29,378,349	.9	120,899
Public works and utilities	517	.1	38,690,950	1.2	74,837
Schools and libraries	852	.2	143,519,854	4.6	168,451
Sheds	11,787	3.1	4,895,029	.2	415
Stables and barns	367	.1	583,553	(1)	1,590
Stores and warehouses	13,111	3.4	211,890,765	6.8	16,161
All others	4,158	1.1	7,710,836	.2	1,854
Total	203,440	52.8	1,185,219,330	38.2	5,826
Grand total	385,429	100.0	3,098,940,040	100.0	8,040

[1] Less than one-tenth of 1 per cent.

In the 310 cities for which reports were received for the year 1928 permits were issued for 385,429 buildings. Of this number, 181,989 buildings, or 47.2 per cent, were for residential purposes and 203,440, or 52.8 per cent, for nonresidential use.

Of the residential buildings 145,322 were 1-family dwellings; this is 37.7 per cent of the total number of new buildings for which permits were issued or 79.8 per cent of the total number of residential buildings. Two-family dwellings, the next most numerous group of residential buildings, comprised only 5.2 per cent of the total number of buildings. With the exception of private garages no other kind of building in either the residential or nonresidential group constituted as much as 5 per cent of the total number of buildings for which permits were issued.

In the nonresidential group private garages were far the most numerous kind of building. Of all buildings for which permits were issued in these 310 cities during the calendar year 1928, over 40 per cent were private garages, over 7 per cent more private garages being erected than 1-family dwellings.

Stores and warehouses ranked next after private garages in the nonresidential group and formed only 3.4 per cent of the total number of new buildings.

It will be seen from the above that out of every 100 buildings for which permits were issued in cities having a population of 25,000 or over, 78 were either 1-family dwellings or private garages.

The total estimated expenditure for new buildings in these 310 cities was $3,098,940,040 of which $1,913,720,710, or 61.8 per cent, was for residential buildings and $1,185,219,330, or 38.2 per cent, for nonresidential buildings.

The Bureau of Labor Statistics has been collecting figures concerning building permits issued for every year since 1920, and in each of these years up to 1928, 1-family dwellings accounted for the greatest expenditure of any kind of buildings. In 1928, however, the permits issued for multifamily dwellings (apartment houses) show a larger estimated expenditure than those issued for 1-family dwellings. The estimated cost of apartment houses for which permits were issued in these 310 cities during 1928 was $776,520,458, or 25.1 per cent of the expenditure for all new buildings, as compared with $715,317,535, or 23.1 per cent, for 1-family dwellings.

If we group apartment houses and apartment houses with stores we find that the expenditure for both kinds of apartment houses equaled the expenditure for 1-family dwellings and 2-family dwellings combined. Each combination comprised approximately 28 per cent of the total estimated expenditure for all buildings.

In the nonresidential group, office buildings accounted for the largest expenditure of money, $256,101,159 being expended for this class of structure. Stores and warehouses rated next in expenditures in this group, followed by factories, and schools and libraries in order. Private garages which comprise 40.6 per cent of the number of new buildings account for only 1.8 per cent of the cost.

The average cost per building of all new buildings in these 310 cities was $8,040. In residential buildings the average cost was $10,516 and in nonresidential buildings, $5,826. The average cost of nonresidential buildings, however, is "pulled down" by the inclusion of a large number of private garages and sheds. If we exclude these two classes of buildings the average cost of the remaining nonresidential buildings is $13,992 per building.

Families Provided For

TABLE 2 shows the number and per cent of families provided for by each of the different kinds of dwellings for which permits were issued in 302 identical cities during the calendar years 1927 and 1928, by kind of dwelling.

TABLE 2.—NUMBER AND PER CENT OF FAMILIES TO BE HOUSED IN NEW DWELLINGS FOR WHICH PERMITS WERE ISSUED IN 302 IDENTICAL CITIES DURING THE CALENDAR YEARS 1927 AND 1928, BY KIND OF DWELLING

Kind of dwelling	Number of new buildings for which permits were issued		Families provided for			
			Number		Per cent	
	1927	1928	1927	1928	1927	1928
1-family dwellings	164,268	143,889	164,268	143,889	39.2	36.1
2-family dwellings	25,227	19,956	50,454	39,912	12.0	10.0
1-family and 2-family dwellings with stores combined	3,329	2,620	5,399	4,276	1.3	1.1
Multifamily dwellings	13,663	12,063	179,177	190,282	42.8	47.8
Multifamily dwellings with stores combined	1,768	1,528	19,580	19,780	4.7	5.0
Total	208,255	180,056	418,878	398,139	100.0	100.0

Data were received from 302 cities for both 1927 and 1928. In these 302 cities 398,139 families were provided with dwellings in new buildings in 1928, as compared with 418,878 in 1927, a decrease of 20,739 dwelling units or 5.0 per cent in 1928 as compared with 1927.

There were 164,268 families accommodated in the new 1-family dwellings for which permits were issued in 1927 in these 302 cities. This is 39.2 per cent of the total number of families provided for during that year. In 1928, 1-family dwellings provided for 143,889 families, which was 36.1 per cent of the total number of families supplied with new dwelling places. In contrast, the number of families provided for in apartment houses increased from 179,177 in 1927 to 190,282 in 1928. In 1927, 42.8 per cent of the total number of family dwelling places for which permits were issued were in apartment houses, while in 1928 this percentage had risen to 47.8. The percentage of families supplied with residences in new 2-family dwellings decreased from 12 in 1927 to 10 in 1928.

Table 3 shows the number and percentage distribution of families provided for in the different kinds of dwellings in the 257 identical cities from which reports were received each year from 1921 to 1928, inclusive.

TABLE 3.—NUMBER AND PER CENT OF FAMILIES PROVIDED FOR IN THE DIFFERENT KINDS OF DWELLINGS IN 257 IDENTICAL CITIES, 1921 TO 1928, INCLUSIVE

Year	Number of families provided for in—				Per cent of families provided for in—		
	1-family dwellings	2-family dwellings [1]	Multi-family dwellings [2]	All classes of dwellings	1-family dwellings	2-family dwellings [1]	Multi-family dwellings [2]
1921	130,873	38,858	54,814	224,545	58.3	17.3	24.4
1922	179,364	80,252	117,689	377,305	47.5	21.3	31.2
1923	207,632	96,344	149,697	453,673	45.8	21.2	33.0
1924	210,818	95,019	137,082	442,919	47.6	21.5	30.9
1925	226,159	86,145	178,918	491,222	46.0	17.5	36.4
1926	188,074	64,298	209,842	462,214	40.7	13.9	45.4
1927	155,512	54,320	196,263	406,095	38.3	13.4	48.3
1928	136,907	43,098	208,673	388,678	35.2	11.1	53.7

[1] Includes 1-family and 2-family dwellings with stores combined.
[2] Includes multifamily dwellings with stores combined.

The trend toward apartment-house dwelling continues in full swing. This fact is amply shown by the above table. In 1921 accommodations were provided for 224,545 families in the new buildings for which permits were issued during that year. Of this number 58.3 per cent were sheltered in 1-family dwellings, 17.3 per cent in 2-family dwellings, and 24.4 per cent in apartment houses.

Seven years later, in 1928, it is found that 53.7 per cent of the 388,678 new family dwelling units were in apartment houses and only 35.2 per cent in 1-family dwellings and 11.1 per cent in 2-family dwellings.

The total number of families provided for in 1928 increased 73.1 per cent in 1928 over 1921. One-family dwellings, however, increased only 4.6 per cent in number in 1928 over 1921, while the family units provided in apartment houses in 1928 increased 280.7 per cent over those provided during 1921.

The per cent of families housed in 1-family dwellings has decreased each year from that of the preceding year, except that 1924 showed a slight increase over 1923. Apartment units have shown exactly the opposite trend; 1924 was the only year that the percentage of families housed in apartment houses was less than that of the preceding year. The percentage of families housed in 2-family dwellings reached a peak in 1924; since that year there has been a steady decline in the percentage of families housed in this class of dwelling.

Building Trend 1927 and 1928

TABLE 4 shows the number and cost of the different kinds of buildings for the 302 identical cities from which reports were received in 1927 and 1928 and the per cent of increase or decrease in the number and in the cost in 1928 as compared with 1927.

TABLE 4.—NUMBER AND COST OF NEW BUILDINGS FOR WHICH PERMITS WERE ISSUED IN 302 IDENTICAL CITIES DURING THE CALENDAR YEARS 1927 AND 1928, BY KIND OF BUILDING

Kind of building	New buildings for which permits were issued				Per cent of increase (+) or decrease (−) in 1928 compared with 1927	
	1927		1928			
	Number	Cost	Number	Cost	Number	Cost
Residential buildings						
1-family dwellings	164,268	$789,382,883	143,889	$710,900,837	−12.4	−9.9
2-family dwellings	25,227	208,578,118	19,956	153,128,386	−20.9	−26.6
1-family and 2-family dwellings with stores combined	3,329	34,978,625	2,620	26,678,912	−21.3	−23.7
Multifamily dwellings	13,663	736,830,499	12,063	776,419,458	−11.7	+5.4
Multifamily dwellings with stores combined	1,783	90,666,916	1,528	90,754,524	−14.3	+.1
Hotels	201	69,393,263	234	114,289,650	+16.4	+64.7
Lodging houses	79	1,305,302	37	780,576	−53.2	−40.2
Other	213	30,763,923	207	35,369,533	−2.8	+15.0
Total	208,763	1,961,899,529	180,534	1,908,321,876	−13.5	−2.7
Nonresidential buildings						
Amusement buildings	943	128,208,773	947	94,676,800	+.4	−34.0
Churches	1,118	58,890,438	1,002	48,852,444	−10.4	−17.0
Factories and workshops	4,181	141,307,499	3,932	152,410,564	−6.0	+7.9
Public garages	4,192	74,395,804	3,836	70,656,199	−8.5	−5.0
Private garages	181,859	65,449,178	155,478	54,921,052	−14.5	−16.1
Service stations	4,919	15,022,065	4,462	14,768,932	−9.3	−1.7
Institutions	332	75,132,340	303	65,001,863	−8.7	−13.5
Office buildings	1,271	242,853,223	1,352	255,801,159	+6.4	+5.3
Public buildings	339	47,450,619	243	29,378,349	−28.3	−38.1
Public works and utilities	593	45,389,033	516	38,670,950	−13.0	−14.8
Schools and libraries	837	155,542,100	843	142,154,423	+.7	−8.6
Sheds	13,608	5,091,261	11,658	4,869,737	−14.3	−4.4
Stables and barns	358	823,018	356	581,478	−.6	−29.3
Stores and warehouses	13,280	215,747,108	12,925	210,305,687	−2.7	−2.5
All other	4,283	7,239,146	4,127	7,703,679	−3.6	+6.4
Total	232,113	1,278,541,605	201,980	1,180,753,316	−13.0	−7.6
Grand total	440,876	3,240,441,134	382,514	3,089,075,192	−13.2	−4.7

In the 302 cities from which reports were received for both 1927 and 1928 permits were issued for 382,514 new buildings during the calendar year 1928 as compared with 440,876 during the calendar year 1927. This is a decrease, in the number of buildings, of 13.2

per cent. The estimated amount spent for the erection of the buildings for which permits were issued in 1928 was $3,089,075,192, a decrease of 4.7 per cent from the $3,240,441,134 spent during 1927.

Residential buildings decreased more in number but less in estimated expenditure than nonresidential buildings in 1928 as compared with 1927. The decrease in the number of residential buildings for which permits were issued during 1928, in these 302 cities, being 13.5 per cent over 1927, while nonresidential buildings decreased in number 13.0 per cent. In estimated costs, however, the decrease in residential buildings was only 2.7 per cent as compared with 7.6 per cent in nonresidential buildings.

All classes of residential buildings except hotels showed a decrease in the number of buildings, comparing 1928 with 1927. Hotels increased 16.4 per cent in number. The greatest decrease was in 1-family and 2-family dwellings with stores where there was a falling off of 21.3 per cent.

In estimated expenditure four classes of structures in the residential group showed a decrease and four showed an increase. The decreases ranged from 9.9 per cent in the case of 1-family dwellings to 40.2 per cent in lodging houses. The increases in estimated expenditure in this group ranged from one-tenth of 1 per cent for multifamily dwellings with stores combined to 64.7 per cent for hotels.

In the nonresidential group all classes of buildings showed a decrease in number except amusement buildings, office buildings, and schools and libraries, office buildings showing the largest increase with a gain of 6.4 per cent over 1927. The decreases ranged from six-tenths of 1 per cent for stables and barns to 28.3 per cent in the case of public buildings.

In amounts expended factory buildings, office buildings, and miscellaneous buildings showed an increase in 1928 as compared with 1927. All other nonresidential buildings showed a decrease in expenditures ranging from 1.7 per cent for service stations to 38.1 per cent for public buildings.

Per Capita Expenditure for Buildings

TABLE 5 shows the total and the per capita expenditures for new buildings, new housekeeping dwellings, repairs and additions, and for all kinds of buildings in each of the 310 cities for which reports were received for the calendar year 1928; the total number of families provided for and the ratio of families provided for to each 10,000 of population in these 310 cities; and the total expenditure for all classes of buildings in 302 cities in 1927.

In the 310 cities which reported for 1928 there was an expenditure of $3,423,584,461 for building operations of all kinds. Of this amount, $3,098,940,040 was for new buildings and $324,644,421 for repairs to old buildings. Of the amount spent for new buildings, $1,762,452,315 was for housekeeping dwellings. The expenditure for all buildings for the 302 cities which reported for 1927 was $3,593,839,405.

The per capita expenditure for the cities from which reports were received for 1928 was $76.18 for all building operations, divided as follows: $68.96 for new buildings and $7.22 for repairs; $39.22 of

the amount expended for new buildings was for housekeeping dwellings. The population of these 310 cities, as estimated by the Bureau of the Census for July 1, 1928, was 44,940,049.

The five leading cities in per capita expenditure were White Plains, N. Y., $440.15; Yonkers, N. Y., $293.64; Evanston, Ill., $276.85; Mount Vernon, N. Y., $260.74; and New Rochelle, N. Y., $230.19. All of these cities are suburban cities, four being suburbs of New York and one of Chicago. In all of these cities residential buildings accounted for the large per capita expenditure.

Following is a list of the five leading cities in total expenditure for the years 1920 to 1928, inclusive. It will be noted that the cities of New York, Chicago, Detroit, Los Angeles, and Philadelphia make up this list each year except for 1920 and 1921 when Cleveland was included and Philadelphia slumped below the leading five.

1920	
New York	$277, 695, 337
Chicago	84, 602, 650
Detroit	77, 737, 215
Cleveland	64, 198, 600
Los Angeles	60, 023, 600
1921	
New York	442, 285, 248
Chicago	133, 027, 910
Cleveland	86, 680, 023
Los Angeles	82, 761, 386
Detroit	58, 086, 053
1922	
New York	645, 176, 481
Chicago	229, 853, 125
Los Angeles	121, 206, 787
Philadelphia	114, 190, 525
Detroit	93, 614, 593
1923	
New York	789, 265, 335
Chicago	334, 164, 404
Los Angeles	200, 133, 181
Detroit	129, 719, 831
Philadelphia	128, 227, 405
1924	
New York	836, 043, 604
Chicago	308, 911, 159
Detroit	160, 547, 723
1924—Continued	
Los Angeles	$150, 147, 516
Philadelphia	141, 402, 655
1925	
New York	1,020,604,713
Chicago	373, 803, 571
Detroit	180, 132, 528
Philadelphia	171, 034, 280
Los Angeles	152, 646, 436
1926	
New York	1,039,670,572
Chicago	376, 808, 480
Detroit	183, 721, 443
Philadelphia	140, 093, 075
Los Angeles	123, 006, 215
1927	
New York	880, 333, 455
Chicago	365, 065, 042
Detroit	145, 555, 647
Los Angeles	123, 027, 139
Philadelphia	117, 590, 650
1928	
New York	916, 671, 855
Chicago	323, 509, 048
Detroit	129, 260, 285
Philadelphia	112, 225, 865
Los Angeles	101, 678, 768

During 1928 accommodations were provided in the new dwellings for which permits were issued for 399,657 families, or at the rate of 88.9 families to each 10,000 of population in these 310 cities.

Following is a list of the five leading builders of homes for each year since 1921. This list shows the number of families provided with homes in new buildings, for each 10,000 of the city's population. Four of the five for 1928 are contiguous to the great metropolitan center of New York City.

1921	
Long Beach	631. 9
Los Angeles	320. 9
Pasadena	251. 7
Shreveport	249. 8
Lakewood	191. 3

1922	
Long Beach	1, 081. 0
Los Angeles	441. 6
Lakewood	358. 9
Miami	268. 1
East Cleveland	267. 6

1923	
Long Beach	1, 038. 1
Los Angeles	657. 4
Miami	611. 1
Irvington	432. 1
Lakewood	381. 5

1924	
Miami [1]	2, 248. 9
Irvington	501. 2
Los Angeles [2]	448. 3
San Diego	378. 0
Long Beach	347. 6

1925	
Miami [1]	1, 342. 0
San Diego	392. 0
Tampa	379. 3
Irvington	374. 6
Los Angeles [2]	331. 0

1926	
St. Petersburg	700. 3
Mount Vernon	644. 7
Irvington	398. 6
White Plains	367. 2
San Diego	339. 5

1927	
Irvington	740. 5
White Plains	419. 5
Mount Vernon	414. 8
Yonkers	349. 0
East Orange	338. 1

1928	
Yonkers	347. 6
Mt. Vernon	299. 1
White Plains	298. 3
Long Beach	297. 4
Irvington	295. 4

[1] The ratio of families provided for in Miami in 1924 was based on the population as estimated by the Census Bureau for that year. In the light of the actual census taken by State enumeration in 1925, it would seem that the estimate for 1924 was below the actual population for that year, hence the ratio here shown for 1924 is probably higher than the actual population in that year would warrant.

[2] Population not estimated in 1924 or 1925; 1923 estimate used.

TABLE 5.—TOTAL AND PER CAPITA EXPENDITURES FOR NEW BUILDINGS AND FOR

City and State	Expenditure for new buildings, 1928	Expenditure for repairs and additions, 1928	Total expenditures		Expenditure for new housekeeping dwellings only, 1928
			1928	1927	
Akron, Ohio	$17,837,500	$1,647,596	$19,485,096	$20,196,088	$12,164,148
Alameda, Calif	1,994,724	136,672	2,131,396	1,536,930	1,429,224
Albany, N. Y	12,503,715	2,389,810	14,893,525	16,188,743	7,460,200
Allentown, Pa	5,484,715	450,325	5,935,040	6,588,169	3,165,000
Altoona, Pa	2,898,276	462,631	3,360,907	3,041,304	930,090
Amsterdam, N. Y	677,675	6,000	683,675	607,530	242,600
Alton, Ill	816,115	228,340	1,044,455	(3)	567,724
Anderson, Ind	2,169,014	283,819	2,452,833	2,213,382	881,550
Asheville, N. C	2,832,362	262,748	3,095,110	5,987,153	1,749,300
Ashtabula, Ohio	395,093	118,779	513,872	496,780	150,250
Atlanta, Ga	25,119,931	2,274,848	27,394,779	11,860,907	9,968,489
Atlantic City, N. J	5,786,810	1,624,032	7,410,842	5,822,864	259,265
Auburn, N. Y	356,870	158,726	515,596	843,194	159,125
Augusta, Ga	1,165,846	385,098	1,550,944	1,459,090	815,644
Aurora, Ill	2,650,700	299,772	2,950,472	2,791,528	1,561,549
Baltimore, Md	26,478,200	7,467,150	33,945,350	28,437,790	12,660,000
Bangor, Me	469,260	156,350	625,610	851,355	136,550
Battle Creek, Mich	2,686,505	184,807	2,871,312	4,751,866	752,750
Bay City, Mich	1,490,201	354,695	1,844,896	775,209	229,200
Bayonne, N. J	1,807,300	188,065	1,995,365	1,949,950	968,500
Beaumont, Tex	3,615,913	710,856	4,326,769	(3)	1,486,841
Belleville, Ill	1,014,881	6,740	1,021,621	(3)	666,000
Bellingham, Wash	1,608,105	264,213	1,872,318	1,787,110	674,000
Berkeley, Calif	5,517,950	558,676	6,076,626	6,683,068	4,107,551
Bethlehem, Pa	3,479,390	363,616	3,843,006	2,476,621	1,421,000
Binghamton, N. Y	2,762,317	694,076	3,456,393	4,290,909	1,264,421
Birmingham, Ala	12,820,664	1,403,913	14,224,577	21,786,696	7,130,335
Bloomfield, N. J	3,932,100	608,500	4,540,600	6,880,077	3,370,000
Bloomington, Ill	1,319,300	63,500	1,382,800	924,200	601,000
Boston, Mass	47,961,432	7,737,125	55,698,557	60,987,468	26,867,550
Bridgeport, Conn	3,070,524	456,098	3,526,622	5,186,712	1,945,000
Brockton, Mass	1,448,908	276,950	1,725,858	1,433,359	732,950
Brookline, Mass	5,738,345	553,077	6,291,422	5,902,440	5,065,100
Buffalo, N. Y	23,279,259	1,122,724	24,401,983	33,073,453	10,750,950
Burlington, Iowa	402,871	40,900	443,771	721,140	178,100
Butler, Pa	302,740	86,096	388,836	(3)	258,300
Butte, Mont	215,050	151,390	366,440	68,249	11,500
Cambridge, Mass	7,146,113	937,610	8,083,723	9,557,469	3,581,300
Camden, N. J	6,762,090	665,965	7,428,055	5,330,327	1,164,950
Canton, Ohio	3,083,147	579,171	3,662,318	4,156,020	2,180,850
Cedar Rapids, Iowa	1,856,631	581,599	2,438,230	2,602,622	688,940
Central Falls, R. I	230,345	73,000	303,345	798,730	92,000
Charleston, S. C	383,228	177,407	560,635	586,099	160,300
Charleston, W. Va	2,613,790	259,390	2,873,180	2,038,709	860,000
Charlotte, N. C	7,048,994	409,270	7,458,264	5,554,884	4,432,020
Chattanooga, Tenn	3,978,069	725,417	4,703,486	4,874,201	1,862,875
Chelsea, Mass	898,540	265,175	1,163,715	866,060	573,000
Chester, Pa	1,537,867	208,675	1,746,542	2,396,265	1,000,000
Chicago, Ill	315,208,908	8,300,140	323,509,048	365,065,042	174,749,900
Chicopee, Mass	1,161,265	114,300	1,275,565	1,117,110	368,300
Cicero, Ill	3,560,114	299,966	3,860,080	4,635,829	2,537,600
Cincinnati, Ohio	30,679,990	4,778,740	35,458,730	30,570,299	21,628,235
Clarksburg, W. Va	1,075,450	113,935	1,189,385	1,007,635	357,235
Cleveland, Ohio	47,017,150	9,141,375	56,158,525	45,480,550	16,247,100
Clifton, N. J	3,437,510	104,545	3,542,055	3,388,565	2,539,650
Colorado Springs, Colo	614,466	198,029	812,495	577,398	340,440
Columbia, S. C	1,347,695	262,080	1,609,775	1,533,375	1,108,000
Columbus, Ga	984,848	169,154	1,154,002	1,539,749	700,724
Columbus, Ohio	14,857,790	1,379,460	16,237,250	23,282,600	11,533,300
Council Bluffs, Iowa	701,450	108,800	810,250	930,250	261,400
Covington, Ky	1,299,400	292,350	1,591,750	1,722,310	953,200
Cranston, R. I	3,607,224	103,025	3,710,249	2,669,634	2,775,200
Cumberland, Md	924,421	75,127	999,548	942,465	284,010
Dallas, Tex	6,360,840	1,728,159	8,088,999	9,773,523	3,187,924
Danville, Ill	752,159	163,189	915,348	1,036,791	599,086
Davenport, Iowa	1,060,362	289,379	1,349,741	2,053,351	635,650
Dayton, Ohio	9,010,900	1,347,478	10,358,378	10,332,026	2,703,488

[1] Not estimated by Census Bureau.

[2] Estimate as of July 1, 1926.

REPAIRS, AND FAMILIES PROVIDED FOR, IN 310 CITIES IN THE CALENDAR YEAR 1928

City and State	Estimated population, July 1, 1928	Families provided for		Per capita expenditure, 1928				Per capita expenditure for housekeeping dwellings only, 1928
		Number	Ratio per 10,000	For new buildings	For repairs and additions	Total	Rank of city	
Akron, Ohio	(1)	2,557						
Alameda, Calif	[2] 32,400	504	155.6	$61.57	$4.22	$65.78	78	$44.11
Albany, N. Y	120,400	615	51.1	103.85	19.85	123.70	22	61.96
Allentown, Pa	99,400	556	55.9	55.18	4.53	59.71	93	31.84
Altoona, Pa	69,100	155	22.4	41.94	6.70	48.64	136	13.46
Amsterdam, N. Y	36,200	42	11.6	18.72	.17	18.89	258	6.70
Alton, Ill	[4] 26,797	167	62.3	30.46	8.52	38.98	171	21.19
Anderson, Ind	[2] 34,600	268	77.5	62.69	8.20	70.89	66	25.48
Asheville, N. C	[2] 32,000	370	115.6	88.51	8.21	96.72	40	54.67
Ashtabula, Ohio	[2] 25,500	20	7.8	15.49	4.66	20.15	254	5.89
Atlanta, Ga	255,100	3,170	124.3	98.47	8.92	107.39	27	39.08
Atlantic City, N. J	54,700	57	10.4	105.79	29.69	135.48	20	4.74
Auburn, N. Y	[4] 35,677	31	8.7	10.00	4.45	14.45	272	4.46
Augusta, Ga	56,700	318	56.1	20.56	6.79	27.35	223	14.39
Aurora, Ill	47,100	301	63.9	56.28	6.36	62.64	88	33.15
Baltimore, Md	830,400	2,884	34.7	31.89	8.99	40.88	160	15.25
Bangor, Me	[2] 26,800	38	14.2	17.51	5.83	23.34	243	5.10
Battle Creek, Mich	47,200	177	37.5	56.92	3.92	60.83	91	15.95
Bay City, Mich	49,600	57	11.5	30.04	7.15	37.20	180	4.62
Bayonne, N. J	95,300	436	45.8	18.96	1.97	20.94	250	10.16
Beaumont, Tex	56,300	540	95.9	64.23	12.63	76.85	53	26.41
Belleville, Ill	[4] 26,969	136	50.4	37.63	.25	37.88	178	24.70
Bellingham, Wash	[2] 26,300	264	100.4	61.14	10.05	71.19	64	25.63
Berkeley, Calif	71,000	1,330	187.3	77.72	7.87	85.59	47	57.85
Bethlehem, Pa	67,600	223	33.0	51.47	5.38	56.85	101	21.02
Binghamton, N. Y	74,800	306	40.9	36.93	9.28	46.21	145	16.90
Birmingham, Ala	222,400	2,589	116.4	57.65	6.31	63.96	87	32.06
Bloomfield, N. J	(1)	675						
Bloomington, Ill	[2] 30,700	90	29.3	42.97	2.07	45.04	148	19.58
Boston, Mass	799,200	6,805	85.1	60.01	9.68	69.69	67	33.62
Bridgeport, Conn	[4] 143,535	388	27.0	21.39	3.18	24.57	237	13.55
Brockton, Mass	[4] 65,343	141	21.6	22.17	4.24	26.41	229	11.22
Brookline, Mass	45,700	556	121.7	125.57	12.10	137.67	19	110.83
Buffalo, N. Y	555,800	3,181	57.2	41.88	2.02	43.90	149	19.34
Burlington, Iowa	[2] 27,100	55	20.3	14.87	1.51	16.38	266	6.57
Butler, Pa	[4] 25,230	40	15.9	12.00	3.41	15.41	267	10.24
Butte, Mont	43,600	7	1.6	4.93	3.47	8.40	288	.26
Cambridge, Mass	125,800	863	68.6	56.81	7.45	64.26	83	28.47
Camden, N. J	135,400	350	25.8	49.94	4.92	54.86	111	8.60
Canton, Ohio	116,800	374	32.0	26.40	4.96	31.36	210	18.67
Cedar Rapids, Iowa	58,200	157	27.0	31.90	9.99	41.89	157	11.84
Central Falls, R. I	[2] 25,700	44	17.1	8.96	2.84	11.80	282	3.58
Charleston, S. C	75,900	46	6.1	5.05	2.34	7.39	289	2.11
Charleston, W. Va	55,200	258	46.7	47.35	4.70	52.05	124	15.58
Charlotte, N. C	82,100	1,237	150.7	85.86	4.99	90.84	43	53.98
Chattanooga, Tenn	73,500	611	83.1	54.12	9.87	63.99	86	25.35
Chelsea, Mass	49,800	142	28.5	18.04	5.32	23.37	242	11.51
Chester, Pa	74,200	243	32.7	20.73	2.81	23.54	240	13.48
Chicago, Ill	3,157,400	34,447	109.1	99.83	2.63	102.46	32	55.35
Chicopee, Mass	45,400	102	22.5	25.58	2.52	28.10	221	8.11
Cicero, Ill	71,600	464	64.8	49.72	4.19	53.91	116	35.44
Cincinnati, Ohio	413,700	3,559	86.0	74.16	11.55	85.71	46	52.28
Clarksburg, W. Va	[2] 30,900	98	31.7	34.80	3.69	38.49	174	11.56
Cleveland, Ohio	1,010,300	3,167	31.3	46.54	9.05	55.59	107	16.08
Clifton, N. J	[2] 36,200	547	151.1	94.96	2.89	97.85	36	70.16
Colorado Springs, Colo	(1)	95						
Columbia, S. C	50,600	272	53.8	26.63	5.18	31.81	208	21.90
Columbus, Ga	46,600	321	68.9	21.13	3.63	24.76	236	15.04
Columbus, Ohio	299,000	2,477	82.8	49.69	4.61	54.31	114	38.57
Council Bluffs, Iowa	42,300	94	22.2	16.58	2.57	19.15	255	6.18
Covington, Ky	59,000	314	53.2	22.02	4.96	26.98	228	16.16
Cranston, R. I	37,500	559	149.1	96.19	2.75	98.94	35	74.01
Cumberland, Md	[2] 34,400	67	19.5	26.87	2.18	29.06	218	8.26
Dallas, Tex	217,800	1,199	55.1	29.20	7.93	37.14	181	14.64
Danville, Ill	38,800	164	42.3	19.39	4.21	23.59	239	15.44
Davenport, Iowa	[4] 52,469	140	26.7	20.21	5.52	25.72	233	12.11
Dayton, Ohio	184,500	732	39.7	48.84	7.30	56.14	102	14.65

Data not collected.

[4] State census Jan. 1, 1925.

TABLE 5.—TOTAL AND PER CAPITA EXPENDITURES FOR NEW BUILDINGS AND FOR

City and State	Expenditure for new buildings, 1928	Expenditure for repairs and additions, 1928	Total expenditures		Expenditure for new housekeeping dwellings only, 1928
			1928	1927	
Decatur, Ill	$3,906,710	$262,635	$4,169,345	$5,790,415	$1,967,500
Denver, Colo	15,113,000	1,657,750	16,770,750	15,754,600	8,249,200
Des Moines, Iowa	4,154,173	355,807	4,509,980	2,876,131	1,675,328
Detroit, Mich	117,458,340	11,801,945	129,260,285	145,555,647	66,448,106
Dubuque, Iowa	764,425	112,961	877,386	1,288,207	269,500
Duluth, Minn	2,283,368	1,006,036	3,289,404	4,431,435	947,650
Durham, N. C	9,672,888	232,950	9,905,838	2,587,754	1,582,935
East Chicago, Ind	3,126,499	355,405	3,481,904	4,304,366	950,850
East Cleveland, Ohio	1,678,961	110,291	1,789,252	1,220,620	186,000
Easton, Pa	426,339	306,669	733,008	1,299,670	202,425
East Orange, N. J	7,266,012	366,373	7,632,385	12,313,092	4,631,150
East Providence, R. I	2,972,117	117,984	3,090,101	2,389,700	1,478,025
East St. Louis, Ill	2,490,326	216,608	2,706,934	5,562,971	1,843,880
Elgin, Ill	2,013,075	356,571	2,369,646	1,891,883	1,055,570
Elizabeth, N. J	5,473,100	30,500	5,503,600	10,922,877	3,451,000
Elkhart, Ind	832,616	231,273	1,063,889	2,660,566	590,261
Elmira, N. Y	1,668,121	237,596	1,905,717	1,311,783	631,100
El Paso, Tex	1,836,814	307,411	2,144,225	1,792,561	900,426
Erie, Pa	3,846,534	917,154	4,763,688	5,393,056	2,104,500
Evanston, Ill	12,306,175	872,050	13,178,225	15,917,225	7,714,000
Evansville, Ind	4,780,090	330,724	5,110,814	3,415,998	1,488,250
Everett, Mass	1,521,858	238,901	1,760,759	2,097,830	977,600
Everett, Wash	677,590	509,000	1,186,590	[3]	262,300
Fall River, Mass	2,546,384	289,260	2,835,644	1,840,768	469,020
Fitchburg, Mass	570,115	252,235	822,350	637,975	110,500
Flint, Mich	13,112,152	1,310,577	14,422,729	22,087,451	8,495,144
Fond du Lac, Wis	493,631	85,499	579,130	1,000,179	203,000
Fort Smith, Ark	1,004,184	604,518	1,608,702	[3]	184,488
Fort Wayne, Ind	4,284,436	726,688	5,011,124	6,002,498	2,128,815
Fort Wayne, Tex	10,083,937	1,459,850	11,543,787	28,483,764	6,402,445
Fresno, Calif	1,205,652	455,913	1,661,565	2,690,578	480,645
Galveston, Tex	2,308,562	368,246	2,676,808	2,974,415	1,146,686
Gary, Ind	5,240,875	800,275	6,041,150	15,016,529	3,701,575
Grand Rapids, Mich	6,435,245	1,751,510	8,186,755	12,319,420	3,584,100
Great Falls, Mont	2,525,652	133,830	2,659,482	1,163,119	789,830
Green Bay, Wis	1,831,861	160,000	1,991,861	2,508,898	834,180
Greensboro, N. C	4,520,144	528,151	5,048,295	4,837,830	2,030,865
Greenville, S. C	1,197,452	242,691	1,440,143	1,111,182	729,547
Greenwich, Conn	5,736,745	867,635	6,604,380	5,700,062	4,559,300
Hagerstown, Md	462,200	215,034	677,234	1,558,205	300,510
Hamilton, Ohio	1,920,934	142,099	2,063,033	1,782,749	1,538,487
Hammond, Ind	6,057,980	469,300	6,527,280	6,431,200	2,759,700
Hamtramck, Mich	1,056,930	288,045	1,344,975	1,545,815	404,200
Harrisburg, Pa	4,713,635	881,140	5,594,775	3,569,365	1,214,500
Hartford, Conn	9,394,186	1,884,257	11,278,443	17,529,941	4,650,269
Haverhill, Mass	444,190	109,875	554,065	909,625	271,400
Hazelton, Pa	1,011,988	183,022	1,195,010	2,072,504	343,264
Highland Park, Mich	1,675,167	928,110	2,603,277	2,654,960	364,500
Hoboken, N. J	320,790	244,173	564,963	1,519,599	70,500
Holyoke, Mass	913,700	347,400	1,261,100	2,044,200	492,800
Houston, Tex	34,598,940	710,563	35,309,503	27,326,475	17,806,385
Huntington, W. Va	929,600	52,000	981,600	1,547,150	467,900
Hutchinson, Kans	1,067,390	201,722	1,269,112	[3]	467,270
Indianapolis, Ind	19,354,573	2,612,813	21,967,386	23,682,316	10,224,100
Irvington, N. J	6,556,253	83,041	6,639,294	12,960,227	5,021,800
Jackson, Mich	1,550,690	546,396	2,097,086	2,575,644	1,107,450
Jacksonville, Fla	6,818,590	841,569	7,660,159	12,768,386	5,263,115
Jamestown, N. Y	1,554,990	291,880	1,846,870	2,745,835	855,000
Jersey City, N. J	12,943,194	933,050	13,876,244	13,851,780	7,649,000
Johnstown, Pa	961,341	133,753	1,095,094	1,386,183	345,150
Joliet, Ill	2,773,828	307,792	3,081,620	2,793,700	1,412,900
Joplin, Mo	1,231,393	172,346	1,403,739	1,355,533	591,200

[1] Not estimated by Census Bureau. [2] Estimate as of July 1, 1926. [3] Data not collected.

REPAIRS, AND FAMILIES PROVIDED FOR, ETC., IN THE CALENDAR YEAR 1928—Con.

City and State	Estimated population, July 1, 1928	Families provided for		Per capita expenditure, 1928				Per capita expenditure for housekeeping dwellings only, 1928
		Number	Ratio per 10,000	For new buildings	For repairs and additions	Total	Rank of city	
Decatur, Ill	57,100	339	59.4	$68.42	$4.60	$73.02	59	$34.49
Denver, Colo	294,200	1,869	63.5	51.37	5.63	57.00	100	28.06
Des Moines, Iowa	151,900	406	26.7	27.35	2.34	29.69	216	11.04
Detroit, Mich	1,378,900	15,929	115.5	85.18	8.56	93.74	42	48.13
Dubuque, Iowa	42,300	67	15.8	18.07	2.67	20.74	253	6.37
Duluth, Minn	116,800	196	16.8	19.55	8.61	28.16	220	8.11
Durham, N. C	47,600	464	97.5	203.21	4.89	208.11	8	33.25
East Chicago, Ind	50,800	204	40.2	61.55	7.00	68.54	69	18.72
East Cleveland, Ohio	[2] 39,400	136	34.5	42.61	2.80	45.41	147	4.72
Easton, Pa	38,400	24	6.3	11.10	7.99	19.09	257	5.27
East Orange, N. J	65,000	968	148.9	111.78	5.64	117.42	24	71.25
East Providence, R. I	[2] 27,100	271	100.0	109.67	4.35	114.03	26	54.54
East St. Louis, Ill	74,000	501	67.7	33.65	2.93	36.58	186	24.92
Elgin, Ill	36,000	207	57.5	55.92	9.90	65.82	77	29.32
Elizabeth, N. J	(1)	1,002						
Elkhart, Ind	(1)	155						
Elmira, N. Y	50,000	120	24.0	33.36	4.75	38.11	177	12.62
El Paso, Tex	117,800	310	26.3	15.59	2.61	18.20	260	7.64
Erie, Pa	(1)	397						
Evanston, Ill	47,600	945	198.5	258.53	18.32	276.85	3	162.06
Evansville, Ind	98,100	420	42.8	48.73	3.37	52.10	123	15.17
Everett, Mass	43,300	283	65.4	35.15	5.52	40.66	162	22.58
Everett, Wash	[4] 29,303	123	42.0	23.12	17.37	40.49	164	8.95
Fall River, Mass	134,300	110	8.2	18.96	2.15	21.11	249	3.49
Fitchburg, Mass	45,200	25	5.5	12.61	5.58	18.19	261	2.44
Flint, Mich	148,800	2,221	149.3	88.12	8.81	96.93	39	57.09
Fond du Lac, Wis	[2] 26,500	59	22.3	18.63	3.23	21.85	244	7.66
Fort Smith, Ark	[4] 31,643	61	19.3	31.73	19.10	50.84	128	5.83
Fort Wayne, Ind	105,300	407	38.7	40.69	6.90	47.59	139	20.22
Fort Worth, Tex	170,600	1,758	103.0	59.11	8.56	67.67	72	37.53
Fresno, Calif	64,000	146	22.8	18.84	7.12	25.96	232	7.51
Galveston, Tex	50,600	369	72.9	45.62	7.28	52.90	121	22.66
Gary, Ind	89,100	890	99.9	58.82	8.98	67.80	71	41.54
Grand Rapids, Mich	164,200	895	54.5	39.19	10.67	49.86	133	21.83
Great Falls, Mont	[2] 30,900	260	84.1	81.74	4.33	86.07	45	25.56
Green Bay, Wis	36,100	186	51.5	50.74	4.43	55.18	109	23.11
Greensboro, N. C	51,900	446	85.9	87.09	10.18	97.27	38	39.13
Greenville, S. C	[2] 28,100	193	68.7	42.61	8.64	51.25	125	25.96
Greenwich, Conn	(1)	344						
Hagerstown, Md	[2] 32,000	82	25.6	14.44	6.72	21.16	248	9.39
Hamilton, Ohio	44,200	410	92.8	43.46	3.21	46.67	143	34.81
Hammond, Ind	56,000	698	124.6	108.18	8.38	116.56	25	49.28
Hamtramck, Mich	99,800	89	8.9	10.59	2.89	13.48	277	4.05
Harrisburg, Pa	86,900	206	23.7	54.24	10.14	64.38	82	13.98
Hartford, Conn	172,300	1,363	79.1	54.52	10.94	65.46	79	26.99
Haverhill, Mass	[4] 49,232	68	13.8	9.02	2.23	11.25	283	5.51
Hazelton, Pa	38,300	57	14.9	26.42	4.78	31.20	212	8.96
Highland Park, Mich	86,400	117	13.5	19.39	10.74	30.13	215	4.22
Hoboken, N. J	(1)	5						
Holyoke, Mass	60,400	86	14.2	15.13	5.75	20.88	251	8.16
Houston, Tex	[5] 164,954	4,463	270.6	209.75	4.31	214.06	6	107.95
Huntington, W. Va	68,600	87	12.7	13.55	.76	14.31	274	6.82
Hutchinson, Kans	(1)	146						
Indianapolis, Ind	382,100	2,511	65.7	50.65	6.84	57.49	98	26.76
Irvington, N. J	[2] 34,600	1,022	295.4	189.49	2.40	191.89	10	145.14
Jackson, Mich	63,700	250	39.2	24.34	8.58	32.92	204	17.39
Jacksonville, Fla	140,700	1,658	117.8	48.46	5.98	54.44	112	37.41
Jamestown, N. Y	46,000	169	36.7	33.80	6.35	40.15	165	18.59
Jersey City, N. J	324,700	2,155	66.4	39.86	2.87	42.74	152	23.56
Johnstown, Pa	73,700	73	9.9	13.04	1.81	14.86	271	4.68
Joliet, Ill	41,900	180	43.0	66.20	7.35	73.55	57	33.72
Joplin, Mo	(1)	151						

[4] State census Jan. 1, 1925.

[5] Estimate as of July 1, 1925.

TABLE 5.—TOTAL AND PER CAPITA EXPENDITURES FOR NEW BUILDINGS AND FOR

City and State	Expenditure for new buildings, 1928	Expenditure for repairs and additions, 1928	Total expenditures		Expenditure for new housekeeping dwellings only, 1928
			1928	1927	
Kalamazoo, Mich	$1,559,478	$475,386	$2,034,864	$2,223,046	$640,525
Kansas City, Kans	1,562,452	88,825	1,651,277	1,586,790	648,620
Kansas City, Mo	14,739,275	802,000	15,541,275	14,822,336	7,629,200
Kearny, N. J	6,115,160	136,430	6,251,590	5,795,875	2,945,000
Kenosha, Wis	3,291,659	434,745	3,726,404	4,468,453	2,484,518
Kingston, N. Y	1,020,006	716,784	1,736,790	2,140,093	683,050
Knoxville, Tenn	6,784,741	329,796	7,114,537	5,699,417	3,187,541
Kokomo, Ind	459,013	67,653	526,666	480,095	350,262
Lakewood, Ohio	4,512,046	110,050	4,622,096	3,516,399	2,172,400
Lancaster, Pa	1,528,895	860,180	2,389,075	3,004,838	839,050
Lansing, Mich	4,919,662	284,685	5,204,347	7,330,420	2,004,800
Lawrence, Mass	427,500	175,135	602,635	913,134	104,200
Lebanon, Pa	403,000	257,325	660,325	604,500	101,000
Lewiston, Me	985,000	5,000	990,000	469,100	148,000
Lexington, Ky	1,448,119	169,299	1,617,418	2,350,985	573,400
Lima, Ohio	295,217	159,217	454,434	707,313	86,100
Lincoln, Nebr	3,450,854	192,495	3,643,349	4,398,540	1,801,712
Little Rock, Ark	3,804,523	455,585	4,260,108	2,993,636	2,079,137
Long Beach, Calif	15,607,585	700,240	16,307,825	13,639,425	8,631,515
Lorain, Ohio	1,079,714	97,660	1,177,374	1,300,534	815,140
Los Angeles, Calif	91,279,946	10,398,822	101,678,768	123,027,139	60,977,127
Louisville, Ky	15,462,120	2,657,955	18,120,075	23,340,610	8,250,300
Lowell, Mass	630,805	310,945	941,750	971,115	170,600
Lynchburg, Va	916,244	176,839	1,093,083	1,528,729	499,710
Lynn, Mass	2,841,269	945,535	3,786,804	3,877,775	1,898,500
McKeesport, Pa	1,845,076	339,909	2,184,985	2,356,119	980,535
Macon, Ga	1,997,240	352,449	2,349,689	2,886,116	1,248,170
Madison, Wis	6,860,767	769,347	7,630,114	4,461,813	4,646,200
Malden, Mass	2,695,847	197,097	2,892,944	3,800,093	2,307,250
Manchester, N. H	827,360	231,359	1,058,719	1,940,074	339,625
Mansfield, Ohio	1,668,055	140,819	1,808,874	1,779,555	663,000
Marion, Ind	1,243,660	63,500	1,307,160	521,560	382,000
Marion, Ohio	1,106,345	33,940	1,140,285	557,793	439,900
Medford, Mass	4,324,637	190,196	4,514,833	4,370,512	3,689,450
Memphis, Tenn	12,223,414	2,059,625	14,283,039	12,402,920	6,100,030
Meriden, Conn	1,008,926	259,795	1,268,721	1,316,177	678,200
Miami, Fla	1,262,488	683,575	1,946,063	9,540,937	592,855
Milwaukee, Wis	31,764,594	3,641,787	35,406,381	37,747,895	19,159,269
Minneapolis, Minn	20,057,560	3,200,165	23,257,725	22,429,620	8,377,920
Mobile, Ala	3,158,310	187,508	3,345,818	2,146,241	1,690,456
Moline, Ill	1,458,440	201,335	1,659,775	1,170,010	553,084
Montclair, N. J	4,119,035	524,233	4,643,268	5,446,164	3,673,324
Montgomery, Ala	2,981,098	307,820	3,288,918	2,531,347	1,023,355
Mount Vernon, N. Y	13,650,885	611,564	14,262,449	16,775,452	10,991,935
Muncie, Ind	2,422,019	452,129	2,874,148	3,038,813	1,134,885
Muskegon, Mich	1,533,007	277,328	1,810,335	1,078,668	318,010
Muskogee, Okla	530,330	35,255	565,585	842,567	314,350
Nashville, Tenn	4,893,949	670,694	5,564,643	7,078,073	1,916,074
Newark, N. J	29,391,765	4,893,388	34,285,153	51,451,630	16,655,563
Newark, Ohio	1,038,316	28,600	1,066,916	653,822	338,300
New Bedford, Mass	808,753	286,622	1,095,375	2,166,627	281,100
New Britain, Conn	2,889,608	642,509	3,532,117	4,103,884	1,762,950
New Brunswick, N. J	1,757,670	426,395	2,184,065	2,839,066	807,925
Newburgh, N. Y	989,275	248,692	1,237,967	1,517,651	429,800
New Castle, Pa	1,358,740	107,500	1,466,240	3,037,495	938,825
New Haven, Conn	7,779,394	1,019,000	8,798,394	11,741,379	2,227,300
New London, Conn	1,919,465	269,187	2,188,652	1,801,715	1,453,400
New Orleans, La	9,858,184	2,769,494	12,627,678	15,896,775	5,305,913
Newport, Ky	259,810	167,140	426,950	439,225	185,300
Newport, R. I	564,520	115,545	680,065	906,330	309,300
Newport News, Va	600,111	219,194	819,305	548,015	347,203
New Rochelle, N. Y	10,386,272	847,046	11,233,318	9,735,614	8,639,450
Newton, Mass	10,094,405	707,673	10,802,078	10,138,606	8,986,720
New York City, N. Y	849,962,931	66,708,924	916,671,855	880,333,455	526,470,604
Niagara Falls, N. Y	4,270,153	599,325	4,869,478	4,791,480	2,447,278
Norfolk, Va	3,347,903	491,840	3,839,743	3,346,826	1,984,650
Norristown, Pa	981,025	313,940	1,294,965	1,826,101	574,000
Norwalk, Conn	4,225,963	555,740	4,781,703	3,592,009	2,371,683

[1] Not estimated by Census Bureau.

[2] Estimate as of July 1, 1926.

REPAIRS, AND FAMILIES PROVIDED FOR, ETC., IN THE CALENDAR YEAR 1928—Con.

City and State	Estimated population, July 1, 1928	Families provided for		Per capita expenditure, 1928				Per capita expenditure for housekeeping dwellings only, 1928
		Number	Ratio per 10,000	For new buildings	For repairs and additions	Total	Rank of city	
Kalamazoo, Mich	56,400	165	29.3	$27.65	$8.43	$36.08	188	$11.36
Kansas City, Kans	118,300	321	27.1	13.21	.75	13.96	275	5.48
Kansas City, Mo	391,000	1,969	50.4	37.70	2.05	39.75	169	19.51
Kearny, N. J	[2] 32,100	857	267.0	190.50	4.25	194.75	9	91.74
Kenosha, Wis	56,500	295	52.2	58.26	7.69	65.95	76	43.97
Kingston, N. Y	[2] 28,400	126	44.4	35.92	25.24	61.15	90	24.05
Knoxville, Tenn	105,400	940	89.2	64.37	3.13	67.50	73	30.24
Kokomo, Ind	40,400	82	20.3	11.36	1.67	13.04	279	8.67
Lakewood, Ohio	65,000	537	82.6	69.42	1.69	71.11	65	33.42
Lancaster, Pa	58,300	154	26.4	26.22	14.75	40.98	159	14.39
Lansing, Mich	79,600	443	55.7	61.80	3.58	65.38	80	25.19
Lawrence, Mass	[2] 93,500	32	3.4	4.57	1.87	6.45	290	1.11
Lebanon, Pa	[2] 25,300	19	7.5	15.93	10.17	26.10	231	3.99
Lewiston, Me	36,600	77	21.0	26.91	.14	27.05	227	4.04
Lexington, Ky	48,700	104	21.4	29.74	3.48	33.21	201	11.77
Lima, Ohio	49,700	19	3.8	5.94	3.20	9.14	286	1.73
Lincoln, Nebr	71,100	497	69.9	48.54	2.71	51.24	126	25.34
Little Rock, Ark	79,200	527	66.5	48.04	5.75	53.79	117	26.25
Long Beach, Calif	[6] 104,200	3,099	297.4	149.78	6.72	156.51	14	82.84
Lorain, Ohio	44,900	227	50.6	24.05	2.18	26.22	230	18.15
Los Angeles, Calif	[1]	21,081						
Louisville, Ky	329,400	1,542	46.8	46.94	8.07	55.01	110	25.05
Lowell, Mass	[4] 110,296	50	4.5	5.72	2.82	8.54	287	1.55
Lynchburg, Va	38,600	114	29.5	23.74	4.58	28.32	219	12.95
Lynn, Mass	105,500	501	47.5	26.93	8.96	35.89	189	18.00
McKeesport, Pa	50,400	203	40.3	36.61	6.74	43.35	151	19.46
Macon, Ga	61,200	321	52.5	32.63	5.76	38.39	175	20.39
Madison, Wis	50,500	542	107.3	135.86	15.23	151.09	16	92.00
Malden, Mass	53,400	718	134.5	50.48	3.69	54.17	115	43.21
Manchester, N. H	85,700	116	13.5	9.65	2.70	12.35	281	3.96
Mansfield, Ohio	[2] 32,500	127	39.1	51.32	4.33	55.66	105	20.40
Marion, Ind	[1]	158						
Marion, Ohio	[2] 33,400	172	51.5	33.12	1.02	34.14	199	13.17
Medford, Mass	52,900	745	140.8	81.75	3.60	85.35	48	69.74
Memphis, Tenn	190,200	1,887	99.2	64.27	10.83	75.09	54	32.07
Meriden, Conn	37,100	137	36.9	27.19	7.00	34.20	197	18.28
Miami, Fla	156,700	124	7.9	8.06	4.36	12.42	280	3.78
Milwaukee, Wis	544,200	4,965	91.2	58.37	6.69	65.06	81	35.21
Minneapolis, Minn	455,900	2,240	49.1	44.00	7.02	51.01	127	18.38
Mobile, Ala	69,600	638	91.7	45.38	2.69	48.07	138	24.29
Moline, Ill	35,600	109	30.6	40.97	5.66	46.62	144	15.54
Montclair, N. J	[2] 33,700	323	95.8	122.23	15.56	137.78	18	109.00
Montgomery, Ala	63,100	726	115.1	47.24	4.88	52.12	122	16.22
Mount Vernon, N. Y	54,700	1,636	299.1	249.56	11.18	260.74	4	200.95
Muncie, Ind	46,800	371	79.3	51.75	9.66	61.41	89	24.25
Muskegon, Mich	46,600	104	22.3	32.90	5.95	38.85	172	6.82
Muskogee, Okla	33,200	116	34.9	15.97	1.06	17.04	265	9.47
Nashville, Tenn	139,600	753	53.9	35.06	4.80	39.86	168	13.73
Newark, N. J	473,600	3,288	69.4	62.06	10.33	72.39	61	35.17
Newark, Ohio	[2] 30,600	108	35.3	33.93	.93	34.87	191	11.06
New Bedford, Mass	[4] 119,539	42	3.5	6.77	2.40	9.16	285	2.35
New Britain, Conn	72,800	327	44.9	39.69	8.83	48.52	137	24.22
New Brunswick, N. J	40,800	210	51.5	43.08	10.45	53.53	120	19.80
Newburgh, N. Y	30,400	74	24.3	32.54	8.18	40.72	161	14.14
New Castle, Pa	52,500	143	27.2	25.88	2.05	27.93	222	17.88
New Haven, Conn	187,900	546	29.1	41.40	5.42	46.82	141	11.85
New London, Conn	[2] 29,700	218	73.4	64.63	9.06	73.69	56	48.94
New Orleans, La	429,400	2,107	49.1	22.96	6.45	29.41	224	12.36
Newport, Ky	[1]	43						
Newport, R. I	[4] 27,757	61	22.0	20.34	4.16	24.50	238	11.14
Newport News, Va	53,300	101	18.9	11.26	4.11	15.37	268	6.51
New Rochelle, N. Y	48,800	1,205	246.9	212.83	17.36	230.19	5	177.04
Newton, Mass	57,300	939	163.9	176.17	12.35	188.52	11	156.84
New York City, N. Y	6,017,500	109,523	182.0	141.25	11.09	152.33	15	87.49
Niagara Falls, N. Y	68,300	506	74.1	62.52	8.77	71.30	62	35.83
Norfolk, Va	184,200	634	34.4	18.18	2.67	20.85	252	10.77
Norristown, Pa	36,200	96	26.5	27.10	8.67	35.77	190	15.86
Norwalk, Conn	[2] 30,100	358	118.9	140.40	18.46	158.86	13	78.79

[4] State census, Jan. 1, 1925.

[6] Estimate as of July 1, 1927.

TABLE 5.—TOTAL AND PER CAPITA EXPENDITURES FOR NEW BUILDINGS AND FOR

City and State	Expenditure for new buildings, 1928	Expenditure for repairs and additions, 1928	Total expenditures		Expenditure for new housekeeping dwellings only, 1928
			1928	1927	
Oakland, Calif	$17, 824, 002	$1, 713, 163	$19, 537, 165	$20, 518, 417	$8, 107, 443
Oak Park, Ill	9, 074, 251	216, 244	9, 290, 495	9, 080, 676	5, 265, 455
Ogden, Utah	1, 202, 325	145, 900	1, 348, 225	1, 498, 260	476, 300
Oklahoma City, Okla	12, 267, 630	1, 254, 368	13, 521, 998	12, 682, 293	8, 709, 509
Okmulgee, Okla	227, 615	25, 350	252, 965	262, 150	45, 550
Omaha, Nebr	8, 422, 073	628, 337	9, 050, 410	4, 567, 218	2, 257, 950
Orange, N. J	2, 708, 090	398, 409	3, 106, 499	5, 581, 523	1, 306, 400
Oshkosh, Wis	686, 924	165, 922	852, 846	1, 494, 076	539, 066
Ottumwa, Iowa	328, 450	65, 325	393, 775	579, 900	204, 800
Paducah, Ky	527, 590	81, 015	608, 605	356, 000	202, 735
Pasadena, Calif	5, 056, 253	893, 300	5, 949, 553	8, 965, 720	3, 347, 929
Passaic, N. J	2, 573, 057	488, 461	3, 061, 518	5, 603, 448	1, 766, 650
Paterson, N. J	6, 214, 664	1, 142, 027	7, 356, 691	6, 369, 917	2, 580, 513
Pawtucket, R. I	2, 430, 159	392, 430	2, 822, 589	3, 586, 765	1, 923, 850
Peoria, Ill	3, 411, 295	539, 965	3, 951, 260	3, 409, 575	2, 182, 500
Perth Amboy, N. J	910, 022	457, 337	1, 367, 359	1, 671, 872	432, 082
Petersburg, Va	416, 767	151, 861	568, 628	279, 466	187, 650
Philadelphia, Pa	100, 023, 155	12, 202, 710	112, 225, 865	117, 590, 650	51, 432, 580
Phoenix, Ariz	5, 604, 161	372, 501	5, 976, 662	5, 645, 124	2, 146, 922
Pittsburgh, Pa	35, 223, 329	4, 150, 203	39, 373, 532	37, 111, 332	13, 270, 969
Pittsfield, Mass	1, 657, 915	155, 215	1, 813, 130	1, 650, 690	X 1, 117, 200
Plainfield, N. J	3, 058, 148	406, 623	3, 464, 771	5, 046, 011	2, 066, 779
Pontiac, Mich	12, 637, 246	477, 980	13, 115, 226	17, 558, 296	5, 801, 365
Port Arthur, Tex	1, 646, 320	234, 916	1, 881, 236	1, 731, 380	457, 877
Port Huron, Mich	429, 450	31, 725	461, 175	839, 065	190, 550
Portland, Me	2, 218, 792	520, 094	2, 738, 886	2, 326, 783	1, 046, 350
Portland, Oreg	18, 407, 440	2, 868, 530	21, 275, 970	28, 973, 455	9, 907, 285
Portsmouth, Ohio	1, 145, 200	101, 885	1, 247, 085	1, 585, 007	615, 350
Portsmouth, Va	534, 945	153, 586	688, 531	463, 385	242, 055
Poughkeepsie, N. Y	1, 460, 119	204, 701	1, 664, 820	1, 147, 667	691, 550
Providence, R. I	13, 172, 494	2, 831, 025	16, 003, 519	23, 132, 819	7, 190, 600
Pueblo, Colo	1, 170, 983	295, 829	1, 466, 812	1, 625, 382	911, 825
Quincy, Ill	1, 096, 736	180, 221	1, 276, 957	1, 073, 321	529, 775
Quincy, Mass	6, 505, 572	364, 440	6, 870, 012	5, 231, 872	3, 695, 600
Racine, Wis	4, 134, 138	283, 351	4, 417, 489	6, 391, 171	3, 109, 193
Reading, Pa	2, 809, 366	998, 954	3, 808, 320	4, 614, 067	1, 507, 650
Revere, Mass	1, 118, 897	108, 245	1, 227, 142	1, 602, 120	942, 545
Richmond, Ind	703, 017	237, 706	940, 723	1, 826, 139	598, 342
Richmond, Va	7, 579, 286	1, 265, 595	8, 844, 881	15, 216, 203	3, 625, 166
Roanoke, Va	3, 108, 331	171, 092	3, 279, 423	2, 583, 996	1, 369, 582
Rochester, N. Y	15, 683, 912	1, 936, 886	17, 620, 798	22, 589, 418	7, 960, 709
Rockford, Ill	4, 281, 725	1, 454, 917	5, 736, 642	6, 553, 423	2, 721, 500
Rock Island, Ill	503, 515	1, 079, 729	1, 583, 244	1, 999, 890	453, 500
Sacramento, Calif	4, 674, 424	849, 908	5, 524, 332	8, 814, 211	3, 302, 972
Saginaw, Mich	3, 871, 672	477, 913	4, 349, 585	3, 610, 783	1, 469, 116
St. Joseph, Mo	1, 878, 643	125, 975	2, 004, 618	768, 898	374, 200
St. Louis, Mo	38, 215, 329	4, 613, 166	42, 828, 495	41, 417, 221	19, 228, 980
St. Paul, Minn	7, 026, 558	1, 672, 955	8, 699, 513	10, 071, 216	4, 529, 238
St. Petersburg, Fla	1, 540, 000	306, 100	1, 846, 100	2, 907, 500	828, 100
Salem, Mass	1, 323, 125	396, 560	1, 719, 685	2, 727, 080	707, 000
Salt Lake City, Utah	3, 930, 626	1, 346, 778	5, 277, 404	4, 855, 845	2, 297, 410
San Antonio, Tex	16, 732, 750	1, 567, 609	18, 300, 359	12, 190, 280	8, 661, 556
San Diego, Calif	11, 310, 940	839, 198	12, 150, 138	13, 877, 153	7, 247, 101
San Francisco, Calif	33, 822, 280	3, 682, 158	37, 504, 438	46, 448, 676	19, 944, 664
San Jose, Calif	2, 233, 010	308, 290	2, 541, 300	3, 554, 430	1, 301, 010
Savannah, Ga	2, 010, 069	127, 065	2, 137, 134	2, 180, 050	1, 429, 665
Schenectady, N. Y	2, 962, 070	466, 410	3, 428, 480	4, 318, 270	1, 669, 500
Scranton, Pa	3, 597, 993	1, 034, 250	4, 632, 243	5, 707, 115	1, 632, 495
Seattle, Wash	30, 540, 015	4, 266, 960	34, 806, 975	29, 070, 080	15, 833, 350
Sheboygan, Wis	1, 596, 165	512, 554	2, 108, 719	2, 171, 940	1, 037, 400
Shreveport, La	4, 039, 341	807, 084	4, 846, 425	3, 946, 370	2, 039, 914
Sioux City, Iowa	1, 966, 060	204, 380	2, 170, 440	1, 867, 575	1, 058, 750
Sioux Falls, S. Dak	1, 843, 540	161, 185	2, 004, 725	2, 042, 505	858, 920
Somerville, Mass	1, 203, 945	220, 252	1, 424, 197	3, 385, 850	861, 300
South Bend, Ind	6, 032, 415	330, 770	6, 363, 185	4, 888, 660	2, 951, 350

[1] Not estimated by Census Bureau.

[2] Estimate as o July 1, 1926.

REPAIRS, AND FAMILIES PROVIDED FOR, ETC., IN THE CALENDAR YEAR 1928—Con.

City and State	Estimated population, July 1, 1928	Families provided for		Per capita expenditure, 1928				Per capita expenditure for housekeeping dwellings only, 1928
		Number	Ratio per 10,000	For new buildings	For repairs and additions	Total	Rank of city	
Oakland, Calif	274,100	2,430	88.7	$65.03	$6.25	$71.28	63	$29.58
Oak Park, Ill	57,700	745	129.1	157.27	3.75	161.01	12	91.26
Ogden, Utah	39,100	157	40.2	30.75	3.73	34.48	196	12.18
Oklahoma City, Okla	7,104,080	2,637	253.4	117.87	12.05	129.92	21	83.68
Okmulgee, Okla	(1)	15						
Omaha, Nebr	222,800	412	18.5	37.80	2.82	40.62	163	10.13
Orange, N. J	36,500	281	77.0	74.19	10.92	85.11	49	35.79
Oshkosh, Wis	33,200	155	46.7	20.69	5.00	25.69	234	16.24
Ottumwa, Iowa	[2] 27,400	38	13.9	11.99	2.38	14.37	273	7.47
Paducah, Ky	[2] 26,100	94	36.0	20.21	3.10	23.32	241	7.77
Pasadena, Calif	62,100	600	96.6	81.42	14.38	95.80	41	53.91
Passaic, N. J	71,800	351	48.9	35.84	6.80	42.64	153	24.61
Paterson, N. J	144,900	748	51.6	42.89	7.88	50.77	129	17.81
Pawtucket, R. I	73,100	455	62.2	33.24	5.37	38.61	173	26.32
Peoria, Ill	84,500	437	51.7	40.37	6.39	46.76	142	25.83
Perth Amboy, N. J	50,100	104	20.8	18.16	9.13	27.29	225	8.62
Petersburg, Va	37,800	48	12.7	11.03	4.02	15.04	269	4.96
Philadelphia, Pa	2,064,200	10,576	51.2	48.46	5.91	54.37	113	24.92
Phoenix, Ariz	[2] 42,100	748	177.7	133.12	8.85	141.96	17	51.00
Pittsburgh, Pa	673,800	2,544	37.8	52.28	6.16	58.44	96	19.70
Pittsfield, Mass	50,000	211	42.2	33.16	3.10	36.26	187	22.34
Plainfield, N. J	[2] 32,500	311	95.7	94.10	12.51	106.61	30	63.59
Pontiac, Mich	61,500	1,735	282.1	205.48	7.77	213.26	7	94.33
Port Arthur, Tex	[2] 33,000	210	63.6	49.89	7.12	57.01	99	13.88
Port Huron, Mich	[2] 30,700	71	23.1	13.99	1.03	15.02	270	6.21
Portland, Me	78,600	261	33.2	28.23	6.62	34.85	192	13.31
Portland, Oreg	(1)	2,321						
Portsmouth, Ohio	41,200	169	41.0	27.80	2.47	30.27	214	14.94
Portsmouth, Va	61,600	85	13.8	8.68	2.49	11.18	284	3.93
Poughkeepsie, N. Y	39,100	96	24.6	37.34	5.24	42.58	154	17.69
Providence, R. I	286,300	1,134	39.6	46.01	9.89	55.90	103	25.12
Pueblo, Colo	44,200	372	84.2	26.49	6.69	33.19	202	20.63
Quincy, Ill	39,800	133	33.4	27.56	4.53	32.08	205	13.31
Quincy, Mass	67,600	977	144.5	96.24	5.39	101.63	33	54.67
Racine, Wis	74,400	681	91.5	55.57	3.81	59.37	95	41.79
Reading, Pa	115,400	263	22.8	24.34	8.66	33.00	203	13.06
Revere, Mass	36,000	247	68.6	31.08	3.01	34.09	200	26.14
Richmond, Ind	[2] 31,000	153	49.4	22.68	7.67	30.35	213	19.30
Richmond, Va	194,400	764	39.3	38.99	6.51	45.50	146	18.65
Roanoke, Va	64,600	364	56.3	48.12	2.65	50.77	130	21.20
Rochester, N. Y	328,200	1,862	56.7	47.79	5.90	53.69	118	24.26
Rockford, Ill	82,800	779	94.1	51.71	17.57	69.28	68	32.87
Rock Island, Ill	42,700	146	34.2	11.79	25.29	37.08	182	10.62
Sacramento, Calif	75,700	917	121.1	61.75	11.23	72.98	60	43.63
Saginaw, Mich	75,600	577	76.3	51.21	6.32	57.53	97	19.43
St. Joseph, Mo	78,500	98	12.5	23.93	1.60	25.54	235	4.77
St. Louis, Mo	848,100	7,190	84.8	45.06	5.44	50.50	131	22.67
St. Paul, Minn	[6] 250,100	773	30.9	28.09	6.69	34.78	194	18.11
St. Petersburg, Fla	53,300	172	32.3	28.89	5.74	34.64	195	15.54
Salem, Mass	43,000	120	27.9	30.77	9.22	39.99	166	16.44
Salt Lake City, Utah	138,000	731	53.0	28.48	9.76	38.24	176	16.65
San Antonio, Tex	218,100	2,784	127.6	76.72	7.19	83.91	50	39.71
San Diego, Calif	119,700	2,146	179.3	94.49	7.01	101.50	34	60.54
San Francisco, Calif	585,300	6,084	103.9	57.79	6.29	64.08	85	34.08
San Jose, Calif	45,500	370	81.3	49.08	6.78	55.85	104	28.59
Savannah, Ga	99,900	430	43.0	20.12	1.27	21.39	246	14.31
Schenectady, N. Y	93,300	269	28.8	31.75	5.00	36.75	183	17.89
Scranton, Pa	144,700	292	20.2	24.87	7.15	32.01	206	11.28
Seattle, Wash	383,200	4,658	121.6	79.70	11.14	90.83	44	41.32
Sheboygan, Wis	35,100	188	53.6	45.47	14.60	60.08	92	29.56
Shreveport, La	81,300	713	87.7	49.68	9.93	59.61	94	25.09
Sioux, City, Iowa	80,000	282	35.3	24.58	2.55	27.13	226	13.23
Sioux Falls, S. Dak	[2] 31,200	211	67.6	59.09	5.17	64.25	84	27.53
Somerville, Mass	102,700	199	19.4	11.72	2.14	13.87	276	8.39
South Bend, Ind	86,100	579	67.2	70.06	3.84	73.90	55	34.28

[6] Estimate of July 1, 1927.

TABLE 5.—TOTAL AND PER CAPITA EXPENDITURES FOR NEW BUILDINGS AND FOR

City and State	Expenditure for new buildings, 1928	Expenditure for repairs and additions, 1928	Total expenditures		Expenditure for new housekeeping dwellings only, 1928
			1928	1927	
Spokane, Wash	$4,879,063	$857,715	$5,736,778	$3,656,500	$2,244,025
Springfield, Ill	3,319,125	420,028	3,739,153	3,770,303	1,929,900
Springfield, Mass	4,956,324	1,020,475	5,976,799	8,905,819	2,776,050
Springfield, Mo	1,366,035	249,620	1,615,655	(3)	677,275
Springfield, Ohio	1,407,564	149,203	1,556,767	1,693,927	987,550
Stamford, Conn	4,009,610	1,185,668	5,195,278	6,042,716	2,244,550
Steubenville, Ohio	1,151,595	41,815	1,193,410	1,856,435	708,000
Stockton, Calif	1,411,142	363,724	1,774,866	2,803,347	809,210
Superior, Wis	1,665,705	186,447	1,852,152	1,277,019	551,850
Syracuse, N. Y	11,861,603	1,358,826	13,220,429	21,990,371	8,000,200
Tacoma, Wash	4,026,470	633,945	4,660,415	4,764,728	2,546,000
Tampa, Fla	3,042,030	575,024	3,617,054	6,145,201	1,620,260
Taunton, Mass	768,247	114,250	882,497	1,055,999	215,300
Terre Haute, Ind	605,195	368,292	973,487	1,212,771	336,050
Toledo, Ohio	14,463,296	2,882,899	17,346,195	15,513,710	6,658,125
Topeka, Kans	1,832,950	158,564	1,991,514	2,222,196	1,187,550
Trenton, N. J	3,314,867	791,054	4,105,921	4,539,632	1,172,100
Troy, N. Y	1,061,600	262,064	1,323,664	3,206,057	786,750
Tucson, Ariz	2,726,395	168,996	2,895,391	2,322,550	1,102,972
Tulsa, Okla	12,697,207	713,844	13,411,051	14,791,854	7,613,800
Union City, N. J	749,085	371,671	1,120,756	3,409,526	326,300
Utica, N. Y	3,475,465	441,505	3,916,970	3,381,105	2,140,100
Vallejo, Calif	372,488	69,359	441,847	492,898	182,950
Waco, Tex	1,997,020	294,319	2,291,339	1,573,641	631,003
Waltham, Mass	2,285,970	191,085	2,477,055	2,217,925	1,744,300
Warren, Ohio	1,667,940	143,680	1,811,620	1,425,474	1,084,830
Washington, D. C	50,284,426	3,690,553	53,974,979	39,263,477	29,601,350
Waterbury, Conn	2,944,450	543,850	3,488,300	5,015,638	1,963,500
Waterloo, Iowa	2,460,584	261,610	2,722,194	1,151,981	848,700
Watertown, Mass	2,729,425	94,670	2,824,095	4,281,230	2,246,800
Watertown, N. Y	931,030	221,419	1,152,449	756,204	278,800
West New York, N. J	1,272,875	355,510	1,628,385	1,685,293	577,000
Wheeling, W. Va	1,331,806	635,682	1,967,488	3,014,131	641,280
White Plains, N. Y	12,093,064	539,142	12,632,206	10,125,792	6,365,600
Wichita, Kans	7,323,978	650,243	7,974,221	5,848,942	3,976,615
Wichita Falls, Tex	1,315,400	596,012	1,911,412	4,050,687	900,788
Wilkes-Barre, Pa	3,233,464	662,881	3,896,345	4,934,339	753,540
Wilkinsburg, Pa	1,810,556	105,005	1,915,561	1,932,390	1,009,095
Williamsport, Pa	1,733,765	347,175	2,080,940	2,732,695	730,090
Wilmington, Del	4,447,657	1,129,452	5,577,109	6,805,900	2,307,463
Wilmington, N. C	592,500	156,000	748,500	552,125	222,000
Winston-Salem, N. C	8,001,722	529,306	8,531,028	6,539,187	3,597,360
Woonsocket, R. I	464,470	454,073	918,543	1,360,179	271,300
Worcester, Mass	5,772,236	1,488,084	7,260,320	8,814,669	2,509,535
Yonkers, N. Y	34,373,299	1,245,525	35,618,824	32,585,888	29,553,210
York, Pa	1,347,932	717,117	2,065,049	1,588,854	575,300
Youngstown, Ohio	8,108,260	529,415	8,637,675	9,007,160	5,043,935
Zanesville, Ohio	475,276	72,788	548,064	1,021,100	372,785
Total	3,098,940,040	324,644,421	3,423,584,461	3,593,839,405	1,762,452,315

[1] Not estimated by Census Bureau. [2] Estimate as of July 1, 1926.

REPAIRS, AND FAMILIES PROVIDED FOR, ETC., IN THE CALENDAR YEAR 1928—Con.

City and State	Estimated population, July 1, 1928	Families provided for		Per capita expenditure, 1928				Per capita expenditure for housekeeping dwellings only, 1928
		Number	Ratio per 10,000	For new buildings	For repairs and additions	Total	Rank of city	
Spokane, Wash	$109,100	574	52.6	$44.72	$7.86	$52.58	119	$20.57
Springfield, Ill	67,200	352	52.4	49.39	6.25	55.64	106	28.72
Springfield, Mass	149,800	647	43.2	33.09	6.81	39.90	167	18.53
Springfield, Mo	51,700	305	59.0	26.42	4.83	31.25	211	13.10
Springfield, Ohio	73,000	315	43.2	19.28	2.04	21.33	247	13.53
Stamford, Conn	43,800	331	75.6	91.54	27.07	118.61	23	51.25
Steubenville, Ohio	[2] 32,600	191	58.6	35.33	1.28	36.61	185	21.72
Stockton, Calif	51,000	226	44.3	27.67	7.13	34.80	193	15.87
Superior, Wis	(1)	136						
Syracuse, N. Y	199,300	1,561	78.3	59.52	6.82	66.33	75	40.14
Tacoma, Wash	110,500	822	74.4	36.44	5.74	42.18	156	23.04
Tampa, Fla	113,400	647	57.1	26.83	5.07	31.90	207	14.29
Taunton, Mass	40,600	60	14.8	18.92	2.81	21.74	245	5.30
Terre Haute, Ind	73,500	113	15.4	8.23	5.01	13.24	278	4.57
Toledo, Ohio	313,200	1,698	54.2	46.18	9.20	55.38	108	21.26
Topeka, Kans	62,800	304	48.4	29.19	2.52	31.71	209	18.91
Trenton, N. J	139,000	223	16.0	23.85	5.69	29.54	217	8.43
Troy, N. Y	72,300	157	21.7	14.68	3.62	18.31	259	10.88
Tucson, Ariz	[2] 27,500	336	122.2	99.14	6.15	105.29	31	40.11
Tulsa, Okla	170,500	2,187	128.3	74.47	4.19	78.66	52	44.66
Union City, N. J	64,400	84	13.0	11.63	5.77	17.40	263	5.07
Utica, N. Y	104,200	342	32.8	33.35	4.24	37.59	179	20.54
Vallejo, Calif	(1)	43						
Waco, Tex	46,600	177	38.0	42.85	6.32	49.17	135	13.54
Waltham, Mass	37,100	362	97.6	61.62	5.15	66.77	74	47.02
Warren, Ohio	[2] 36,100	306	84.8	46.20	3.98	50.18	132	30.05
Washington, D. C	552,000	4,305	78.0	91.09	6.69	97.78	37	53.63
Waterbury, Conn	(1)	504						
Waterloo, Iowa	37,100	270	72.8	66.32	7.05	73.37	58	22.88
Watertown, Mass	[2] 26,400	454	172.0	103.39	3.59	106.97	28	85.11
Watertown, N. Y	33,700	53	15.7	27.63	6.57	34.20	198	8.27
West New York, N. J	[2] 41,000	170	41.5	31.05	8.67	39.72	170	14.07
Wheeling, W. Va	(1)	125						
White Plains, N. Y	[2] 28,700	856	298.3	421.36	18.79	440.15	1	221.80
Wichita, Kans	99,300	1,207	121.6	73.76	6.55	80.30	51	40.05
Wichita Falls, Tex	(1)	222						
Wilkes-Barre, Pa	91,900	174	18.9	35.18	7.21	42.40	155	8.20
Wilkinsburg, Pa	[2] 28,000	90	32.1	64.66	3.75	68.41	70	36.04
Williamsport, Pa	44,000	169	38.4	39.40	7.89	47.29	140	16.59
Wilmington, Del	128,500	365	28.4	34.61	8.79	43.40	150	17.96
Wilmington, N. C	39,100	64	16.4	15.15	3.99	19.14	256	5.68
Winston-Salem, N. C	80,000	965	120.6	100.02	6.62	106.64	29	44.97
Woonsocket, R. I	53,400	79	14.8	8.70	8.50	17.20	264	5.08
Worcester, Mass	197,600	474	24.0	29.21	7.53	36.74	184	12.70
Yonkers, N. Y	121,300	4,216	347.6	283.37	10.27	293.64	2	243.64
York, Pa	49,900	144	28.9	27.01	14.37	41.38	158	11.53
Youngstown, Ohio	174,200	929	53.3	46.55	3.04	49.58	134	28.95
Zanesville, Ohio	[2] 30,600	138	45.1	15.53	2.38	17.91	262	12.18
Total	44,940,049	399,657	88.9	68.96	7.22	76.18		39.22

[2] Data not collected.

COOPERATION

Membership and Sales of Consumers' Cocperative Societies

THE March, 1929, issue of Cooperation, periodical of the Cooperative League of the United States of America, contains a tabulation showing for 23 of the larger consumers' cooperative societies (20 retail associations and 3 wholesales) the sales, membership, and net gain for the years 1927 and 1928. These data are reproduced in the table below. As the table shows, all of the societies had sales of more than $100,000 during the year 1928, seven had sales of more than $500,000, and three had sales of a million dollars or more.

MEMBERSHIP AND BUSINESS OF CONSUMERS' COOPERATIVE SOCIETIES, 1927 AND 1928

State and society	Membership		Income		Net gain	
	1927	1928	1927	1928	1927	1928
California:						
Fort Bragg Cooperative Mercantile Co., Fort Bragg	290	290	$159,454	$175,252	$15,568	$9,330
Illinois:						
Cooperative Trading Co., Waukegan	1,240	1,350	579,618	679,198	24,136	24,170
Massachusetts:						
United Cooperative Society, Maynard	755	686	338,488	350,000	12,589	13,395
United Cooperative Society, Fitchburg	600	600	332,746	319,322	10,949	10,425
United Cooperative Society, Norwood	200	205	113,741	110,182	1,371	1,632
Michigan:						
Soo Cooperative Mercantile Association, Sault Ste. Marie	580	585	602,847	645,862	39,886	37,011
Rock Cooperative Co., Rock	374	395	144,864	178,593	12,272	16,175
Farmers' Cooperative Trading Co., Hancock	772	772	136,091	145,121	3,544	6,685
Minnesota:						
Franklin Cooperative Creamery Association, Minneapolis	4,769	4,632	3,341,740	3,410,397	67,499	95,521
Cloquet Cooperative Society, Cloquet	1,117	1,275	516,278	545,152	16,980	17,884
Work People's Trading Co., Virginia	861	961	316,877	373,477	11,226	11,875
Nebraska:						
Farmers' Union State Exchange, Omaha (wholesale)	[1]	6,300	1,618,288	1,775,849	49,096	37,930
New York:						
Consumers' Cooperative Services, New York	2,838	3,152	530,156	611,044	34,611	34,056
Cooperative Trading Association, Brooklyn	1,968	2,114	428,121	451,070	11,730	1,733
United Workers Cooperative Association,[2] New York	1,800	[1]	202,298	413,806	11,396	9,785
Cooperative Bakeries of Brooklyn & Eastern New York, Brooklyn	1,100	1,100	394,793	371,312	4,837	1,815
Russian Workers' Cooperative Stores, Brooklyn	120	138	149,784	185,191	3,300	2,313
Amalgamated Cooperative Service Corporation, New York	133	150	[3]	152,747	[3]	3,722
Ohio:						
North Star Cooperative Store Co., Fairport Harbor	[1]	[1]	449,361	459,514	17,284	14,242
New Cooperative Co., Dillonvale	410	350	372,199	218,756	11,216	1,460
Washington:						
Grange Warehouse Co., Kent	250	250	196,163	223,290	5,947	3,293
Grange Cooperative Wholesale, Seattle	[4] 17	[4] 15	105,881	109,862	1,786	1,321
Wisconsin:						
Cooperative Central Exchange, Superior	[4] 51	[1]	1,255,676	1,517,813	18,335	[1]

[1] No data.
[2] Store department only.
[3] In operation only a short time in 1927
[4] Affiliated societies.

Development of the Credit-Union Movement in 1928

THE year 1928 was marked by a remarkable development in the credit-union movement. This is to-day perhaps the most rapidly increasing branch of the cooperative movement in the United States. Much of this growth, however, is due to the activities of the Credit Union National Extension Bureau, the National Service Relations Council of the Post Office Department, and the encouragement of some of the larger labor unions, such as the Brotherhood of Railway Clerks.

The 1928 issues of The Bridge (Boston) list 368 credit unions as having been established during that year. These are located, by States, as follows:

	Number		Number
Alabama	41	New Hampshire	3
Arkansas	1	New Jersey	7
California	12	New York	14
District of Columbia	1	North Carolina	23
Georgia	30	Ohio	2
Illinois	30	Oklahoma	1
Indiana	16	Oregon	3
Iowa	17	Rhode Island	3
Kentucky	4	Tennessee	8
Louisiana	3	Utah	3
Maine	1	Virginia	17
Massachusetts	35	West Virginia	4
Michigan	23	Wisconsin	7
Minnesota	31		
Missouri	24	Total	368
Nebraska	4		

A report (Bul. No. 9) of the director of service relations in the Post Office Department states that from October 1, 1927, to December 31, 1928, the number of credit unions among employees in the Postal Service increased from 83 to 190, a gain of 107. During the same period the membership rose from 16,257 to 25,397, the assets from $1,001,535 to $1,770,952, and the loans granted from $3,183,890 to $6,329,736.

LABOR CONGRESSES

Convention of Workers' Education Bureau, 1929

THE sixth national convention of the Workers' Education Bureau was held in Washington, D. C., April 5–7, 1929.

The opening session was addressed by William Green, president of the American Federation of Labor. He expressed the belief that a trade-unionist "is a stronger force for good if he is an educated trade-unionist." While it is desired that ideals be reached at once, human experience has shown that there is "no short cut to the millenium."

He referred to some "who would have us follow some other policy than that adopted by the American Federation of Labor in conventions assembled. Many of them are honest in their judgment, sincere in their protestations, and earnest in their enthusiastic endeavors to persuade the American Federation of Labor to follow some other course; but * * * we are not to be diverted from our fixed purpose to raise and advance, through practical, tried means and methods, the economic, social, and industrial interests of the workers of our great country."

Further on Mr. Green said:

"We are engaged in preserving our movement, not in tearing it down. We are not blind. We are endeavoring to understand the trend of the times, and while we concede to every institution the right to follow such academic policies as it may outline, we reserve to ourselves the right to withhold support, financially or otherwise, to an institution that would ridicule our philosophy, ignore it, and condemn its leaders, and thus undermine the confidence that the rank and file should have in those who lead them.

"Now, regarding education, I repeat again, if I may, that we are deeply interested in workers' education, and we do not want to restrict the workers in their examination of facts, but we want to carry to them every opportunity to equip themselves with the power of knowledge so they may succeed."

In closing his remarks Mr. Green expressed his sincere sympathy with the work of the convention and in the purposes and policies of the Workers' Education Bureau, pledging his support to that agency as follows:

> So far as I am able to help it, it will be helped. So far as I am able to raise my voice in its behalf it will be raised. And on the other hand let no man deceive himself that when foes attack us, let them be professing friends or open foes coming in the light of day or the darkness of night, whether in sheep or wolf's clothing, the voice of the American Federation of Labor will be raised and we will strike back whenever we need to do so.

In the judgment of Mr. James H. Maurer, the president of the Workers' Education Bureau since its establishment in 1921, who spoke after Mr. Green, the function of workers' education is to

"rip free the dogmas and illusions which clutter up the social sciences in order to present to the workers an understanding of social life that will make possible an analytical survey of existing institutions." He held that for the last two years the workers' education movement has been losing ground. He attributed this in part to what he regarded as a denial by the American Federation of Labor that the fundamental purpose of such education was intelligent guidance to "a new social order." [1]

Referring to the exclusion of Brookwood Labor College from continued affiliation with the Workers' Education Bureau Mr. Maurer asserted:

> If the workers' education movement, in convention assembled, will condone the suppression of one of its most successful and influential enterprises and not make effective protest to the labor movement, it may just as well fold up its tents and go home. There wouldn't be enough spirit left in the movement to keep it going for another year. [1]

Report of the Executive Committee

ON THE AFTERNOON of April 5 the report of the bureau's executive committee was submitted. This report briefly records the progress of the American worker's education movement since the last biennial convention in 1927 and summarizes some of the problems faced by the movement during that period. According to this official document such record shows greater success "in the closer linking of the workers' education movement with the needs of wage earners."

Among the subjects discussed in the section on activities of the bureau are educational advice, field and district representatives, research, publications, cooperation of the public library, cooperative book service, registry of teachers and research work, and workers' loan library.

A topical summary is given below of that part of the report which deals with the general development of workers' education in the United States.

State federations of labor.—In 1927–28 there was less activity among State federations of labor in behalf of workers' education, due in part to the severe unemployment conditions in certain localities.

> Of the States which in 1927 had educational directors, California, Colorado, Wyoming, and Pennsylvania remain. In the States of Colorado and Wyoming, however, the project for a joint director for both States suffered an interruption for a period of time with the result that the work which was being carried on has suffered. In the States of New Jersey, Massachusetts, Pennsylvania, and Oregon, and the South, there have been provisions for local educational directors who are devoting part or all of their time to this activity whose respective work has been, in many ways, notable in character.

The State federations of labor of California, Oklahoma, and Wisconsin, the committee thinks, deserve special mention for their recent outstanding efforts in the cause of workers' education, special indorsement being given by the 1928 convention of the American Federation of Labor to the successful cooperative educational activities of the University of California and the federation of labor of that State.

> The record of the past five years is a record of gratifying achievement. There has not been the slightest effort on the part of the university to exercise control

[1] New York Times, New York, Apr. 6, 1929, p. 16.

over the classes which have been started. There has been a full measure of cooperation on the part of the labor movement and the State in support of the plan. Paul Scharrenberg, secretary of the State federation, has authorized the statement that he is "fully satisfied with California plan, whereby we cooperate with the State university in labor education." The only criticism that has been raised has been the inability to arouse a larger number of workers in the State to the use of the facilities which have thus been provided.

Educational committees.—An increase is reported in the number of educational committees of central labor unions, of which there are now 270 as compared to 260 in 1927.

Labor forums.—Open labor forums have been held in the period under review by the Baltimore Labor College, the Denver Labor College, the New Haven Trades Council, and the Detroit Federation of Labor. A forum is to be established in Durham, N. C. In Ohio an ambitious plan for the development of forums has been formulated under the direction of the educational advisor of the federation of labor of that State.

Week-end conferences.—Since its 1927 convention the bureau has record of the holding of 32 week-end labor conferences in various parts of the country, seven of these being called specifically for the discussion of unemployment while several others dealt with this problem in connection with some other important subject—for example, the 5-day week, the injunction, and social insurance.

Among other subjects taken up at these week-end conferences were: Old-age pensions, youth and the labor movement, new wage policy of the American Federation of Labor, poverty, workers' education, labor organization, the menace of the unorganized, the remedy for the textile industry, the newer relationships between capital and labor, trade-union psychology, and "Do savings cause depression?"

Labor institutes.—In the summer of 1927 there were three institutes at Brookwood College, one for the United Textile Workers, one for the women's auxiliaries to trade-unions, and a third to discuss the economics of the building industry.

A week's (evening) institute for the discussion of labor problems was arranged for by the educational director of the Wyoming Federation of Labor and held at Rock Spring.

In the summer of 1928 two additional labor institutes were carried on under the auspices of the Ladies' Auxiliary of the International Association of Machinists, one being conducted at Katonah, N. Y., and the other at Atlanta, Ga.

Labor chautauquas.—The labor chautauqua was first tried out in Pennsylvania coal-mining communities. In the summer of 1927 Mr. Paul W. Fuller directed two labor chautauquas, one in Passaic and the other in Paterson, N. J., the results of which are declared "sufficiently encouraging" to include such gatherings among the methods of stimulating the interest of wage earners in labor problems.

Workers' colleges and study classes.—The executive committee still holds to its conviction of two years ago that the important nucleus of the whole movement continues to be the local nonresident study class or workers' college. The committee confesses, however, that "it is impossible for anyone to state accurately how many study classes are in session in any one year."

The total aggregate number of groups of study classes about the country in all educational groups, however, will probably not be considerably under our

estimate of two years ago. In round numbers this might represent between 30,000 and 35,000 students at the present time distributed in study groups in classes in at least 40 States of the Union. Some new States have also been added to the list. If the study class itself be taken as a unit instead of the labor college which is a collection of study classes, the number of classes would probably total approximately 250 at the present time.

Summer schools.—In addition to the labor institutes and week-end conferences conducted during the summers of 1927 and 1928, the following workers' schools were also carried on:

Summer School for Women Workers in Industry, Bryn Mawr, Pa.
Barnard Summer School for Women Workers, New York.
Colorado Workers Summer School, Denver, Colo.
Summer School for Women Workers in Industry (Middle Western), Madison, Wis.
Southern Summer School for Women Workers, Sweet Briar, Va., 1927, and Burnsville, N. C., 1928.
The League Summer School (for wage earners), Miller's Point, N. Y.
Caspar Labor Institute, Caspar, Wyo.

In 1928, under the auspices of the Southern Summer School, at Burnsville, N. C., the first interstate labor conference was held.

Resident labor colleges.—Brief accounts are given by the executive committee concerning Brookwood Labor College, Katonah, N. Y., and Commonwealth College, Mena, Ark., and in a separate section of the report the committee gives its version of the recent controversy between the American Federation of Labor and the Brookwood Labor College. (This dispute was referred to in the account of the 1928 convention of the American Federation of Labor, in the Labor Review, January, 1929, p. 106.)

Women's auxiliaries.—The three institutes held under the auspices of the Ladies' Auxiliary of the International Association of Machinists have already been referred to. The educational activities of this body of women have aroused the interest of other auxiliaries to the possibility of their undertaking a somewhat similar program. It is estimated that there are about 100,000 wives, sisters, and daughters in trade-union auxiliaries.

In Springfield, Mass., there is the Women's Economic Council which is an auxiliary educational body composed of the wives and families of trade-unionists. Lectures and social and recreational features are included in their educational program. In the beginning the Central Labor Union made a small grant to carry on the council's activities, but this outside assistance is no longer necessary as the auxiliary has now become sufficiently self-supporting to finance its own work.

Problems of American Workers' Education

Curriculum.—The committee stressed the importance of the curriculum in workers' education and referred to the recent results of the research of Edward C. Lindeman which are embodied in a pamphlet entitled "What Workers Study." The following analysis

of 1,277 workers' education courses in the United States from 1920–1927, inclusive, are taken from this publication:

NUMBER AND PER CENT OF WORKERS' EDUCATION COURSES ON SPECIFIED SUBJECTS, 1920–1927

Subject of course	Number	Per cent	Subject of course	Number	Per cent
Language and expression	383	30.0	Science and mathematics	37	3.0
Economics	215	16.8	Health, etc	20	1.5
Sociology	141	11.0	Women's interests	19	1.5
Labor and trade-unionism	136	10.6	Geography	11	1.0
Psychology	85	6.7	Philosophy	6	.5
Politics, government law	60	4.7	Miscellaneous	70	5.5
History (other than labor and economics)	54	4.2	Total	1,277	100.0
The arts	40	3.0			

Other problems.—Included in the workers' education problems in the United States were the relation of labor colleges to the labor movement, teaching methods and teacher training, textbooks and pamphlets, mass education and the radio, health education, dramatic art, and the financing of the workers' education movement.

Interest of Washington (D. C.) Public Library in Workers' Education

DR. GEORGE BOWERMAN, director of the Washington Public Library, in his address at the second session of the convention, expressed the great interest of that institution in labor schools and colleges and voiced his regret that the local workers' school had been abandoned and that there was no such school at the Capital at the present time.

Field reports were made from Passaic and Paterson, the New England area, California, the Southern Summer School, and on week-end conferences.

Amendments to the Constitution

AFTER STRONG protests from representatives of certain labor colleges the constitution of the Workers' Education Bureau was amended to provide that the majority of the members of the bureau's executive committee be elected by duly accredited delegates at large, instead of being selected or elected by certain groups such as the workers' study classes and trade-union colleges.

Israel Mufson, of the Philadelphia Labor College, had contended that the adoption of this amendment would mean the control of the Workers' Education Bureau by the international unions. A. J. Muste held that the amendment proposed in the majority report of the committee on constitution was seemingly democratic but in reality would create an autocracy unless the right of the smaller groups to select members of the executive committee was definitely safeguarded. Matthew Woll had already explained that the recommended changes in the constitution would not exclude competent representatives of study classes and labor colleges from the executive committee of the Workers' Education Committee, and pledged his support to such delegates in their efforts to secure membership on the committee if they were capable.

According to James H. Maurer, the presiding officer of the session, the proposed amendments would cause irremediable injury to the workers' education movement, and if the changes were made he would refuse to preside at future sessions.

Election of Officers

THOMAS BURKE, secretary-treasurer of the United Association of Plumbers and Steam Fitters, was elected president of the education bureau, and Spencer Miller, jr., was reelected secretary.

Dinner Session

SPEAKERS on the program at the dinner session on April 6 were Dr. L. F. Jacks, principal of Manchester College, Oxford, England; Dr. Frank Mann, president of the American Council of Education; and Theodore G. Risley, Solicitor of the United States Department of Labor; former United States Representative Edward Keating served as toastmaster.

Program of Queensland Trade-Union Congress

INDUSTRIAL and Labor Information (Geneva), in the issue of January 7, 1929, quotes from a Queensland daily paper the following program of immediate demands adopted at its fifth annual session by the Queensland Trade-Union Congress, meeting in Brisbane from October 5 to October 9, 1928:

1. That the immediate objective of the industrial movement be the 44-hour week.
2. That the immediate objective of the movement be a basic wage equal to the cost of the Piddington Commission's standard of living [£5 16s. a week] plus an amount equivalent to the average yearly increase in the productivity of the workers since that standard was fixed.
3. The abolition of all piecework, task and bonus systems in all industries.
4. The engagement of all labor through the unions based on the equalization system.
5. The repeal of the State and Federal arbitration acts, and the simplification of all wage contracts by the method of direct negotiation between employers and employees.
6. The immediate socialization and control of all banking and insurance businesses.
7. The socialization of medical services.

The congress also passed resolutions indorsing the policy of the full basic wage for workers during periods of unemployment and illness, urging special endeavors to organize foreign workers, and providing for a review of the whole industrial situation in the principal industries, with a view to reorganization of the trade-unions, forming amalgamations where possible.

INDUSTRIAL DISPUTES

Strikes and Lockouts in the United States in March, 1929

DATA regarding industrial disputes in the United States for March, 1929, with comparable data for preceding months are presented below. Disputes involving fewer than six workers and lasting less than one day have been omitted.

The bureau is dependent upon trade journals, newspapers, and labor periodicals for notices of strikes. These reports are followed up by correspondence and when necessary by personal visits of representatives of the Conciliation Service or of this bureau.

Table 1 is a summary table showing for each of the months—January, 1927, to March, 1929, inclusive—the number of disputes which began in those months, the number in effect at the end of each month, and the number of workers involved. It also shows, in the last column, the economic loss (in man-days) involved. The number of workdays lost is computed by multiplying the number of workers affected in each dispute by the length of the dispute measured in working days as normally worked by the industry or trade in question.

TABLE 1.—INDUSTRIAL DISPUTES BEGINNING IN AND IN EFFEC TAT END OF EACH MONTH, JANUARY, 1927, TO MARCH, 1929

Month and year	Number of disputes		Number of workers involved in disputes		Number of man-days lost during month
	Beginning in month	In effect at end of month	Beginning in month	In effect at end of month	
1927					
January	37	18	5,915	2,287	58,125
February	65	45	9,756	5,717	115,229
March	74	67	13,142	8,182	214,283
April	87	88	202,406	199,701	5,265,420
May	107	116	22,245	200,702	5,136,006
June	80	88	18,957	196,323	4,863,345
July	65	63	33,994	199,287	5,308,123
August	57	53	8,150	198,444	4,999,751
September	57	58	12,282	196,829	4,945,702
October	50	58	13,024	82,095	2,724,117
November	27	51	5,282	82,607	2,040,140
December	28	54	4,281	81,229	2,129,153
1928					
January	43	62	18,263	81,676	2,135,092
February	47	61	33,602	104,883	2,155,559
March	34	63	7,145	78,362	2,343,415
April	62	70	143,834	134,382	4,884,430
May	72	74	15,138	136,094	3,526,608
June	40	64	20,941	134,406	3,580,719
July	53	60	17,232	134,102	3,365,803
August	57	59	8,279	129,210	3,577,599
September	48	48	8,041	63,650	2,605,713
October	49	43	26,615	41,420	1,304,647
November	43	39	37,650	38,553	1,295,134
December	22	36	5,346	36,196	1,001,414
1929					
January	45	34	14,727	39,484	949,692
February	48	35	20,066	40,600	916,527
March	67	45	14,093	42,103	1,088,374

Occurrence of Industrial Disputes, by Industries

TABLE 2 gives by industry the number of strikes beginning in January, February, and March, 1929, and the number of workers directly involved.

TABLE 2.—INDUSTRIAL DISPUTES BEGINNING IN JANUARY, FEBRUARY, AND MARCH, 1929

Industry	Number of disputes beginning in—			Number of workers involved in disputes beginning in—		
	January	February	March	January	February	March
Bakery workers		1			9	
Brick and tile workers			2			141
Building trades	1	11	8	60	1,422	1,081
Teamsters and chauffeurs	1		5	25		157
Clothing workers	11	12	26	1,032	6,228	4,080
Furniture workers	2	1	1	295	19	37
Glass workers			1			32
Hospital employees	1			15		
Hotel and restaurant employees			1			70
Laundry workers	1	1		3,000	20	
Leather workers	1	1		25	25	
Metal trades	1	4	1	22	457	44
Mine workers	8	8	3	9,325	9,923	1,478
Motion-picture operators, actors, and theatrical workers	4	2	1	73	25	94
Oil and chemical workers			1			100
Rubber workers			2			240
Shipbuilding			1			15
Slaughtering and meat packing		1			550	
Telegraph and telephone employees			1			50
Textile workers	14	5	10	855	1,138	6,403
Miscellaneous		1	3		250	71
Total	45	48	67	14,727	20,066	14,093

Size and Duration of Industrial Disputes, by Industries

TABLE 3 gives the number of industrial disputes beginning in March, 1929, classified by number of workers and by industries.

TABLE 3.—NUMBER OF INDUSTRIAL DISPUTES BEGINNING IN MARCH, 1929, CLASSIFIED BY NUMBER OF WORKERS AND BY INDUSTRIES

Industry	Number of disputes beginning in March, 1929, involving—				
	6 and under 20 workers	20 and under 100 workers	100 and under 500 workers	500 and under 1,000 workers	1,000 and under 5,000 workers
Brick and tile workers		1	1		
Building trades	1	5	1	1	
Teamsters and chauffeurs	1	4			
Clothing workers	1	12	12		1
Furniture workers		1			
Glass workers		1			
Hotel and restaurant workers		1			
Metal trades		1			
Mine workers			1	2	
Motion picture operators, actors, and theatrical workers		1			
Oil and chemical workers			1		
Rubber workers		1	1		
Shipbuilding	1				
Telegraph and telephone employees		1			
Textile workers		3	1	3	3
Miscellaneous	2	1			
Total	6	33	18	6	4

In Table 4 are shown the number of industrial disputes ending in March, 1929, by industries and classified duration.

TABLE 4.—NUMBER OF INDUSTRIAL DISPUTES ENDING IN MARCH, 1929, BY INDUSTRIES AND BY CLASSIFIED DURATION

Industry	Classified duration of strikes ending in March, 1929					
	One-half month or less	Over one-half and less than 1 month	1 month and less than 2 months	2 months and less than 3 months	3 months and less than 4 months	5 months and less than 6 months
Bakery workers			1			
Brick and tile workers		1				
Building trades	6	3	2			
Teamsters and chauffeurs	2					
Clothing workers	15	1		2		
Furniture workers	1					
Glassworkers	1					
Hotel and restaurant workers	1					
Metal trades	1				1	1
Mine workers	2	1				
Motion-picture operators, actors, and theatrical workers	1		3			
Rubber workers	2					
Slaughtering and meat packing			1			
Telegraph and telephone employees	1					
Textile workers	6					
Miscellaneous	1					
Total	40	6	7	2	1	1

Principal Strikes and Lockouts Beginning in March, 1929

Anthracite miners, Pennsylvania.—The Glen Alden Coal Co., of Scranton, was affected by a strike of 803 employees, beginning March 7, because of a disagreement involving the laying off of a motor runner. Work was resumed on March 9 with the understanding that the case would be handled by the "board of conciliation and the umpire," if the union committee insisted on its claim that "a motorman from another section of the colliery should have been laid off instead of the one in the section where the work had decreased."

Textile workers (rayon), Tennessee.—Following a strike which began March 12, of 800 workers employed by the American Glanzstoff Corporation, Elizabethton, the president of the company on March 13 ordered the plant closed indefinitely. This plant employs about 2,000 workers of both sexes. At a conference with the president of the company, the committee representing the strikers asked for wage increases ranging, it is said, from 15 to 30 per cent above the existing scale.

On March 18 several hundred strikers were picketing the streets and highways leading to both the American Glanzstoff plant and the adjoining plant of the American Bemberg Corporation. The plant was closed, however, for several days because of the local unrest. Operations at this plant, which employs about 3,000 persons, were fully resumed on March 28.

The strike began as a protest against low wages, but developed into a fight for union recognition also.

The strike at the Glanzstoff plant ended on March 22, shortly after noon, when an agreement between plant officials and workers' committees was ratified at a mass meeting of strikers. The agree-

ment provides that the wage scale for men employees at the Glanzstoff plant will be the same as that prevailing at the Bemberg plant prior to March 18, which is said to be an average increase of about 20 per cent. Woman employees are to receive 18 cents an hour for the first three weeks, 20 cents for the next three weeks, and 22 cents thereafter until efficiency brings them to a 24-cent rate. This scale is also represented as an increase.

Employees are to resume work under the open-shop plan, but there is to be no discrimination against members of the newly formed union.

Shirt makers, New York.—A successful strike of approximately 1,000 shirt makers in New York City is reported to have begun on March 13 against some 47 shops, as a protest against the practice of the manufacturers in having goods made up "out of town" where labor was cheaper, alleging violation of contract. The strike ended by April 5.

Textile workers, South Carolina.—A series of strikes by cotton-textile workers began during March in South Carolina against a new efficiency system, variously described as the Bedeaux system,[1] the stretched-out or stretch-out system, the classification or extended system, the minute system, etc. The more important of these strikes so far recorded are described below, according to location.

Ware Shoals: The 1,200 employees of the Ware Shoals Manufacturing Co. quit work on March 15 in protest against the "Bedeaux" or "minute system." They returned to work on March 18 following the promulgation of a statement by the president of the company reading as follows:

> To the people of Ware Shoals: In the matter of our difference at this time, I am authorizing Mr. Cobb, Mr. Gary, Mr. Lollis, Mr. Clark, and Mr. Calles to advise you that our mill will open to-morrow morning. Any system adopted will be under their complete supervision, and the system adopted will be for the best interest of the company and our people, in fairness to all. Any necessary adjustments will be promptly made.

The employees promptly accepted this statement as meaning a return to the old method of operation.

Pelzer: Here 1,093 employees of the Pelzer Manufacturing Co. were on strike from March 23 to March 25 against the "classification or stretched-out system." The company agreed to return to the old method of operation and wages.

Greenville: About 1,200 employees of the Brandon Mills began a strike on March 27 against the efficiency or "stretch-out system," which is described as a method for the extension of the employee's duties to include more machines and more work, without a corresponding increase in earnings. In fact, the new system, according to press reports, sometimes resulted in a positive decrease in earnings.

The employees of the Poinsett Mills to the number of about 400, also 125 employees of the Brandon duck mill, struck on the afternoon of March 29.

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[1] The Bedeaux system has been described as a plan which provides for a supervisory bonus above standard, so that it, together with that for direct labor, equals a piece rate. In other words, any saving in earnings is divided between direct and indirect labor responsible for it in a ratio of 3 to 1. Below standard the day wage is guaranteed. The basis is a point called Bedeaux or "B." This is merely an amount of work assigned to one-sixtieth of an hour, or to the minute. Rate of pay is also reduced to a minute basis and a task is always indicated as 60 B's times hours per day. It is claimed that this B unit permits measurement of efficiency between departments and plants. It is said to be a system which provides a bonus to the supervisory heads of all departments and other nonproducers which is earned by the man or woman doing the actual work and that for every point earned the employee gets three-fourths and the boss one-fourth, or 25 per cent.

The foregoing mill units are controlled by the Brandon Corporation, which also controls the Woodruff Cotton Mills at Woodruff, S. C., where, it is understood, the workers also struck, making the total number of employees of this corporation on strike, 2,400. These strikes are still in progress, as the management has declined to abolish the so-called efficiency systems. The strike at Woodruff, however, did not begin until the morning of April 1.

Central: The Issaqueena Mill was affected by a brief strike involving 500 employees. The strike began March 29 as a protest against the so-called efficiency system. Work was resumed on March 30 under the old method.

The findings of a committee of the South Carolina House of Representatives, according to press reports, were that "the whole trouble in the textile area where strikes have occurred has been brought about by putting more work on the employees than they can do. The stretch-out system is not brought into play by the introduction of any improved type of machinery—the strike, we find, is in no sense a rebellion against improved textile machinery."

> In the "stretch-out" system it is the employee who does the stretching. * * *
> To illustrate. In a card room in one mill five section men were employed at $23 per man per week. This force was cut to four men and the pay also cut to $17.25 per week per man. Still later this force was reduced to three and the pay was raised a little, to $20.23 per man per week.
> In a spinning room three men did the work at 20 cents an hour. The force was cut to two men and the pay was raised to 21½ cents per hour. The work of one man was dispensed with.
> In one mill six sweepers were employed on the day shift. Two were laid off, and four did the work, but there was no increase in pay for the four.
> There were three sweepers in a spinning room, the pay being $1.90 each. The force was cut to two sweepers and the pay raised to $2.05.
> In one mill the man who had formerly operated 24 looms was given 114 to care for. When running 24 looms he received $18.91. When running 114 he received $23 per week.
> We could give other instances, showing what this "stretch-out" system means. This additional work, we find, without commensurate increase in pay, has brought about the protest which has taken the form of walkouts.
> The walkouts are the culmination of protests. They are the final weapons of defense which the workers have employed.

Where the "stretch-out" systems have not been introduced, the committee is reported to have found harmony prevailing, with the most cordial relation between employer and employee.

Textile (rayon) workers, Ohio.—Misunderstanding of a new method of twisting including a new piecework rate gave rise to a strike of 650 female employees of the Industrial Rayon Corporation, Cleveland, from March 26 to April 2. The workers accepted the proposed change in piece rates from 8¼ cents a pound for rayon handled to 6 cents a pound, under a guaranty, it is said, from the company that their earnings would be as much for the ensuing two weeks as they had previously been under the old scale. "The machines are to be slowed down so that one girl can handle 93 spindles instead of 63 as formerly. At the end of two weeks the company agreed to consult with the women as to whether the new plan is feasible."

Principal Strikes and Lockouts Continuing into March, 1929

Textile workers, New Hampshire.—The suspension of operations of the Newmarket Manufacturing Co., Newmarket, is still on. The

company has announced the intention of reopening the plant on April 15, and if a sufficient number of workers to operate the mill is not secured within a reasonable time a large proportion of the mill machinery will be removed from Newmarket and the remainder will be either shut down or operated as shall seem advisable to the management.

Supplement: So few employees reported for work after the reopening of the plant on April 15 that the company decided to close the mills for an indefinite period; notices to this effect were posted on April 21 and the former employees have been notified to vacate the houses owned by the company.

Shoe workers, Ohio.—No report has been received of the ending of the strike beginning February 15 against the United States Shoe Co., Cincinnati, but is understood that by April 22 the company had filled the places of the strikers "as desired and required."

Conciliation Work of the Department of Labor in March, 1929

By Hugh L. Kerwin, Director of Conciliation

THE Secretary of Labor, through the Conciliation Service, exercised his good offices in connection with 46 labor disputes during March, 1929. These disputes affected a known total of 30,750 employees. The table following shows the name and location of the establishment or industry in which the dispute occurred, the nature of the dispute (whether strike or lockout or controversy not having reached the strike or lockout stage), the craft or trade concerned, the cause of the dispute, its present status, the terms of settlement, the date of beginning and ending, and the number of workers directly and indirectly involved.

On April 1, 1929, there were 35 strikes before the department for settlement and in addition 19 controversies which had not reached the strike stage. The total number of cases pending was 54.

LABOR DISPUTES HANDLED BY THE UNITED STATES DEPARTMENT OF LABOR THROUGH ITS CONCILIATION SERVICE, MARCH, 1929

Company or industry and location	Nature of controversy	Craftsmen concerned	Cause of dispute	Present status and terms of settlement	Duration		Workers involved	
					Beginning	Ending	Directly	Indirectly
					1929	1929		
Shoe factories, Lynn, Mass.	Strike	Lasters and stock fitters.	Asked 20 per cent increase, 8-hour day, and union recognition.	Partial adjustment. Returned; allowed recognition and wage rates fixed.	Mar. 1	Mar. 3	1,800	
Cleveland Furniture Co., Cleveland, Ohio.	do	Upholsterers	Refusal to renew contract	Pending	Jan. 24		140	
Structural-iron workers, Pittsburgh, Pa.	Threatened strike.	Ironworkers	Asked $1 per day increase—$13 for 8-hour day.	Adjusted. Allowed $12 per day; small changes in working conditions.	Mar. 1	Mar. 2	500	
Metropolitan Garment Co., Boston, Mass.	Strike	Waterproof-garment makers.	Alleged violation of agreement.	Adjusted. Referred to arbitration	Jan. 2	Mar. 5	20	
Goldberg Bros. Co., Philadelphia, Pa.	do	Upholsterers	Reduced force causing increased labor without increase in pay.	Pending	Mar. 7		20	
Real Silk Co., Paterson, N. J.	do	Silk weavers	Wage cut of 14 per cent	do	Mar. 4		49	
Gelles Neckwear Co., Boston, Mass.	Controversy	Neckwear workers	Poor workmanship	Adjusted. Work done over by employees.	Mar. 5	Mar. 6	10	
Shamokin & Treverton Bus Co., Shamokin, Pa.	Strike	Drivers and mechanics.	Discharge of employee for absence without leave.	Adjusted. All returned; settled by arbitration.	Mar. 7	Mar. 10	25	10
Bersted Manufacturing Co., Chicago, Ill.	do	Metal polishers	Wages cut from $1.10 to 90 cents per hour.	Pending	Mar. 1		10	
Apartment building, The Bronx, N. Y.	do	Laborers	Nonunion laborers	Unclassified. All union laborers employed before arrival of commissioner.	Feb. 5	Mar. 4	47	
Northwest National Bank, Minneapolis, Minn.	Controversy	Building crafts	Asked that all union laborers be employed.	Pending	Feb. 26		(1)	
Shell Oil Co., Sacramento, Calif.	do	Employees	Alleged failure to pay prevailing wage.	do	Mar. 8		200	500
United States Gypsum Co., Oakfield, N. Y.	Strike	Gypsum miners	Discharge of 40 miners for failure to load quota of rock.	Partial adjustment. Majority returned; no change in conditions.	Mar. 2	Mar. 28	150	30
Floyd Wells Stove Co., Royersford, Pa.	do	Stove molders	Employee discharged	Unclassified. Returned before arrival of commissioner; international officers to review case.	Mar. 6	Mar. 13	250	45
Modern Shoe Co., Haverhill, Mass.	do	Shoe workers	Alleged violation of agreement and asked restoration 10 per cent cut.	Adjusted. Allowed union recognition; conditions improved.	Mar. 13	Mar. 28	350	
Carpenters and sheet metal workers, Jamestown, N. Y.	Controversy	Carpenters and sheet-metal workers.	Jurisdiction of metal-door work.	Unclassified. Controversy over metal-door work continues.	do	Apr. 1	(1)	
Shirt makers, New York City	Strike	Shirt makers	Alleged violation of contract	Adjusted. Will fully abide by contract.	do	Mar. 23	1,000	4,000

Vitrified-brick workers, East Liverpool, Ohio.	do	Vitrified brickmakers	Working conditions	Unclassified. Plant closed; conferences refused by company.	Mar. 12	Mar. 15	(1)	
Owens Shoe Factory, Lynn, Mass	do	Lasters	Asked union recognition and increase in wages for piecework.	Pending	Mar. 14		25	
Castro, Alhambra, and Royal Theaters, San Francisco, Calif.	Lockout	Musicians	Discharges; alleged violation of agreement.	do	Mar. 17		15	10
American Glanzstoff Corporation, Elizabethton, Tenn.	Strike	Rayon textile workers.	Protest against low minimum wage.	Adjusted. Allowed increase; no discrimination; open shop effective.	Mar. 12	Mar. 22	2,140	2,750
Lafayette College Building, Easton, Pa.	do	Building crafts	Nonunion ironworkers	Adjusted. Agreed to employ union ironworkers.	Mar. 8	Mar. 27	4	15
Glen Alden Coal Co., Taylor, Pa	do	Miners	Working conditions	Unclassified. Returned before arrival of commissioner; district committee to fix terms.	Mar. 7	Mar. 11	800	
Wellwood Silk Mills, Hawley, Pa	do	Silk weavers	Asked restoration of wage cut and resinstatement of discharged employee.	Unclassified. Returned on employer's terms.	Mar. 11	Mar. 14	35	115
I. Kravitz Silk Co., Paterson, N. J	do	do	Asked wage increase and improved shop conditions.	Adjusted. Allowed 1 cent and 2 cents per yard increase.	Mar. 14	Mar. 18	54	7
Logan & Bryant, brokers, United States and Canada.	do	Telegraphers	Installation of printing machines; operators claimed wages cut thereby.	Pending	Mar. 18		91	
Rutherford Co., Akron, Ohio	do	Carpenters and engineers.	Asked closed shop	Unclassified. Company conceded closed shop before arrival of commissioner.	Mar. 1	Mar. 8	30	
T. & D. Theaters, Chico, Orville, etc., Calif.	do	Theater employees	Alleged violation of contract	Pending	Mar. 18		120	150
Longshoremen, Buffalo, N. Y	Controversy	Longshoremen	Working conditions	do	Mar. 20		(1)	
Dan Palter Shoe Co., New York City.	Strike	Shoe workers	Asked wage increase and recognition.	Unclassified. Allowed union recognition and 5 per cent wage increase before arrival of commissioner.	Mar. 1	Mar. 15	250	
American Bemberg Corporation, Elizabethton, Tenn.	do	Textile workers	Asked wage increase	Adjusted. Allowed increase; no discrimination; open shop effective.	Mar. 18	Mar. 21	3,000	
Colonial Shoe Manufacturing Co., Brooklyn, N. Y.	do	Shoe workers	Wages and recognition	Unclassified. Increases allowed; union agreement until Mar. 1, 1930.	Mar. 14	Mar. 20	90	
Wm. Goldstein (Inc.), New York City.	do	do	Asked union recognition	Unclassified. Union agreement signed.	Mar. 12	Mar. 17	120	
Lackawanna Terminal, Hoboken, N. J.	do	Dredgemen, dock builders, laborers, and hoisting engineers.	Nonunion laborers employed	Pending	Mar. 18		200	400
Beaver Avenue Church, Des Moines, Iowa.	do	Lathers and carpenters.	Jurisdiction of certain work	Adjusted. Neither craft will perform labor until international officers make award.	Mar. 21	Mar. 23	5	70
Wilkes-Barre Weaving Co., Wilkes-Barre, Pa.	do	Silk weavers	Asked 8-hour day, 30 per cent increase, and improved working conditions.	Pending	Mar. 23		90	

[1] Not reported.

LABOR DISPUTES HANDLED BY THE UNITED STATES DEPARTMENT OF LABOR THROUGH ITS CONCILIATION SERVICE, MARCH, 1929—Con.

Company or industry and location	Nature of controversy	Craftsmen concerned	Cause of dispute	Present status and terms of settlement	Duration		Workers involved	
					Beginning	Ending	Directly	Indirectly
					1929	1929		
Dufwin Theater, Portland, Oreg.	Controversy	Engineers	Employment of engineers	Adjusted. Disputed questions withdrawn.	Mar. 26	Mar. 30	21	31
New England Southern Manufacturing Co., Pelzer, S. C.	Strike	Weavers and spinners.	Objection to new system increasing number of looms to operative.	Adjusted. System dropped; will use old method.	do	Mar. 27	2,500	
Industrial Rayon Corporation, Cleveland, Ohio.	do	Twisters and lacers	Proposed wage cut 2½ cents per pound; increased number of spindles.	Adjusted. Returned for trial of company's terms.	do	Apr. 2	450	950
Brandon Mills, Greenville, S. C.	do	Carders, spinners, and weavers.	Wages and methods	Pending	Mar. 27		1,200	900
Underwood, Elliott, Fisher Co., Hartford and Bridgeport, Conn.	Controversy	Metal polishers	Wages	Unclassified. Increase of 5 cents per hour to polishers and 6 cents to buffers.	Mar. 12	Mar. 25	200	4,000
L. O. Bouquin Co., Oil City, Pa.	Lockout	Painters	Asked $1.10 per hour and 40-hour week.	Adjusted. Allowed 8-hour day, 40-hour week, and adjusted wage scale.	Mar. 22	Mar. 29	61	
Building trades, Fort Wayne, Ind.	Controversy	Building crafts	Nonunion carpenters employed.	Adjusted. Union carpenters employed.	Mar. 15	Mar. 25	26	224
Strour & Stritter, Lynn, Mass.	Strike	Cutters, stock fitters, and lasters.	Asked union recognition and wage increase.	Pending	Mar. 24		300	
Fair Sex Shoe Co., Lynn, Mass.	do	do	do	Adjusted. Granted wage increase and union recognition.	Mar. 4	Mar. 7	125	
Stutz Plant addition, Indianapolis, Ind.	do	Painters, cement finishers, etc.	Jurisdiction	Adjusted. Compromised; cement finishers paid for time lost.	Mar. 25	Mar. 29	10	10
Total							16,533	14,217

Presidential Emergency Board for Dispute on Texas & Pacific Railroad

ON March 29, 1929, the President of the United States issued a proclamation creating an emergency board to investigate a dispute between the Texas & Pacific Railroad and its conductors, trainmen, engineers, and firemen. The membership of the board is as follows: James R. Garfield, Cleveland, Ohio; Chester H. Rowell, Berkeley, Calif.; Walter C. Clephane, Washington, D. C.; William Rogers Clay, Frankfort, Ky.; and F. H. Kreismann, St. Louis, Mo.

Of the seven cases presented to the board at the opening of the session, one was withdrawn by consent of both sides and two were settled during the hearing by agreement.

The most important of the four remaining cases is the compensation of employees who suffered financial loss by reason of being compelled to vacate homes owned by them in Longview and Marshall through the removal of the terminals to Mineola, Tex., and Shreveport, La. In this case the board finds that "the loss should be borne equally by the carrier and the employees," and recommends that the claims should be settled in conference or, in case of a disagreement, by arbitration.

Pooling of cabooses in all freight service out of the new terminal at Mineola was opposed by the employees. The board finds that "the agreement as claimed by the employees is in force and that the pooling of cabooses, except in emergencies, should not be made other than by agreement between the parties."

In the assignment of passenger-engine crews to run through from Fort Worth to Texarkana, a distance of 249 miles, eliminating the break at Longview Junction, the board "is convinced that the run is excessive and should be abolished."

Application of Texas & Pacific wage schedules and the interchange of seniority rights for men in the train service of the five branch lines owned by the company was requested by the employees. The board is of the opinion that all matters in dispute between the employees on the subsidiary lines and the managers of those lines should be negotiated, using the existing rates and schedules and operating rules as a basis for any modification or changes that may be requested by the employees or their representatives or by the managers of the subsidiary lines.

The board transmitted its report to the President April 20. Following the report of the board both parties are forbidden to change existing conditions, except by mutual agreement, for a further period of 30 days.

Strikes and Lockouts in Canada, 1928

THE statistical record given below of strikes and lockouts in Canada from 1913 to 1929 is taken from the Canadian Labor Gazette for February, 1929 (p. 137).

STRIKES AND LOCKOUTS IN CANADA, 1913 TO 1928

Year	Number of disputes		Disputes in existence in the year		
	In existence in the year	Beginning in the year	Employers involved	Workers involved	Time loss in working days
1913	113	106	1,015	39,536	1,287,678
1914	44	40	205	8,678	430,054
1915	43	38	96	9,140	106,149
1916	75	74	271	21,157	208,277
1917	148	141	714	48,329	1,134,970
1918	196	191	766	68,489	763,341
1919	298	290	1,913	138,988	3,942,189
1920	285	272	1,273	52,150	886,754
1921	145	138	907	22,930	956,461
1922	85	70	569	41,050	1,975,276
1923	91	77	419	32,868	768,494
1924	73	63	415	32,494	1,770,825
1925	83	81	510	25,796	1,743,996
1926	77	73	598	24,142	296,811
1927	79	72	652	22,683	165,288
1928	101	97	726	18,239	238,132

In an analysis of the 1928 industrial disputes it is stated that most of the time loss in the year in question was due to 21 of these controversies, involving from 250 to 1,500 directly affected workers; that is, to employees on strike or locked out. One controversy, while directly involving only 450 employees, indirectly affected nearly 6,000 as a result of the shutdown of the establishment. One dispute alone, that of the coal miners at Wayne, Alberta, caused a loss of 51,000 days, or 21.4 per cent, of the entire time loss of the year.

Nearly 39 per cent of the disputes continued for less than 5 days and 62 per cent for less than 15 days.

In 1928 the highest percentages of time loss occurred in the following industries: Mining, 36.5 per cent; building, 32.7 per cent; clothing manufacture, 6.7 per cent; rubber manufacture, 6.4 per cent; and logging, 5.3 per cent.

Of the 101 disputes in the year under review, 46 were mainly concerned with wage changes—28 with the purpose of securing increases and 10 in opposition to proposed reductions. In 9 of these 46 controversies the workers were successful and in 18 partially so, while 4 cases were indefinite or unterminated.

In 29 of the 101 disputes the results were favorable to the workers. In 30 other cases, however, the workers met with only partial success, while 7 cases were indefinite or unterminated.

WAGES AND HOURS OF LABOR

Wages and Hours in the Motor-Vehicle Industry, 1928

SUMMARIES of a study in 1928 by the Bureau of Labor Statistics of wages and hours of labor in the motor-vehicle industry in the United States are presented in this article. Studies were also made in 1922 and 1925 and the details of the results were published in Bulletins 348 and 438. The details of the 1928 study will be available later in bulletin form.

The 1928 data for the industry as a whole are for 153,962 wage earners of 94 representative manufacturers of passenger cars, trucks, bodies or parts in 8 States in which the industry is of sufficient importance in number of wage earners to warrant inclusion in the study. This number represents 37.4 per cent of the total number in the industry in 1925, according to the United States Census of Manufactures, and 39.6 per cent of the total in the 8 States. The data for 1925 were for 99 representative establishments and 144,362 employees, and for 1922 were for 49 establishments and 56,309 employees. The average full-time hours per week for the employees in 1928 are 49.4, as compared with 50.3 in 1925 and 50.1 in 1922. Average earnings were 75 cents per hour compared with 72.3 cents in 1925 and 65.7 cents in 1922, and average full-time earnings per week were $37.05 in 1928, $36.37 in 1925, and $32.92 in 1922.

The averages in Table 1 for 1925 and 1928 are for all of the males and of the females in each of the occupations in the industry and for a group of employees designated as "other employees."

Average full-time hours per week for male axle assemblers, as may be seen from the table, decreased from 50.3 in 1925 to 50.2 in 1928, average earnings per hour increased from 72.9 cents in 1925 to 75.5 cents in 1928, and average full-time earnings per week increased from $36.67 in 1925 to $37.90 per week in 1928.

Average full-time hours per week for males in 1925 in the various occupations ranged from 48.4 for sewing-machine operators to 53.7 for hardeners, and in 1928 from 42.4 for sewing-machine operators to 54.5 for hardeners. Averages for females in 1925 ranged from 47.8 for general painters to 51.8 for cloth and leather cutters, and in 1928 from 48.9 for paint sprayers to 52.8 for cloth and leather cutters.

Average earnings per hour for males in 1925 in the various occupations ranged from 51.2 cents for apprentices to $1.037 for dingmen, and in 1928 from 57.2 cents for apprentices to $1.128 for dingmen. Averages for females in 1925 ranged from 36.1 cents for inspectors to 57.3 cents for drill-press operators, and in 1928 from 39 cents for inspectors to 63.6 cents for lacquer rubbers.

Average full-time earnings per week for males in 1925 in the various occupations ranged from $25.60 for apprentices to $52.47 for dingmen, and in 1928 from $27.80 for apprentices to $57.53 for dingmen. Averages for females in 1925 ranged from $17.91 for inspectors to $28.54 for drill-press operators, and in 1928 from $19.77 for inspectors to $33.33 for lacquer rubbers.

TABLE 1.—AVERAGE HOURS AND EARNINGS, 1925 AND 1928, BY OCCUPATIONS

Occupation	Sex	Number of establishments		Number of wage earners		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
		1925	1928	1925	1928	1925	1928	1925	1928	1925	1928
Apprentices	M.	45	49	544	1,167	50.0	48.6	$0.512	$0.572	$25.60	$27.80
Assemblers, axle	M.	45	48	1,922	2,703	50.3	50.2	.729	.755	36.67	37.90
	F.	2	3	24	13	50.0	50.3	.496	.451	24.80	22.69
Assemblers, body frame	M.	49	47	3,091	3,256	50.8	50.4	.739	.799	37.54	40.27
	F.	----	5	-------	12	------	49.8	-------	.419	-------	20.87
Assemblers, chassis	M.	54	53	2,902	4,593	49.9	49.0	.694	.758	34.63	37.14
	F.	3	7	34	109	50.0	49.8	.520	.529	26.00	26.34
Assemblers, final	M.	74	66	7,400	8,198	50.1	50.1	.731	.774	36.62	38.78
	F.	18	22	318	575	49.8	49.3	.507	.507	25.25	25.00
Assemblers, frame	M.	47	45	1,115	1,125	50.0	49.5	.753	.770	37.65	38.12
Assemblers, motor	M.	61	59	4,851	4,859	49.8	50.1	.747	.762	37.20	38.18
	F.	6	9	48	81	50.0	50.4	.489	.460	24.45	23.18
Automatic operators, lathe and screw machine.	M.	65	54	2,622	1,842	49.7	49.0	.764	.806	37.97	39.49
Bench hands, machine shop	M.	70	67	2,439	2,178	50.2	50.3	.716	.724	35.94	36.42
	F.	8	7	35	42	49.3	49.3	.568	.538	28.00	26.52
Blacksmiths	M.	80	79	1,040	850	49.6	48.9	.957	.973	47.47	47.58
Boring-mill operators	M.	53	56	828	1,129	50.6	47.3	.765	.808	38.71	38.22
Bumpers	M.	35	43	323	358	49.8	49.6	.945	1.042	47.06	51.68
Crane operators	M.	29	37	145	217	49.7	49.3	.726	.707	36.08	34.86
Cutters, cloth and leather	M.	44	39	219	205	50.5	49.1	.803	.831	40.55	40.80
	F.	5	4	18	12	51.8	52.8	.517	.461	26.78	24.34
Die setters, sheet metal	M.	19	22	274	224	49.9	47.4	.797	.849	39.77	40.24
Dingmen	M.	32	36	209	235	50.6	51.0	1.037	1.128	52.47	57.53
Door hangers	M.	32	41	659	672	51.2	50.9	.827	.861	42.34	43.82
Drill-press operators	M.	84	78	8,688	8,488	50.3	49.6	.712	.734	35.81	36.41
	F.	17	15	99	164	49.8	50.5	.573	.466	28.54	23.53
Forge-shop helpers	M.	55	58	1,661	1,833	51.0	50.7	.753	.735	38.40	37.26
Gear-cutter operators	M.	48	50	1,331	1,121	50.6	49.5	.746	.760	37.75	37.62
Grinding-machine operators	M.	69	70	5,422	5,419	50.1	48.8	.765	.792	38.33	38.65
	F.	3	4	9	8	49.9	50.3	.471	.457	23.50	22.99
Hardeners	M.	54	56	945	720	53.7	54.5	.725	.749	38.93	40.82
Helpers	M.	81	74	3,019	4,085	50.9	48.1	.603	.621	30.69	29.87
	F.	2	4	25	17	50.0	52.0	.491	.463	24.55	24.08
Inspectors	M.	93	90	7,676	7,579	50.1	49.4	.682	.723	34.17	35.72
	F.	24	29	437	503	49.6	50.7	.361	.390	17.91	19.77
Laborers	M.	97	92	16,592	15,535	50.4	49.4	.570	.589	28.73	29.10
	F.	13	21	105	119	50.2	49.5	.403	.465	20.23	23.02
Lacquer rubbers	M.	38	43	709	1,465	50.2	50.3	.871	.841	43.72	42.30
	F.	----	3	-------	36	------	52.4	-------	.636	-------	33.33
Lathe operators	M.	72	69	6,260	5,553	50.0	49.0	.762	.789	38.10	38.66
Letterers, stripers, and varnishers.	M.	56	59	990	650	50.1	50.0	.996	1.115	49.90	55.75
	F.	----	6	-------	26	------	49.8	-------	.588	-------	29.28
Machinists	M.	73	81	3,604	3,465	50.0	47.9	.806	.844	40.30	40.43
Metal finishers	M.	36	55	3,397	4,606	50.6	50.5	.851	.893	43.06	45.10
Metal panelers	M.	32	34	1,655	1,947	51.5	49.8	.770	.830	39.66	41.33
Milling-machine operators	M.	74	70	3,549	3,231	50.4	49.5	.737	.764	37.14	37.82
Molders, belt and drip	M.	19	30	266	672	51.0	50.6	.823	.914	41.97	46.25
Painters, general	M.	77	77	1,934	2,155	50.6	50.7	.776	.770	39.27	39.04
	F.	5	3	16	8	47.8	50.3	.519	.415	24.81	20.87
Paint sprayers	M.	69	71	993	1,581	50.0	50.4	.850	.824	42.50	41.53
	F.	----	5	-------	19	------	48.9	-------	.565	-------	27.63
Planer and shaper operators	M.	32	38	308	401	49.7	49.1	.786	.791	39.06	28.84
Platers	M.	27	33	181	358	50.1	49.5	.734	.756	36.77	37.42
Polishers and buffers	M.	35	56	1,095	2,030	50.4	49.2	.908	.936	45.76	46.05
Punch-press operators	M.	61	61	4,416	4,268	49.6	47.9	.718	.746	35.61	35.73
	F.	6	6	103	100	50.0	51.3	.457	.491	22.85	25.19
Sand blasters, etc	M.	51	44	954	1,026	50.8	48.7	.680	.727	34.54	35.40
Sanders and rough-stuff rubbers	M.	44	54	1,937	2,716	50.5	49.7	.843	.807	42.57	40.11
	F.	----	4	-------	18	------	51.4	-------	.540	-------	27.76
Sewing-machine operators	M.	14	13	378	228	48.4	42.4	.718	.833	34.75	35.32
	F.	48	43	1,113	861	50.7	51.0	.472	.513	23.93	26.16
Sheet-metal workers	M.	60	54	3,111	2,441	50.3	50.5	.783	.807	39.38	40.75
	F.	3	7	39	56	49.5	49.6	.490	.489	24.26	24.25
Straighteners	M.	42	45	628	531	50.9	49.8	.753	.780	38.33	38.84
Testers, final and road	M.	45	48	741	538	50.8	49.9	.639	.699	32.46	34.88
Testers, motor	M.	48	41	1,433	749	50.5	51.4	.712	.726	35.96	37.32
Tool and die makers	M.	80	77	3,689	3,523	50.2	48.8	.875	.919	43.93	44.85
Top builders	M.	64	56	4,415	4,090	50.6	49.6	.808	.840	40.88	41.66
	F.	14	11	155	287	51.4	49.5	.481	.536	24.72	26.53
Trim bench hands	M.	35	25	473	385	49.2	49.4	.754	.770	37.10	38.04
	F.	26	29	474	669	49.7	50.8	.479	.483	23.81	24.54
Varnish rubbers	M.	34	26	553	357	50.3	49.4	.901	.836	45.32	41.30

TABLE 1.—AVERAGE HOURS AND EARNINGS, 1925 AND 1928, BY OCCUPATIONS—Contd.

Occupation	Sex	Number of establishments		Number of wage earners		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
		1925	1928	1925	1928	1925	1928	1925	1928	1925	1928
Welders and braziers	M.	68	66	783	1,197	50.3	47.6	$0.810	$0.852	$40.74	$40.56
Welders, spot and butt	M.	33	41	677	825	50.2	49.5	.792	.789	39.76	39.06
Woodworking-machine operators	M.	42	47	1,942	1,815	51.2	50.5	.674	.729	34.51	36.81
Other skilled occupations	M.	91	93	3,771	5,615	50.0	48.9	.774	.773	38.70	37.80
	F.	3	4	8	8	50.0	51.0	.536	.509	26.80	25.96
Other employees	M.	97	93	10,171	12,819	49.9	48.8	.692	.702	34.53	34.26
	F.	26	30	305	391	49.6	49.2	.450	.506	22.32	24.90
All occupations	M.	99	94	140,930	149,828	50.3	49.4	.729	.756	36.67	37.35
	F.	59	64	3,432	4,134	50.1	50.3	.467	.487	23.40	24.50
All occupations, male and female		99	94	144,362	153,962	50.3	49.4	.723	.750	36.37	37.05

Average Hours and Earnings, by States, 1925 and 1928

IN TABLE 2 are given average full-time hours per week, average earnings per hour, and average full-time earnings per week for 1925 and 1928 for all males and females separately, and also for both sexes combined, that were included in the study of the motor-vehicle industry in each State in each of these years.

The purpose of this table is to show the increases or decreases in average hours and earnings between 1925 and 1928 in each State and also to furnish a comparison of those of one State with another.

Average full-time hours per week for the males in Illinois decreased from 51.4 in 1925 to 49.2 in 1928, or 4.3 per cent, average earnings per hour increased from 68.2 in 1925 to 70.4 cents in 1928, or 3.2 per cent, and average full-time earnings per week decreased from $35.05 in 1925 to $34.64 in 1928, the decrease in average full-time earnings being due to a larger decrease in full-time hours than the increase in average earnings per hour.

Average full-time hours per week for males in the various States ranged from 48.5 in 1925 for the State with the lowest average to 53.4 for the one with the highest average, and in 1928 from 45.3 to 53.3; for females they ranged from 48.3 to 50.9 in 1925 and from 48.4 to 54.4 in 1928; and for both sexes, or the industry, they ranged from 48.5 to 53.4 in 1925 and from 45.3 to 53.2 in 1928. The averages for males in all States were 50.3 in 1925 and 49.4 in 1928, for females 50.1 in 1925 and 50.3 in 1928, and for both sexes combined 50.3 in 1925 and 49.4 in 1928.

Average earnings per hour for males in the various States ranged from 59.3 cents to 75.6 cents in 1925 and from 64.4 cents to 79 cents in 1928; for females they ranged from 39.4 cents to 47.9 cents in 1925, and from 44.1 cents to 51.6 cents in 1928; and for both sexes combined or the industry, they ranged from 59.2 cents to 74.8 cents in 1925, and from 64.3 cents to 78.2 cents in 1928. The averages for males in all States were 72.9 cents in 1925 and 75.6 cents in 1928; for females, 46.7 cents in 1925 and 48.7 cents in 1928; and for both sexes, or the industry, 72.3 cents in 1925 and 75 cents per hour in 1928.

Average full-time earnings per week for males in the various States ranged from $30.90 to $37.88 in 1925 and from $32.84 to $38.55 in 1928; for females they ranged from $20.05 to $24.23 in 1925 and from $23.03 to $25.25 in 1928; and for both sexes, or the industry, they ranged from $30.78 to $37.47 in 1925 and from $32.75 to $38.24 in 1928. The averages for males in all States were $36.67 in 1925 and $37.35 in 1928; for females, $23.40 in 1925 and $24.50 in 1928; and for both sexes, $36.37 in 1925 and $37.05 in 1928.

TABLE 2.—AVERAGE HOURS AND EARNINGS, 1925 AND 1928, BY SEX AND STATES

Sex and State	Number of establishments		Number of wage earners		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
	1925	1928	1925	1928	1925	1928	1925	1928	1925	1928
Males										
Illinois	9	8	3,596	3,361	51.4	49.2	$0.682	$0.704	$35.05	$34.64
Indiana	12	9	10,028	10,258	50.6	50.9	.690	.652	34.91	33.19
Michigan	29	33	82,268	92,784	50.1	48.8	.756	.790	37.88	38.55
New Jersey	6	6	5,412	5,629	50.2	45.3	.720	.725	36.14	32.84
New York	14	13	10,878	10,142	51.1	50.9	.685	.734	35.00	37.36
Ohio	15	12	16,929	14,624	48.5	49.6	.736	.734	35.70	36.41
Pennsylvania	8	6	6,675	8,127	52.1	52.8	.593	.644	30.90	34.00
Wisconsin	6	7	5,144	4,903	53.4	53.3	.674	.717	35.99	38.22
Total	99	94	140,930	149,828	50.3	49.4	.729	.756	36.67	37.35
Females										
Illinois	4	3	20	60	50.9	54.4	.394	.441	20.05	23.99
Indiana	9	6	277	342	49.9	50.4	.474	.457	23.65	23.03
Michigan	18	25	2,354	2,840	50.5	50.5	.464	.487	23.43	24.59
New Jersey	3	3	137	51	49.7	50.0	.479	.505	23.81	25.25
New York	10	8	110	226	50.8	49.8	.477	.507	24.23	25.25
Ohio	9	10	416	412	48.3	48.4	.477	.516	23.04	24.97
Pennsylvania	3	4	50	95	50.1	51.8	.420	.460	21.04	23.83
Wisconsin	3	5	68	108	48.2	49.2	.467	.511	22.51	25.14
Total	59	64	3,432	4,134	50.1	50.3	.467	.487	23.40	24.50
Males and females										
Illinois	9	8	3,616	3,421	51.4	49.3	.680	.699	34.95	34.46
Indiana	12	9	10,305	10,600	50.5	50.9	.684	.647	34.54	32.93
Michigan	29	33	84,622	95,624	50.1	48.9	.748	.782	37.47	38.24
New Jersey	6	6	5,549	5,680	50.2	45.3	.714	.723	35.84	32.75
New York	14	13	10,988	10,368	51.1	50.9	.683	.729	34.90	37.11
Ohio	15	12	17,345	15,036	48.5	49.6	.730	.728	35.41	36.11
Pennsylvania	8	6	6,725	8,222	52.0	52.8	.592	.643	30.78	33.95
Wisconsin	6	7	5,212	5,011	53.4	53.2	.669	.714	35.72	37.98
Total	99	94	144,362	153,962	50.3	49.4	.723	.750	36.37	37.05

Table 3 shows for each State 1928 average hours and earnings for males in 18 important occupations, and for females in 12 occupations. The employees in the occupations represent 51 per cent of the 149,828 males and 69 per cent of the 4,134 females included in the study of that year.

Reading the figures for the first occupations, in explanation of the table, it is seen that average full-time hours for axle assemblers ranged by States from 49.7 to 52.4 per week, that the average earnings per hour ranged from 60 to 76.8 cents, and that average full-time earnings ranged from $29.94 to $39.46 per week. The averages for all States were: Full-time hours per week, 50.2; earnings per hour, 75.5 cents; and full-time earnings, per week, $37.90.

TABLE 3.—AVERAGE HOURS AND EARNINGS FOR 18 SPECIFIED OCCUPATIONS, 1928, BY SEX AND STATE

Occupation, sex, and State	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Assemblers, axle, male:					
Illinois	2	10	49.9	$0.600	$29.94
Indiana	6	138	50.8	.652	33.12
Michigan	17	1,883	50.3	.768	38.63
New Jersey	1	(1)	(1)	(1)	(1)
New York	8	279	49.7	.728	36.18
Ohio	8	290	49.7	.745	37.03
Pennsylvania	3	48	49.9	.746	37.23
Wisconsin	3	50	52.4	.753	39.46
Total	48	2,703	50.2	.755	37.90
Assemblers, axle, female:					
Indiana	1	(1)	(1)	(1)	(1)
Michigan	2	9	50.4	.526	26.51
Total	3	13	50.3	.451	22.69
Assemblers, body frame, male:					
Illinois	4	124	42.3	.835	35.32
Indiana	5	572	50.4	.682	34.37
Michigan	16	1,428	50.7	.857	43.45
New Jersey	2	64	50.0	.734	36.70
New York	8	279	50.3	.824	41.45
Ohio	7	422	50.0	.757	37.85
Pennsylvania	1	(1)	(1)	(1)	(1)
Wisconsin	4	356	52.2	.795	41.50
Total	47	3,256	50.4	.799	40.27
Assemblers, body frame, female:					
Indiana	2	6	50.0	.321	16.05
Michigan	2	2	49.0	.564	27.64
New York	1	(1)	(1)	(1)	(1)
Total	5	12	49.8	.419	20.87
Assemblers, chassis, male:					
Illinois	4	251	41.0	.834	34.19
Indiana	5	214	51.9	.612	31.76
Michigan	17	2,534	50.0	.782	39.10
New Jersey	4	403	42.3	.740	31.30
New York	6	249	50.5	.773	39.04
Ohio	10	578	49.4	.738	36.46
Pennsylvania	3	163	49.8	.673	33.52
Wisconsin	4	201	52.0	.671	34.89
Total	53	4,593	49.0	.758	37.14
Assemblers, chassis, female:					
Indiana	1	(1)	(1)	(1)	(1)
Michigan	6	108	49.8	.529	26.34
Total	7	109	49.8	.529	26.34
Assemblers, frame, male:					
Illinois	3	35	49.9	.597	29.79
Indiana	5	117	50.8	.733	37.24
Michigan	13	599	48.8	.784	38.26
New Jersey	2	28	46.8	.751	35.15
New York	7	86	50.2	.760	38.15
Ohio	8	154	49.2	.822	40.44
Pennsylvania	4	77	52.1	.738	38.45
Wisconsin	3	29	53.4	.730	38.98
Total	45	1,125	49.5	.770	38.12
Assemblers, motor, male:					
Illinois	7	275	53.2	.699	37.19
Indiana	6	283	50.7	.652	33.06
Michigan	19	3,050	49.4	.792	39.12
New Jersey	2	84	50.0	.782	39.10
New York	6	201	50.5	.732	36.97
Ohio	11	661	50.1	.714	35.77
Pennsylvania	3	169	54.7	.754	41.24
Wisconsin	5	136	52.4	.740	38.78
Total	59	4,859	50.1	.762	38.18

1 Data included in total.

TABLE 3.—AVERAGE HOURS AND EARNINGS FOR 18 SPECIFIED OCCUPATIONS, 1928, BY SEX AND STATE—Continued

Occupation, sex, and State	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Assemblers, motor, female:					
Illinois	1	[1]	[1]	[1]	[1]
Indiana	1	[1]	[1]	[1]	[1]
Michigan	7	63	50.4	$0.498	$25.10
Total	9	81	50.4	.460	23.18
Automatic operators, lathe and screw machine, male:					
Illinois	4	29	55.0	.695	38.23
Indiana	4	195	50.3	.676	34.00
Michigan	21	1,088	48.1	.850	40.89
New Jersey	2	24	50.0	.945	47.25
New York	8	295	50.6	.744	37.65
Ohio	8	152	48.1	.811	39.01
Pennsylvania	4	36	51.8	.735	38.07
Wisconsin	3	23	55.4	.756	41.88
Total	54	1,842	49.0	.806	39.49
Drill-press operators, male:					
Illinois	6	274	54.1	.645	34.89
Indiana	9	564	50.7	.593	30.07
Michigan	28	5,698	48.6	.771	37.47
New Jersey	3	111	50.3	.677	34.05
New York	10	390	50.4	.686	34.57
Ohio	10	699	49.7	.700	34.79
Pennsylvania	6	486	53.1	.661	35.10
Wisconsin	6	266	55.1	.688	37.91
Total	78	8,488	49.6	.734	36.41
Drill-press operators, female:					
Illinois	2	32	54.8	.464	25.43
Indiana	2	20	50.0	.359	17.95
Michigan	5	68	49.8	.486	24.20
New Jersey	2	4	50.0	.612	30.60
New York	2	36	48.2	.478	23.04
Pennsylvania	2	4	50.3	.418	21.03
Total	15	164	50.5	.466	23.53
Grinding-machine operators, male:					
Illinois	6	139	53.1	.690	36.66
Indiana	6	316	50.7	.638	32.37
Michigan	27	3,657	47.9	.828	39.66
New Jersey	3	109	50.2	.791	39.71
New York	8	466	49.9	.716	35.73
Ohio	10	448	48.9	.794	38.83
Pennsylvania	5	166	53.7	.679	36.46
Wisconsin	5	118	54.8	.762	41.76
Total	70	5,419	48.8	.792	38.65
Grinding-machine operators, female:					
Indiana	1	[1]	[1]	[1]	[1]
Michigan	2	3	51.3	.440	22.57
Pennsylvania	1	[1]	[1]	[1]	[1]
Total	4	8	50.3	.457	22.99
Inspectors, male:					
Illinois	5	148	52.1	.658	34.28
Indiana	8	438	50.6	.600	30.36
Michigan	33	4,966	48.7	.755	36.77
New Jersey	6	169	48.3	.737	35.60
New York	13	498	50.5	.672	33.94
Ohio	12	772	49.5	.711	35.19
Pennsylvania	6	431	53.0	.643	34.08
Wisconsin	7	157	53.0	.623	33.02
Total	90	7,579	49.4	.723	35.72

[1] Data included in total.

TABLE 3.—AVERAGE HOURS AND EARNINGS FOR 18 SPECIFIED OCCUPATIONS, 1928, BY SEX AND STATE—Continued

Occupation, sex, and State	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Inspectors, female:					
Illinois	1	(1)	(1)	(1)	(1)
Indiana	2	23	50.0	$0.333	$16.65
Michigan	19	419	50.6	.396	20.04
New Jersey	1	(1)	(1)	(1)	(1)
New York	1	(1)	(1)	(1)	(1)
Ohio	1	(1)	(1)	(1)	(1)
Pennsylvania	3	27	52.5	.388	20.37
Wisconsin	1	(1)	(1)	(1)	(1)
Total	29	503	50.7	.390	19.77
Laborers, male:					
Illinois	6	435	46.6	.661	30.80
Indiana	9	1,056	50.8	.501	25.45
Michigan	33	9,489	49.4	.605	29.89
New Jersey	6	1,131	43.9	.661	29.02
New York	13	1,021	51.1	.564	28.82
Ohio	12	1,488	49.8	.546	27.19
Pennsylvania	6	571	53.0	.486	25.76
Wisconsin	7	344	53.3	.548	29.21
Total	92	15,535	49.4	.589	29.10
Laborers, female:					
Illinois	1	(1)	(1)	(1)	(1)
Michigan	11	97	50.1	.466	23.35
New Jersey	1	(1)	(1)	(1)	(1)
New York	2	4	49.9	.395	19.71
Ohio	3	13	44.5	.509	22.65
Pennsylvania	1	(1)	(1)	(1)	(1)
Wisconsin	2	2	47.5	.350	16.63
Total	21	119	49.5	.465	23.02
Lathe operators, male:					
Illinois	6	227	52.9	.689	36.45
Indiana	8	311	50.8	.629	31.95
Michigan	24	3,495	47.9	.832	39.85
New Jersey	3	219	50.1	.755	37.83
New York	9	303	50.7	.728	36.91
Ohio	10	531	48.1	.780	37.52
Pennsylvania	5	282	52.4	.708	37.10
Wisconsin	4	185	55.0	.706	38.83
Total	69	5,553	49.0	.789	38.66
Letterers, stripers, and varnishers, male:					
Illinois	2	8	44.8	.871	39.02
Indiana	6	72	50.9	.786	40.01
Michigan	23	369	50.0	1.247	62.35
New Jersey	4	22	45.5	.968	44.04
New York	8	50	50.6	.933	47.21
Ohio	10	82	49.9	1.068	53.29
Pennsylvania	1	(1)	(1)	(1)	(1)
Wisconsin	5	35	52.4	.928	48.63
Total	59	650	50.0	1.115	55.75
Letterers, stripers, and varnishers, female:					
Indiana	1	(1)	(1)	(1)	(1)
Michigan	3	14	50.0	.560	28.00
New York	1	(1)	(1)	(1)	(1)
Ohio	1	(1)	(1)	(1)	(1)
Total	6	26	49.8	.588	29.28
Machinists, male:					
Illinois	7	80	52.1	.725	37.77
Indiana	7	148	50.8	.699	35.51
Michigan	31	2,380	46.6	.893	41.61
New Jersey	5	116	49.7	.811	40.31
New York	12	250	49.6	.758	37.60
Ohio	10	202	49.2	.801	39.41
Pennsylvania	5	226	53.2	.729	38.78
Wisconsin	4	63	52.2	.602	31.42
Total	81	3,465	47.9	.844	40.43

[1] Data included in total.

TABLE 3.—AVERAGE HOURS AND EARNINGS FOR 18 SPECIFIED OCCUPATIONS, 1928, BY SEX AND STATE—Continued

Occupation, sex, and State	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Milling-machine operators, male:					
Illinois	6	82	52.9	$0.656	$34.70
Indiana	8	146	50.8	.621	31.55
Michigan	25	2,136	48.5	.798	38.70
New Jersey	3	70	50.0	.716	35.80
New York	9	194	51.3	.716	36.73
Ohio	9	296	49.2	.735	36.16
Pennsylvania	6	213	52.9	.700	37.03
Wisconsin	4	94	55.3	.718	39.71
Total	70	3,231	49.5	.764	37.82
Sewing-machine operators, male:					
Illinois	1	(1)	(1)	(1)	(1)
Indiana	1	(1)	(1)	(1)	(1)
Michigan	7	132	41.4	.839	34.73
New Jersey	1	(1)	(1)	(1)	(1)
New York	2	22	49.0	.833	40.82
Wisconsin	1	(1)	(1)	(1)	(1)
Total	13	228	42.4	.833	35.32
Sewing-machine operators, female:					
Illinois	1	(1)	(1)	(1)	(1)
Indiana	5	133	50.6	.493	24.95
Michigan	16	568	51.5	.508	26.16
New Jersey	2	22	50.0	.513	25.65
New York	6	43	51.1	.561	28.67
Ohio	9	57	49.3	.570	28.10
Pennsylvania	1	(1)	(1)	(1)	(1)
Wisconsin	3	28	46.8	.483	22.60
Total	43	861	51.0	.513	26.16
Tool and die makers, male:					
Illinois	6	40	50.7	.750	38.03
Indiana	8	274	51.1	.795	40.62
Michigan	29	2,391	47.5	.973	46.22
New Jersey	4	77	50.0	.853	42.65
New York	10	208	51.0	.827	42.18
Ohio	10	336	51.3	.855	43.86
Pennsylvania	5	126	53.6	.728	39.02
Wisconsin	5	71	53.8	.730	39.27
Total	77	3,523	48.8	.919	44.85
Top builders, male:					
Illinois	3	68	43.6	.858	37.41
Indiana	6	291	50.8	.750	38.10
Michigan	20	2,204	50.8	.867	44.04
New Jersey	4	500	41.9	.740	31.01
New York	7	293	50.5	.900	45.45
Ohio	10	354	49.5	.875	43.31
Pennsylvania	2	15	50.0	.877	43.85
Wisconsin	4	365	53.0	.788	41.76
Total	56	4,090	49.6	.840	41.66
Top builders, female:					
Indiana	2	15	50.0	.567	28.35
Michigan	3	149	50.0	.536	26.80
New York	1	(1)	(1)	(1)	(1)
Ohio	2	78	48.0	.515	24.72
Pennsylvania	1	(1)	(1)	(1)	(1)
Wisconsin	2	23	50.2	.576	28.92
Total	11	287	49.5	.536	26.53
Trim bench hands, male:					
Illinois	1	(1)	(1)	(1)	(1)
Indiana	5	37	51.5	.595	30.64
Michigan	10	258	50.1	.825	41.33
New Jersey	1	(1)	(1)	(1)	(1)
New York	2	9	48.2	.752	36.25
Ohio	5	49	49.9	.725	36.18
Wisconsin	1	(1)	(1)	(1)	(1)
Total	25	385	49.4	.770	38.04

[1] Data included in total.

TABLE 3.—AVERAGE HOURS AND EARNINGS FOR 18 SPECIFIED OCCUPATIONS, 1928, BY SEX AND STATE—Continued

Occupation, sex, and State	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Trim bench hands, female:					
Indiana	4	50	51.2	$0.445	$22.78
Michigan	12	501	50.9	.477	24.28
New Jersey	1	(1)	(1)	(1)	(1)
New York	3	23	51.9	.518	26.88
Ohio	6	55	49.9	.536	26.75
Wisconsin	3	36	50.0	.506	25.30
Total	29	669	50.8	.483	24.54

[1] Data included in total.

Hours of Operation

AVERAGE full-time hours per week for the employees in an occupation in the motor-vehicle industry or in all occupations in any one State or in all States is the result obtained by dividing the aggregate of the full-time hours for all employees in the occupation, State, or States, by the total number of employees in the occupation, State or States. The full-time hours per week of a motor-vehicle establishment are those when the establishment is working its regular standard of full time as established by a regular time of beginning and of quitting work less a regular time off duty for eating, with no overtime work and no loss of time for any cause.

The full-time hours per week of the 94 establishments covered in 1928 ranged from 40 for 4 plants to 58 per week for 1 plant, and the hours of 44 plants were 50 per week.

Overtime Work

THE policy of paying more than the regular rate for work performed outside of or in excess of the regular full-time hours of operation per day and per week was in effect in 59 of the 94 establishments that were included in the 1928 study. In plants in which employees were paid extra for overtime any employee who worked overtime was paid one and one-fourth or one and one-half times his regular rate for each hour of overtime or his hours were "boosted" by entering on the pay rolls one and one-fourth or one and one-half hours for each hour of overtime. In plants in which hours were "boosted," actual working time was obtained by eliminating the one-fourth or one-half hour of boosted time.

Bonus Systems

BONUS systems were in operation in 44 of the 94 plants included in the study in 1928. Earnings of all or a specified part of the wage earners at their regular rates in these plants were increased by the addition of a fixed amount or per cent for production, efficiency, attendance, time saving, or length of service.

Entrance Wage Rates for Common Labor, January 1, 1929

THE term "common labor" has many interpretations among different industries and even among different localities or plants in the same industry. Also, many employers make a practice of increasing the rate of pay of a laborer after a stated length of service, provided a sufficient degree of fitness for the job has been developed; otherwise the employee is dropped. Owing to these difficulties in the way of securing comparable data as to wage rates for common labor, the Bureau of Labor Statistics has confined these statistics to entrance rates alone—that is, to rates of pay per hour for unskilled adult male common laborers *when first hired.*

This survey is limited to 13 important industries, which require considerable numbers of common laborers. Some establishments have reported two rates—for example, one for the 10-hour day and one for the 8-hour day, or one for white and one for colored or Mexican workers; these distinctions have not been maintained in the tabulated data, although it is apparent that the lowest rates are shown for those geographic divisions where there are large numbers of colored or Mexican workers, while the highest rates are shown for localities where an 8-hour day is more or less prevalent.

The industries included in this survey and the number of common laborers employed at entrance rates in the establishments reporting in each specified industry, on January 1, 1929, are as follows:

Automobiles	24, 470
Brick, tile, and terra cotta	4, 181
Cement	1, 637
Electrical machinery, apparatus, and supplies	3, 579
Foundry and machine-shop products	9, 679
Iron and steel	18, 652
Leather	2, 611
Lumber (sawmills)	11, 851
Paper and pulp	9, 481
Petroleum refining	3, 518
Slaughtering and meat packing	7, 314
Public utilities	10, 596
General contracting	32, 075
Total	139, 644

The number of common laborers employed at entrance rates in the establishments reporting, in each of the nine geographic divisions of the United States, on January 1, 1929, was—

New England	7, 867
Middle Atlantic	26, 983
East North Central	48, 468
West North Central	12, 848
South Atlantic	12, 820
East South Central	6, 663
West South Central	7, 907
Mountain	4, 181
Pacific	11, 907
Total	139, 644

The weighted average hourly common-labor entrance rate for the several industries combined, on January 1, 1929, was 45 cents. The general-contracting industry reported the highest rate, $1.12½—in the

Middle Atlantic division—while the lowest rate, 15 cents, was paid in the sawmill industry, in the South Atlantic division.

The highest average rate per hour for any industry, 55.9 cents, appeared in the automobile industry, followed by 48.6 cents in general contracting, 48 cents in petroleum refining, and 45.7 cents in electrical machinery; the lowest average rate, 30.8 cents, appeared in the sawmill industry.

The highest average rate in the nine geographic divisions, 52.2 cents, appeared in the East North Central division. The New England, Middle Atlantic, and Pacific divisions showed average rates ranging from 46.4 cents to 48.4 cents. The lowest average rate, 26.3 cents, appeared in the East South Central division.

The weighted average entrance rates per hour for all industries represented in this study, including general contracting, have been as follows: July 1, 1926, 42.8 cents; October 1, 1926, 43.4 cents; January 1, 1927, 43.2 cents; July 1, 1927, 42.6 cents; January 1, 1928, 43 cents; July 1, 1928, 44.9 cents; January 1, 1929, 45 cents.

Omitting data for general contracting, which industry was first included in these compilations on July 1, 1926, average entrance rates per hour for the periods studied have been: January 1, 1926, 40.2 cents; April 1, 1926, 40.5 cents; July 1, 1926, 40.9 cents; October 1, 1926, 40.9 cents; January 1, 1927, 41 cents; July 1, 1927, 40.4 cents; January 1, 1928, 41.1 cents; July 1, 1928, 44.1 cents; January 1, 1929, 43.9 cents.

The rather pronounced increases in the average rate for July 1, 1928, and January 1, 1929, as compared with average rates for previous periods, are due to the great activities of certain very large plants since the spring of 1928. These plants have high entrance rates, and recent activities have necessitated the taking on of very large numbers of common laborers.

The table following shows, for each industry included, the high, low, and average common-labor entrance rates per hour, January 1, 1929, in each geographic division and in the United States as a whole:

HOURLY ENTRANCE WAGE RATES FOR COMMON LABOR, JANUARY 1, 1929

[The rates on which this table is based are entrance rates paid for adult male common labor]

Industry	United States	Geographic division								
		New England [1]	Middle Atlantic [2]	East North Central [3]	West North Central [4]	South Atlantic [5]	East South Central [6]	West South Central [7]	Mountain [8]	Pacific [9]
Automobiles:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Low	30.0	-------	35.0	35.0	30.0	-------	-------	-------	-------	45.0
High	62.5	-------	62.5	62.5	62.5	-------	-------	-------	-------	55.0
Average	55.9	-------	47.4	56.7	44.6	-------	-------	-------	-------	50.5
Brick, tile, and terra cotta:										
Low	18.5	40.0	22.2	30.0	27.0	20.0	18.5	25.0	38.5	39.0
High	53.0	50.0	52.8	50.0	40.0	35.0	37.0	37.5	40.0	53.0
Average	37.8	42.4	48.1	38.9	34.9	24.1	26.8	28.0	39.5	45.8

[1] Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.
[2] New Jersey, New York, Pennsylvania.
[3] Illinois, Indiana, Michigan, Ohio, Wisconsin.
[4] Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota.
[5] Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia.
[6] Alabama, Kentucky, Mississippi, Tennessee.
[7] Arkansas, Louisiana, Oklahoma, Texas.
[8] Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming.
[9] California, Oregon, Washington.

HOURLY ENTRANCE WAGE RATES FOR COMMON LABOR, JANUARY 1, 1929—Continued

Industry	United States	Geographic division								
		New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Cement:										
Low	25.0	-------	35.0	35.0	33.0	-------	26.0	25.0	-------	33.0
High	56.0	-------	45.0	45.0	40.5	-------	33.0	28.0	-------	56.0
Average	37.9	-------	43.2	38.8	35.2	-------	30.2	27.4	-------	46.4
Electrical machinery, apparatus, and supplies:										
Low	35.0	35.0	38.0	40.0	35.0	40.0	-------	-------	-------	--------
High	52.5	48.0	51.0	52.5	40.0	45.0	-------	-------	-------	--------
Average	45.7	43.5	44.4	47.6	36.4	42.6	-------	-------	-------	--------
Foundry and machine-shop products:										
Low	17.5	33.0	30.0	35.0	33.0	17.5	25.0	22.5	40.0	44.0
High	60.0	50.0	51.0	50.0	50.0	43.8	40.0	30.0	45.0	60.0
Average	39.4	39.9	41.3	42.5	39.7	28.3	31.7	27.3	43.7	53.7
Iron and steel:										
Low	20.0	35.0	30.0	35.0	35.0	20.0	22.5	-------	41.0	42.5
High	50.0	45.0	50.0	50.0	40.0	44.0	31.0	-------	49.0	50.0
Average	42.5	40.3	41.9	44.6	37.5	36.1	26.9	-------	48.9	46.1
Leather:										
Low	20.0	45.0	25.5	31.6	-------	25.0	20.0	-------	-------	42.5
High	60.0	54.2	50.0	60.0	-------	40.0	33.0	-------	-------	57.8
Average	42.1	49.9	42.7	44.8	-------	33.0	29.6	-------	-------	54.2
Lumber (sawmills):										
Low	15.0	30.0	30.0	30.0	32.5	15.0	19.5	20.0	38.0	31.0
High	50.0	36.0	35.0	40.0	35.0	35.0	25.0	27.5	42.5	50.0
Average	30.8	32.0	34.4	35.6	33.8	21.4	21.0	23.3	41.4	41.1
Paper and pulp:										
Low	22.5	33.3	35.0	30.0	35.0	30.0	22.5	25.0	-------	40.0
High	55.0	50.0	50.0	55.0	45.0	38.3	30.0	35.0	-------	51.3
Average	43.1	47.0	41.2	43.7	41.0	36.3	24.9	30.0	-------	42.8
Petroleum refining:										
Low	25.0	-------	45.0	50.0	50.0	30.0	32.5	25.0	45.0	53.0
High	62.0	-------	53.0	50.0	50.0	50.0	32.5	51.0	60.0	62.0
Average	48.0	-------	47.5	50.0	50.0	40.9	32.5	44.8	54.2	57.0
Slaughtering and meat packing:										
Low	30.0	38.0	40.0	37.5	37.5	40.0	-------	30.0	40.0	40.0
High	50.0	50.0	45.0	45.0	45.0	40.0	-------	37.5	40.0	45.0
Average	41.2	41.4	41.3	40.8	41.5	40.0	-------	36.6	40.0	41.7
Public utilities: [10]										
Low	20.0	35.0	38.0	32.5	30.0	20.0	25.0	28.0	35.0	33.0
High	61.5	61.5	61.3	60.0	40.0	50.0	40.0	40.0	42.0	60.0
Average	41.9	47.7	46.5	47.6	36.3	33.8	26.9	29.6	38.4	51.5
General contracting: [11]										
Low	17.5	40.0	25.0	35.0	22.5	20.0	17.5	20.0	35.0	40.0
High	112.5	85.0	112.5	90.0	75.0	60.0	50.0	40.0	62.5	75.0
Average	48.6	56.8	61.5	61.8	41.7	29.3	28.3	34.5	44.3	55.5
Total: Low	15.0	30.0	22.2	30.0	22.5	15.0	17.5	20.0	35.0	31.0
High	112.5	85.0	112.5	90.0	75.0	60.0	50.0	51.0	62.5	75.0
Average	45.0	46.4	47.6	52.2	41.0	29.2	26.3	32.9	45.1	48.4

[10] Includes street railways, gas works, waterworks, and electric power and light plants.
[11] Includes building, highway, public works, and railroad construction.

Wage Increases as Established by Recent Agreements and Awards

Railway Clerks—Southern Pacific (Pacific Lines)

A BOARD of arbitration was created by agreement dated December 20, 1926, for the purpose of deciding a request for an increase in wages by the railway clerks, freight handlers, express and station employees on the Southern Pacific (Pacific Lines). The board consisted of W. B. Kirkland, selected by the carrier, J. H. Sylvester, selected by the employees, and J. O. Davis as the third arbitrator.

The award of the board, issued on April 16, 1927, granted increases in rates of pay in various amounts to the employees.[1]

Subsequently a dispute arose as to the applicability of said award to employees in the consolidated yard office and freight station at El Paso, Tex. The employees requested the United States Board of Mediation on September 6, 1928, to reconvene the board of arbitration for the purpose of ruling upon the dispute.

The board of arbitration was reconvened on February 18, 1929. Due to the inability of W. B. Kirkland to serve as a member of the board, both parties to the dispute agreed that L. R. Smith serve in his stead.

On March 7, 1929, the board issued the following decision:

The award of the board of arbitration issued April 16, 1927, is applicable to the employees in question.

Railway Clerks—Texas & Pacific Railway

RAILWAY clerks and freight platform employees of the Texas & Pacific Railway will receive a wage increase of approximately 3 cents an hour, through an agreement signed March 27. Several important improvements in rules were secured, including time and one-half for overtime.

The settlement was effected through mediation of the United States Board of Mediation, J. W. Walsh representing the board.

Railroad Telegraphers

Chicago & Alton Railroad.—Telegraphers on the Chicago & Alton Railroad secured a wage increase of 1¾ cents an hour effective February 16, 1929. A new rule providing for "deadheading" and time and one-half for work performed during meal hours was negotiated.

Lehigh Valley Railroad.—The telegraphers' committee on the Lehigh Valley Railroad requested an increase of 5 cents an hour and relief days. On February 11 the committee accepted an increase of 2½ cents an hour, with an understanding with the management that conferences would be renewed in April to consider additional increase. The increase became effective February 1. The subject of relief days remains open for further discussion.

Southern Railway subsidiaries.—An increase in wage rates has been secured for the employees in station and telegraph service of the following subsidiaries of the Southern Railway: Carolina & Northwestern Railway; Yadkin Railway; High Point, Randleman, Ashboro & Western Railway, and the Danville & Western Railway. The increases equal that awarded by the arbitration board to telegraphers on the parent line in December, 1928, and are effective as of March 1, 1929.

Green Bay & Western Railroad.—Telegraphers on the Green Bay & Western Railroad, on November 28, 1928, made a request for an increase of 8 cents an hour and change in certain rules, including vacations with pay for all employees.

On February 22, 1929, a settlement was reached by employees accepting an increase of 5 cents an hour for all positions (excepting

[1] Labor Review, July, 1927, p. 102.

eight agencies which had been voluntarily increased by the carrier within the past year) and a 15-day annual vacation with pay for all telegraphers with five years or more service. The rule governing pay for Sunday and holiday service was revised to grant time and one-half for all service performed on such days, with a minimum of three hours at overtime rate. The increase is effective as of February 16, 1929.

Mobile & Ohio Railroad.—The telegraphers' committee submitted a proposition to the Mobile & Ohio Railroad to revise rules and wage rates, requesting an increase of 10 cents an hour, vacations with pay, time and one-half for all service on Sundays and holidays, and a 6-day week without loss of compensation.

On March 4 a settlement was reached, increasing existing rates by an equivalent of 2¾ cents an hour, 2½ cents thereof to be applied as a flat increase, and the remaining one-fourth cent to be distributed as mutually agreed upon between the committee and the management. In addition an amount of $20 per month increase on the pay roll was granted for distribution to small nontelegraph agents. All requested changes in rules were withdrawn in the settlement except the request for inclusion of certain agency positions, which matter it was agreed would remain open for further negotiation.

Railroad Signalmen

New York Central Railroad.—Signalmen mechanics employed by the Ohio central lines of the New York Central Railroad received an increase of 5 cents an hour, establishing a minimum rate of 82 cents. Proportionate increases were granted other classes in the signal department. Increased rates effective April 1, 1929.

Chicago, Indianapolis & Louisville Railroad.—Through a recent wage settlement on the Chicago, Indianapolis & Louisville Railroad a wage increase of 4 cents an hour was secured for signalmen, signal maintainers and helpers, and a corresponding increase for other classes on monthly rates. The new rate for signalmen and signal maintainers is 78 cents an hour.

Norfolk & Western Railway.—A recent agreement between the signalmen and the Norfolk & Western Railway provides for wage increases of 3 cents an hour for all classes. This establishes a rate of 80 cents an hour for signalmen and signal maintainers, and proportionate rates for the other classes.

Texas & Pacific Railway.—The Brotherhood of Railway Signalmen negotiated a new wage agreement with the Texas & Pacific Railway fixing hourly rates ranging from 51 cents for helpers to 83 cents for lead signalmen.

Wabash Railway.—Railroad signalmen employees of the Wabash Railway have secured a wage increase of 3 cents an hour effective February 1, with an understanding that in June there will be an additional increase of 1½ cents an hour.

Railroad Shopmen

Atchison, Topeka & Santa Fe Railroad.—Shopmen employees of the Atchison, Topeka & Santa Fe Railroad secured a wage increase, effective March 1, 1929, of 5 cents an hour for mechanics, helpers, and apprentices, and an increase of 2 cents an hour for coach cleaners.

Missouri, Kansas & Texas Railroad.—A 3-year agreement between the Missouri, Kansas & Texas Railroad and their shop employees provides for a wage increase of 5 cents an hour for machanics, 4 cents an hour to semiskilled, 3 cents an hour to helpers, and from 1 to 5 cents an hour to apprentices. Such increases became effective March 1, 1929.

St. Louis-San Francisco Railway.—Effective March 1, 1929, the St. Louis-San Francisco Railway granted its shopmen a wage increase of approximately 5 per cent, establishing a minimum rate for first-class mechanics of 81 cents an hour, and for second-class mechanics 65 cents an hour. Apprentices were granted a 2-cent scale increase.

Texas & Pacific Railway.—Shopmen employees of the Texas & Pacific Railway have secured a wage increase for mechanics of 5 cents an hour, semiskilled workers an increase of 4 cents an hour, helpers 3 cents an hour, and apprentices from 1 to 3 cents an hour. Such increase became effective March 1, 1929.

Wages in Industries Under Workmen's Compensation in Minnesota

A WAGE STUDY compiled from accident reports on file in the office of the Industrial Commission of Minnesota is given in its fourth biennial report, July 1, 1926–June 30, 1928. The table following shows the average, median, and modal wages received by injured workers in industries covered by workmen's compensation for the fiscal year 1928. In studying the wage figures it should be borne in mind that the average wages in the five farming classifications, in lumber and logging, and in domestic service (which takes in hotels and restaurants) include board and lodging computed on the basis of $7 per week. All other rates indicate the flat weekly wage scale.

AVERAGE, MEDIAN, AND MODAL WEEKLY WAGES IN INDUSTRIES COVERED BY WORKMEN'S COMPENSATION, 1927–28

Industries	Number of injured workers	Weekly wages		
		Average	Median	Modal
General farming	212	$21.44	$20.38	$18.40
Dairy farming	24	21.83	19.16	17.60
Stock farming	14	22.86	20.00	20.00
Truck farming	92	22.68	23.00	24.60
Operating agricultural implements (not by farmer)	129	25.52	24.75	30.00
Mining	1,063	30.06	28.59	25.61
Quarrying	273	28.77	25.00	21.52
Stone products	982	30.25	27.54	24.81
Clay products	1			
Brick and tile	121	26.64	24.45	21.66
Glass products	39	30.41	30.00	40.00
Ore reduction and smelting	43	33.09	32.75	32.60
Rolling mills and steel works	85	26.47	27.58	24.71
Structural-iron works	74	36.47	36.25	49.00
Foundries	981	27.38	25.51	24.38
Metal products	1,153	27.04	25.79	24.76
Agricultural implements	270	30.56	25.50	21.74
Machinery and instruments	2,005	26.21	25.09	22.45
Vehicles	300	28.90	27.18	25.35
Furniture	380	25.64	24.42	22.56
Lumber mills (sawmills)	264	23.85	24.43	24.93
Planing mills	356	25.65	24.89	24.58

AVERAGE, MEDIAN, AND MODAL WEEKLY WAGES IN INDUSTRIES COVERED BY WORKMEN'S COMPENSATION, 1927–28—Continued

Industries	Number of injured workers	Weekly wages		
		Average	Median	Modal
Woodworking	548	$22.39	$21.96	$17.66
Lumbering and logging	1,529	18.64	17.43	16.32
Leather and fur	127	25.04	24.44	30.75
Boots and shoes	104	18.63	18.62	18.55
Rubber and composition goods	102	25.18	24.21	24.55
Chemical and allied products	673	26.53	25.37	24.72
Paper and pulp mills	1,174	26.78	24.88	21.30
Paper products	124	24.44	22.83	24.66
Printing and publishing	568	26.40	24.19	15.53
Textiles	134	22.07	21.10	22.10
Clothing and furnishings	438	23.03	20.00	20.53
Laundries	324	21.10	23.13	30.00
Flour and grist mills	509	26.55	26.25	21.52
Bakeries	586	26.36	23.67	20.69
Slaughtering and meat packing	1,166	25.56	25.32	20.70
Brewing and bottling	189	27.49	25.84	25.17
Other food products	1,441	27.34	27.41	35.21
Miscellaneous manufacturing	12			
Wrecking and moving	56	24.32	21.22	18.80
Grading, excavating, and foundations	829	28.93	27.14	24.45
Erecting	3,189	32.25	28.21	24.82
Finishing, equipping, and installing	1,194	35.22	33.97	44.00
Steam railways	4			
Electric railways	269	27.20	26.50	45.10
Cartage and storage	2,784	27.84	27.02	25.20
Grain elevators	228	30.82	30.28	30.00
Garages	2,145	28.79	30.11	30.65
Stockyards	128	30.21	25.00	24.88
Transportation by water	54	29.69	30.75	30.10
Telephone and telegraph	207	24.01	23.58	21.27
Light and power	1,052	29.33	28.98	21.39
Public utilities	31	28.48	27.00	24.20
Offices	203	33.21	26.00	45.75
Stores	4,082	23.00	21.09	25.26
Yards (not otherwise classified)	1,146	26.41	25.15	24.83
Lumber yards	412	25.36	24.40	24.47
Salesmen and outside agents	125	27.51	25.41	25.25
Domestic service	1,794	20.26	18.75	18.54
Personal service	279	29.03	23.65	25.14
Professional service	77	33.23	30.16	25.50
Municipal and public	1,284	28.81	27.54	24.64
Miscellaneous industries	342	25.66	24.54	30.75
All industries	40,524	26.90	25.41	24.71

Salaries in Chicago Municipal Service, 1915 to 1929

THE following schedules of salaries for specified positions in the municipal service of Chicago were forwarded under date of March 13, 1929, to the United States Bureau of Labor Statistics by the municipal reference librarian of that city.

Most of the clerical positions in the municipal service fall under the junior, senior, principal, and head grades. The few incumbents in the chief clerk grade and the assistant chief clerk grade are paid fixed or so-called "flat" salaries.

SALARIES FOR POSITIONS IN CHICAGO MUNICIPAL SERVICE, 1915 TO 1929

Grade and date of change of salary	Beginning salary	After 1 year in grade	After 2 years in grade	Maximum
Clerical positions				
Junior grade: [1]				
1915	$840	$960	$1,080	$1,200
1918	960	1,080	1,200	1,320
1919	1,080	1,200	1,320	1,500
1920	1,260	1,380	1,500	1,680
1922	1,260	1,380	1,500	[2] 1,680
1924 (July 1)	-------	1,500	1,620	1,800
1924 (Oct. 1)	1,500	1,580	1,700	1,880
1926 (Dec. 1) to 1929	1,500	1,620	1,740	2,060
Senior grade:				
1915	1,320	1,440	1,560	1,680
1918	1,440	1,560	1,680	1,740
1919	1,620	1,740	1,860	1,980
1920	1,740	1,860	1,980	2,100
1924 (July 1)	1,860	1,980	2,100	2,220
1924 (Oct. 1)	1,940	2,060	2,180	2,300
1926 (Dec. 1) to 1929	2,120	2,240	2,360	2,480
Clerical positions—Continued				
Principal grade:				
1915	$1,800	$1,920	$2,040	$2,160
1919	2,100	2,220	2,340	2,460
1920	2,220	2,340	2,460	2,580
1924 (July 1)	2,340	2,460	2,580	2,700
1924 (Oct. 1)	2,420	2,540	2,660	2,780
1926 (Dec. 1) to 1929	2,600	2,720	2,840	2,960
Head grade:				
1915	2,340	-------	2,520	2,700
1919	2,620	2,740	2,960	3,000
1920	2,700	2,820	2,940	3,060
1924 (July 1)	2,820	2,940	3,060	3,180
1924 (Oct. 1)	2,900	3,020	3,140	3,260
1926 (Dec. 1) to 1929	3,080	3,200	3,320	3,440

Position and date of change	Beginning salary	After one-half year in grade	After 1-year in grade	Maximum
Police department				
Patrolmen:				
1915	$900	-------	$1,000	$1,320
1918	1,200	-------	1,320	1,500
1919	1,440	-------	1,560	1,800
1920	1,632	-------	1,752	1,992
1920 (Jan. 1)	1,640	-------	1,760	2,000
1924 (Oct. 1)	1,840	-------	1,960	2,200
1927	1,990	-------	2,110	2,350
1927 (July 1) to 1929	2,140	-------	2,260	2,500
Fire department				
Firemen:				
1915	$900	$1,056	$1,155	$1,371
1918	1,200	1,320	1,440	1,500
1919	1,440	1,560	-------	1,800
1919 (Jan. 1)	{1,440	1,560	1,680	1,800
	{1,440	1,620	1,740	1,800
1920	1,632	1,752	1,872	1,992
1920 (Jan. 1)	{1,632	1,812	1,932	1,992
	{1,640	1,820	1,940	2,000
1924 (Oct. 1)	1,840	2,020	2,140	2,200
1927	1,990	2,170	2,290	2,350
1927 (July 1) to 1929	2,140	2,320	2,440	2,500

[1] There are 6 groups in the junior clerk grade, and it is necessary for a person to serve 1 year in each group before advancement to the next higher. The requirement of 1 year's service in a lower group for promotion to the next also holds in the salary schedules for other grades unless otherwise specified in such schedules.
[2] $1,800 after 10 years in grade.

Agricultural Wages in Canada, 1927 and 1928

WAGES of agricultural laborers in Canada for 1927 and 1928 are given in the following table, compiled from the February, 1929, issue of the Monthly Bulletin of Agricultural Statistics, published by the Dominion Bureau of Statistics (p. 44):

AVERAGE WAGES OF FARM HELP IN CANADA, 1927 AND 1928

Province and year	Males, per month, summer season			Females, per month, summer season			Males, per year			Females, per year		
	Wages	Board	Wages and board	Wages	Board	Wages and board	Wages	Board	Wages and board	Wages	Board	Wages and board
Canada:												
1927	$40	$22	$62	$23	$19	$42	$384	$245	$629	$247	$220	$467
1928	40	23	63	24	20	44	382	252	634	251	225	476
Prince Edward Island:												
1927	30	16	46	18	13	31	285	187	472	184	150	334
1928	32	17	49	18	13	31	310	203	513	198	157	355
Nova Scotia:												
1927	36	19	55	17	13	30	350	212	562	189	151	340
1928	34	19	53	17	15	32	359	208	567	200	163	363
New Brunswick:												
1927	37	20	57	18	14	32	372	216	588	193	154	347
1928	40	19	59	18	15	33	390	212	602	204	169	373
Quebec:												
1927	39	19	58	19	14	33	347	190	537	183	146	329
1928	39	19	58	19	14	33	366	206	572	202	146	348
Ontario:												
1927	37	22	59	22	16	38	366	239	605	250	195	445
1928	36	22	58	23	18	41	348	244	592	254	199	453
Manitoba:												
1927	38	22	60	21	19	40	358	254	612	222	217	439
1928	38	23	61	21	20	41	353	258	611	226	225	451
Saskatchewan:												
1927	43	24	67	24	21	45	415	277	692	260	236	496
1928	44	25	69	25	22	47	411	284	695	262	237	499
Alberta:												
1927	45	25	70	27	22	49	446	290	736	294	250	544
1928	46	26	72	26	23	49	450	295	745	280	262	542
British Columbia:												
1927	51	27	78	28	23	51	498	306	804	300	256	556
1928	50	27	77	29	23	52	501	305	806	320	268	588

The above table shows that in the summer season monthly wages and board combined for both males and females were higher in British Columbia than in any of the other Provinces, although the estimated value of monthly board for females was equally high in 1928 in Alberta.

British Columbia also holds the Canadian record in 1928 for the highest annual wages and board for agricultural male and female labor.

Wages in Road Motor Transport in England

GROWTH of motor traffic has been as marked in England as in this country, and according to the Manchester Guardian in its issue for March 22, 1929, the trade-unions, which had been taken rather unaware by this sudden development, have waked up to the necessity of regulating conditions in this new form of transport.

Since the principal railroad systems have definitely adopted motor transport along the ordinary highroads as part of their transportation program, the National Union of Railwaymen has taken the initiative in securing trade-union conditions for the men employed in this branch. An agreement has been reached between the union and the four principal railway systems by which the road transport employees of the companies will be brought under the railways' conciliation machinery and will enjoy wages and conditions approximating closely to those on the railways. The field of the nonrailway transport services is left open for the Transport and General Workers Union to organize.

Because road transport differs in many respects from railway service, the agreement, which was to become operative March 25, is regarded as experimental and is to be reviewed at the end of 12 months.

The principle of the 8-hour day and the 48-hour week is recognized, but provision has been made for a good deal of elasticity in working hours. Normally the week is to be worked in six turns of 8 hours each, exclusive of mealtimes, but when necessary the daily turn may be extended up to 12 hours, exclusive of mealtimes, provided there is always at least 9 hours of rest between turns of duty and that the week does not exceed 48 hours. Overtime on ordinary days will be paid for at time and a quarter, and Sunday, Christmas Day, and Good Friday duty at time and a half. The payment for Sunday duty is one of the particulars which may have to be modified in the light of experience, but a trial will be made of the present plan.

Weekly wage rates are as follows:

WEEKLY WAGE RATES OF ROAD MOTOR TRANSPORT EMPLOYEES IN ENGLAND, BY AREA

[Conversions into United States currency on basis of shilling=24.33 cents]

Occupation	London		Industrial areas		Rural areas	
	Shillings	Dollars	Shillings	Dollars	Shillings	Dollars
Road motor drivers:						
Class 1	74	18.00	71	17.27	67	16.30
Class 2	68	16.54	65	15.81	61	14.84
Motor omnibus drivers:						
Public vehicles	64	15.57	62	15.08	58	14.11
Private vehicles	60	14.60	58	14.11	54	13.14
Motor parcel vanmen and goods motor drivers:						
Petrol or steam vehicles	60	14.60	57	13.87	53	12.89
Electric vehicles	56	13.62	54	13.14	50	12.17
Motor-bus conductors	58	14.11	54	13.14	50	12.17

TREND OF EMPLOYMENT

Summary for March, 1929

EMPLOYMENT *increased* 0.8 per cent in March, 1929, as compared with February, and pay-roll totals *increased* 1 per cent, as shown by reports made to the Bureau of Labor Statistics.

The classes of employment surveyed, the number of establishments reporting in each class, the number of employees covered, and the total pay rolls for one week, for both February and March, together with the per cents of change in March, are shown in the following statement:

Line of employment	Establishments	Employment		Per cent of change	Pay-rolls in one week		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
1. Manufacturing	**12,151**	**3,437,733**	**3,479,686**	[1] +1.2	**$95,809,938**	**$97,620,846**	[1] +2.1
2. Coal mining	**1,310**	**316,303**	**305,786**	−3.3	**9,510,664**	**8,056,001**	−15.3
Anthracite	158	120,004	110,984	−7.5	4,277,475	3,184,169	−25.6
Bituminous	1,152	196,299	194,802	−0.8	5,233,189	4,871,832	−6.9
3. Metalliferous mining	**307**	**52,643**	**53,983**	+2.5	**1,543,909**	**1,667,340**	+8.0
4. Public utilities	**8,870**	**644,594**	**645,810**	+0.2	**18,834,490**	**19,530,952**	+3.7
5. Trade	**3,253**	**184,737**	**187,421**	+1.5	**4,633,475**	**4,716,332**	+1.8
Wholesale	1,329	38,104	38,279	+0.5	1,128,148	1,152,494	+2.2
Retail	1,924	146,633	149,142	+1.7	3,505,327	3,563,838	+1.7
6. Hotels	**1,734**	**141,426**	**142,912**	+1.1	[2] **2,383,979**	[2] **2,418,428**	+1.4
Total	**27,625**	**4,777,436**	**4,815,598**	+0.8	**132,716,455**	**134,009,899**	+1.0

[1] Weighted per cent of change, but this month the weighted and unweighted per cents of change in employment are identical; the remaining per cents of change, including total, are unweighted.
[2] Cash payments only; see text, p. 214.

Increases in employment and in pay-roll totals were shown in March in each line of employment except coal mining, in which both anthracite and bituminous coal showed the beginning of a more or less seasonal falling-off in production. Owing to market conditions a considerable number of collieries were idle during the first half of March.

For convenient reference the latest data available relating to all employees, excluding executives and officials, on Class I railroads, drawn from Interstate Commerce Commission reports, are shown in the statement following. These reports are for the months of January and February instead of for March and April. Therefore, the figures can not be combined with those presented in the foregoing statement.

Line of employment	Employment		Per cent of change	Amount of pay roll in entire month		Per cent of change
	Jan. 15, 1929	Feb. 15, 1929		January, 1929	February, 1929	
Class I railroads	1,577,874	1,589,351	+0.7	$228,588,941	$215,173,183	−5.9

The total number of employees covered in this summary, including railroads, is 6,400,000 with pay-roll totals in one week of approximately $183,000,000.

1. Employment in Selected Manufacturing Industries in March, 1929

EMPLOYMENT in manufacturing industries *increased* 1.2 per cent in March, 1929, as compared with February, and pay-roll totals *increased* 2.1 per cent, according to returns made to the Bureau of Labor Statistics by 12,138 establishments in 54 of the foremost manufacturing industries of the United States. These establishments in March had 3,459,042 employees whose combined earnings in one week were $97,220,138. These employees represent 53 per cent of all employees in the 54 industries surveyed and more than 40 per cent of the total number of employees in all manufacturing industries in the United States.

An increase in employment in manufacturing industries in March has been shown in each of the last 7 years, except in 1924, but this increase of 1.2 per cent in March, 1929, is considerably greater than the increases in any of the years except 1923.

The Bureau of Labor Statistics' weighted index of employment in manufacturing industries for March, 1929, is 98.6, as compared with 97.4 in February, 1929, 95.2 in January, 1929, and 93.7 in March, 1928; the weighted index for pay-roll totals in March, 1929, is 103.9, as compared with 101.8 in February, 1929, 94.5 in January, 1929, and 95.2 in March, 1928. The monthly average for 1926 equals 100.

Manufacturing employment stood at a higher level in March, 1929, than at any time since April, 1927, and pay-roll totals were greater than at any time since November, 1923.

Thirty-eight of the 54 separate industries had more employees in March than in February and 39 industries reported higher pay-roll totals.

The spectacular gains in March were 45.8 per cent in employment and 38.9 per cent in pay-roll totals in the fertilizer industry, which habitually reaches its highest level in March and April; carriages and wagons showed gains of 13.8 per cent and 15.4 per cent in the two items; the gains in employment in shipbuilding, cast-iron pipe, cane-sugar refining, and women's clothing ranged from 7.2 per cent to 5.7 per cent, while gains in employment of from 3.9 to 3.1 per cent were shown in brick, machine tools, electric-railroad car building and repairing, millinery and lace goods, foundry and machine-shop products, and electrical machinery. The automobile industry gained 1.3 per cent in employment and 0.6 per cent in pay-roll totals, these comparatively small increases being in strong contrast to the sharply

upward trends of the two months immediately preceding; the iron and steel industry gained 1 per cent in employment and 2 per cent in pay-roll totals.

The decreases in employment in March were all small except a seasonal drop of 4.9 per cent in slaughtering and meat packing.

The rayon industry reported an employment increase of 2.6 per cent with a decrease in pay-roll totals of 1.3 per cent.

Increased employment and greater pay-roll totals were shown in March in each geographic division with one exception—a small decrease in employment in the West North Central division. The pronounced increases were in the West South Central, Mountain, and Pacific divisions, while the increases in Eastern States were less notable.

TABLE 1.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL MANUFACTURING ESTABLISHMENTS IN FEBRUARY AND MARCH, 1929

Industry	Establishments	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
Food and kindred products	**1,748**	**222,219**	**218,221**	(1)	**$5,689,802**	**$5,595,232**	(1)
Slaughtering and meat packing	198	90,266	85,839	−4.9	2,332,166	2,199,885	−5.7
Confectionery	305	32,743	32,032	−2.2	600,499	593,725	−1.1
Ice cream	299	10,119	10,282	+1.6	340,435	347,306	+2.0
Flour	343	16,434	16,013	−2.6	430,186	425,903	−1.0
Baking	588	62,067	62,818	+1.2	1,669,246	1,683,709	+0.9
Sugar refining, cane	15	10,590	11,237	+6.1	317,270	344,704	+8.6
Textiles and their products	**2,129**	**627,445**	**632,230**	(1)	**12,595,968**	**12,770,702**	(1)
Cotton goods	467	221,707	220,536	−0.5	3,553,891	3,548,364	−0.2
Hosiery and knit goods	335	94,760	96,354	+1.7	1,822,156	1,865,282	+2.4
Silk goods	284	65,637	66,959	+2.0	1,431,626	1,469,454	+2.6
Woolen and worsted goods	192	63,199	62,522	−1.1	1,430,942	1,396,808	−2.4
Carpets and rugs	30	25,639	25,913	+1.1	649,075	653,322	+0.7
Dyeing and finishing textiles	111	34,938	35,127	+0.5	909,648	908,799	−0.1
Clothing, men's	311	64,008	65,036	+1.6	1,565,649	1,617,098	+3.3
Shirts and collars	122	21,955	22,412	+2.1	352,743	367,260	+4.1
Clothing, women's	204	23,987	25,346	+5.7	606,994	647,017	+6.6
Millinery and lace goods	73	11,615	12,025	+3.5	273,244	297,298	+8.8
Iron and steel and their products	**1,840**	**705,689**	**718,895**	(1)	**22,196,181**	**22,725,967**	(1)
Iron and steel	204	276,311	278,990	+1.0	9,037,396	9,214,254	+2.0
Cast-iron pipe	38	10,536	11,197	+6.3	252,616	251,108	−0.6
Structural ironwork	164	27,007	27,170	+0.6	810,881	811,401	+0.1
Foundry and machine-shop products	995	265,173	273,437	+3.1	8,286,566	8,620,539	+4.0
Hardware	68	33,259	33,441	+0.5	882,153	876,220	−0.7
Machine tools	146	38,575	40,041	+3.8	1,303,799	1,344,303	+3.1
Steam fittings and steam and hot-water heating apparatus	110	35,600	34,932	−1.9	1,082,936	1,055,158	−2.6
Stoves	115	19,228	19,687	+2.4	539,834	552,984	+2.4
Lumber and its products	**1,380**	**234,919**	**237,126**	(1)	**5,130,552**	**5,240,562**	(1)
Lumber, sawmills	635	134,040	135,777	+1.3	2,695,095	2,759,295	+2.4
Lumber, millwork	321	34,091	35,082	+2.9	788,692	839,666	+6.5
Furniture	424	66,788	66,267	−0.8	1,646,765	1,641,601	−0.3
Leather and its products	**363**	**125,128**	**123,353**	(1)	**2,838,176**	**2,743,499**	(1)
Leather	131	26,359	25,988	−1.4	672,532	647,994	−3.6
Boots and shoes	232	98,769	97,365	−1.4	2,165,644	2,095,505	−3.2
Paper and printing	**1,161**	**209,589**	**209,070**	(1)	**6,982,210**	**7,084,728**	(1)
Paper and pulp	217	60,480	60,504	+(2)	1,675,505	1,673,749	−0.1
Paper boxes	185	19,549	19,548	−(2)	448,016	457,664	+2.2
Printing, book and job	329	50,361	50,136	−0.4	1,718,765	1,769,015	+2.9
Printing, newspapers	430	79,199	78,882	−0.4	3,139,924	3,184,300	+1.4
Chemicals and allied products	**380**	**97,174**	**103,049**	(1)	**2,855,821**	**2,948,201**	(1)
Chemicals	144	39,085	38,677	−1.0	1,099,519	1,088,343	−1.0
Fertilizers	176	11,238	16,385	+45.8	202,056	280,596	+38.9
Petroleum refining	60	46,851	47,987	+2.4	1,554,246	1,579,262	+1.6

[1] The per cent of change has not been computed for the reason that the figures in the preceding columns are unweighted and refer only to the establishments reporting; for the weighted per cent of change, wherein proper allowance is made for the relative importance of the several industries, so that the figures may represent all establishments of the country in the industries here represented, see Table 2.

[2] Less than one-tenth of 1 per cent.

TABLE 1.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL MANUFACTURING ESTABLISHMENTS IN FEBRUARY AND MARCH, 1929—Continued

Industry	Establishments	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
Stone, clay, and glass products	**938**	**120,323**	**123,597**	(1)	**$3,062,153**	**$3,202,092**	(1)
Cement	108	22,901	23,490	+2.6	637,336	666,476	+4.6
Brick, tile, and terra cotta	580	33,949	35,276	+3.9	809,635	867,677	+7.2
Pottery	121	20,377	20,741	+1.8	497,413	504,424	+1.4
Glass	129	43,096	44,090	+2.3	1,117,769	1,163,515	+4.1
Metal products, other than iron and steel	**229**	**56,179**	**56,892**	(1)	**1,563,139**	**1,605,245**	(1)
Stamped and enameled ware	75	20,325	20,693	+1.8	506,753	521,941	+3.0
Brass, bronze, and copper products	154	35,854	36,199	+1.0	1,056,386	1,083,304	+2.5
Tobacco products	**259**	**63,815**	**63,824**	(1)	**1,008,635**	**1,028,414**	(1)
Chewing and smoking tobacco and snuff	28	9,131	8,949	−2.0	147,711	138,402	−6.3
Cigars and cigarettes	231	54,684	54,875	+0.3	860,324	890,012	+3.5
Vehicles for land transportation	**1,247**	**634,970**	**643,702**	(1)	**21,667,932**	**21,971,028**	(1)
Automobiles	214	473,396	479,599	+1.3	16,731,773	16,828,020	+0.6
Carriages and wagons	54	1,410	1,604	+13.8	30,857	35,610	+15.4
Car building and repairing, electric-railroad	419	25,771	26,773	+3.7	801,878	833,393	+3.9
Car building and repairing, steam-railroad	560	134,393	135,766	+1.0	4,103,424	4,274,005	+4.2
Miscellaneous industries	**477**	**340,283**	**349,727**	(1)	**10,219,969**	**10,705,176**	(1)
Agricultural implements	78	27,155	27,696	+2.0	830,443	856,934	+3.2
Electrical machinery, apparatus, and supplies	180	173,710	179,177	+3.1	5,335,667	5,721,036	+7.2
Pianos and organs	69	8,373	8,133	−2.9	245,512	250,470	+2.0
Rubber boots and shoes	11	16,475	16,165	−1.9	374,267	376,771	+0.7
Automobile tires	44	61,413	62,502	+1.8	2,034,548	2,037,691	+0.2
Shipbuilding	82	33,035	35,410	+7.2	993,464	1,061,566	+6.9
Rayon [3]	13	20,122	20,644	+2.6	406,068	400,708	−1.3
All industries	**12,151**	**3,437,733**	**3,479,686**	(1)	**95,809,938**	**97,620,846**	(1)

RECAPITULATION BY GEOGRAPHIC DIVISIONS

GEOGRAPHIC DIVISION							
New England [4]	1,453	401,684	404,600	+0.7	$10,164,834	$10,317,621	+1.5
Middle Atlantic [5]	2,824	894,726	903,319	+1.0	25,966,298	26,543,224	+2.2
East North Central [6]	3,142	1,239,213	1,256,767	+1.4	39,392,103	39,987,704	+1.5
West North Central [7]	1,125	175,241	174,245	−0.6	4,455,758	4,500,176	+1.0
South Atlantic [8]	1,498	347,695	352,992	+1.5	6,901,117	7,038,361	+2.0
East South Central [9]	619	132,305	133,387	+0.8	2,531,642	2,541,377	+0.4
West South Central [10]	506	86,496	89,720	+3.7	1,909,685	2,053,572	+7.5
Mountain [11]	217	30,103	31,180	+3.6	855,850	886,052	+3.5
Pacific [12]	767	130,270	133,476	+2.5	3,632,651	3,752,759	+3.3
All divisions	**12,151**	**3,437,733**	**3,479,686**	(1)	**95,809,938**	**97,620,846**	(1)

[1] The per cent of change has not been computed for the reason that the figures in the preceding columns are unweighted and refer only to the establishments reporting; for the weighted per cent of change, wherein proper allowance is made for the relative importance of the several industries, so that the figures may represent all establishments of the country in the industries here represented, see Table 2.

[3] The rayon industry was surveyed for the January-February comparison for the first time; since the data for computing relative numbers are not yet available the industry is not included in the indexes. The total figures for 54 manufacturing industries given in the text, p. 199, do not include rayon.

[4] Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.

[5] New Jersey, New York, Pennsylvania.

[6] Illinois, Indiana, Michigan, Ohio, Wisconsin.

[7] Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota.

[8] Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia.

[9] Alabama, Kentucky, Mississippi, Tennessee.

[10] Arkansas, Louisiana, Oklahoma, Texas.

[11] Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming.

[12] California, Oregon, Washington.

TABLE 2.—PER CENT OF CHANGE, FEBRUARY TO MARCH, 1929—12 GROUPS OF INDUSTRIES AND TOTAL OF ALL INDUSTRIES

[Computed from the index numbers of each group, which are obtained by weighting the index numbers of the several industries of the group, by the number of employees, or wages paid, in the industries]

Group	Per cent of change, February to March, 1929		Group	Per cent of change, February to March, 1929	
	Number on pay roll	Amount of pay roll		Number on pay roll	Amount of pay roll
Food and kindred products	−1.2	−1.2	Metal products other than iron and steel	+1.2	+2.7
Textiles and their products	+1.1	+2.1	Tobacco products	(1)	+2.3
Iron and steel and their products	+2.1	+2.6	Vehicles for land transportation	+1.2	+2.1
Lumber and its products	+0.8	+2.2	Miscellaneous industries	+2.7	+4.9
Leather and its products	−1.4	−3.3			
Paper and printing	−0.3	+1.6	**All industries**	**+1.2**	**+2.1**
Chemicals and allied products	+6.1	+3.0			
Stone, clay, and glass products	+2.8	+4.6			

[1] No change.

Comparison of Employment and Pay-Roll Totals in Manufacturing Industries in March, 1929, and March, 1928

THE LEVEL of employment in manufacturing industries in March, 1929, was 5.2 per cent higher than in March, 1928, and pay-roll totals were 9.1 per cent higher.

March was the sixth successive month showing a higher level of employment than the same month of the preceding year, the percentage of increase, which in the first of the six months was 0.6 only, having been substantially greater in each succeeding month.

Among the 31 industries which reported increased employment over the 12-month interval the notable increases were: 39.3 per cent in machine tools; 27.9 per cent in automobiles; 23.3 per cent in shipbuilding; 21.6 per cent in electrical machinery; 21.2 per cent in agricultural implements; 16.7 per cent in brass products; 16.1 per cent in foundry and machine-shop products; and 10.6 per cent in automobile tires. The iron and steel *industry* showed a gain of 3.8 per cent.

The outstanding gains in employment in the groups of industries, in this comparison between March, 1929, and March, 1928, were: 19.7 per cent in the group of miscellaneous industries; 14.7 per cent in the vehicle group; 12.3 per cent in the nonferrous group; and 10.2 per cent in the iron and steel *group*.

The East North Central geographic division in March continued to show a very large gain in this yearly comparison, the increase having been 13.3 per cent, with the Middle Atlantic division following with a gain of 5.1 per cent.

TABLE 3.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN MANUFACTURING INDUSTRIES, MARCH, 1929, WITH MARCH, 1928

[The per cents of change for each of the 12 groups of industries and for the total of all industries are weighted in the same manner as are the per cents of change in Table 2]

Industry	Per cent of change, March, 1929, compared with March, 1928	
	Number on pay roll	Amount of pay roll
Food and kindred products	**+0.1**	**−0.3**
Slaughtering and meat packing	−2.4	−3.2
Confectionery	−2.0	−1.2
Ice cream	−2.7	−0.2
Flour	+1.4	+1.7
Baking	+2.3	+1.5
Sugar refining, cane	+9.6	+7.3
Textiles and their products	**−0.4**	**+3.1**
Cotton goods	−0.9	+4.9
Hosiery and knit goods	−1.2	+2.6
Silk goods	−1.7	−0.2
Woolen and worsted goods	+2.8	+6.3
Carpets and rugs	+6.2	+2.7
Dyeing and finishing textiles	+2.9	+3.9
Clothing, men's	−2.7	+3.4
Shirts and collars	−2.3	−0.3
Clothing, women's	+3.4	+3.7
Millinery and lace goods	−1.1	+2.9
Iron and steel and their products	**+10.2**	**+13.7**
Iron and steel	+3.8	+7.2
Cast-iron pipe	−9.2	−13.2
Structural ironwork	+9.7	+9.1
Foundry and machine-shop products	+16.1	+22.2
Hardware	+7.0	+10.6
Machine tools	+39.3	+44.9
Steam fittings and steam and hot-water heating apparatus	−2.0	+0.9
Stoves	+6.8	+6.3
Lumber and its products	(1)	**−0.9**
Lumber, sawmills	−1.7	−4.9
Lumber, millwork	+3.1	+3.8
Furniture	+1.2	+2.0
Leather and its products	**−4.9**	**−8.9**
Leather	−9.2	−11.1
Boots and shoes	−3.6	−7.8
Paper and printing	**+1.3**	**+4.9**
Paper and pulp	+0.4	+2.6
Paper boxes	−0.6	+4.1
Printing, book and job	+3.4	+6.1
Printing, newspaper	+2.0	+4.9
Chemicals and allied products	**+1.5**	**+1.8**
Chemicals	+5.0	+3.5
Fertilizers	−5.1	−5.9
Petroleum refining	+8.1	+8.3
Stone, clay, and glass products	**−3.8**	**−4.4**
Cement	−4.8	−4.3
Brick, tile, and terra cotta	−8.6	−8.9
Pottery	+0.1	−7.8
Glass	+4.5	+8.9
Metal products, other than iron and steel	**+12.3**	**+21.9**
Stamped and enameled ware	+3.6	+5.0
Brass, bronze, and copper products	+16.7	+28.8
Tobacco products	**−1.9**	**−2.4**
Chewing and smoking tobacco and snuff	−6.4	−6.6
Cigars and cigarettes	−0.9	−1.8
Vehicles for land transportation	**+14.7**	**+18.3**
Automobiles	+27.9	+26.4
Carriages and wagons	+7.9	+10.5
Car building and repairing, electric-railroad	−4.6	−6.3
Car building and repairing, steam-railroad	+0.1	+4.8
Miscellaneous industries	**+19.7**	**+24.6**
Agricultural implements	+21.2	+21.7
Electrical machinery, apparatus, and supplies	+21.6	+25.5
Pianos and organs	−7.6	−5.0
Rubber boots and shoes	−4.8	−7.0
Automobile tires	+10.6	+11.3
Shipbuilding	+23.3	+26.3
All industries	**+5.2**	**+9.1**

RECAPITULATION BY GEOGRAPHIC DIVISIONS

GEOGRAPHIC DIVISION [2]			GEOGRAPHIC DIVISION		
New England	+2.1	+7.9	West South Central	+3.8	+8.0
Middle Atlantic	+5.1	+8.0	Mountain	+2.5	+4.5
East North Central	+13.3	+15.5	Pacific	+0.5	−0.3
West North Central	+1.4	+2.0			
South Atlantic	+1.6	+4.7	**All divisions**	**+5.2**	**+9.1**
East South Central	+1.4	+1.3			

[1] No change.
[2] See footnotes 4 to 12, p. 201.

Per Capita Earnings in Manufacturing Industries in March, 1929

PER CAPITA EARNINGS of employees, in the combined 54 manufacturing industries, in March, 1929, were 0.9 per cent higher than in February, 1929, and 3.7 per cent higher than in March, 1928.

Thirty-four of the 54 industries showed increased per capita earnings in March as compared with February, while 35 industries showed higher per capita earnings than in March, 1928.

TABLE 4.—COMPARISON OF PER CAPITA EARNINGS IN **MANUFACTURING** INDUSTRIES, MARCH, 1929, WITH FEBRUARY, 1929, AND MARCH, 1928

Industry	Per cent of change March, 1929, compared with—		Industry	Per cent of change March, 1929, compared with—	
	February 1929	March, 1928		February, 1929	March 1928
Millinery and lace goods	+5.1	+4.0	Cotton goods	+0.4	+6.0
Pianos and organs	+5.0	+2.3	Furniture	+0.4	+0.8
Electrical machinery, apparatus, and supplies	+3.9	+3.0	Ice cream	+0.4	+2.7
Lumber, millwork	+3.5	+0.5	Car building and repairing, electric-railroad	+0.2	−2.1
Printing, book and job	+3.4	+2.6	Chemicals	+(1)	−1.3
Brick, tile, and terra cotta	+3.1	−0.3	Stoves	+(1)	−0.4
Car building and repairing, steam-railroad	+3.1	+4.5	Paper and pulp	−0.1	+1.9
Cigars and cigarettes	+3.1	−0.7	Baking	−0.3	−1.1
Rubber boots and shoes	+2.6	−2.3	Shipbuilding	−0.3	+2.3
Sugar refining, cane	+2.4	−2.1	Carpets and rugs	−0.4	−3.5
Paper boxes	+2.1	+4.8	Pottery	−0.4	−7.9
Shirts and collars	+2.0	+2.1	Structural ironwork	−0.5	−0.7
Cement	+1.9	+0.8	Automobiles	−0.7	−1.0
Printing, newspapers	+1.8	+2.6	Dyeing and finishing textiles	−0.7	+0.6
Glass	+1.7	+4.0	Machine tools	−0.7	+3.7
Brass, bronze, and copper products	+1.6	+10.7	Steam fittings and steam and hot-water heating apparatus	−0.7	+2.9
Clothing, men's	+1.6	+5.7	Petroleum refining	−0.8	+0.2
Flour	+1.6	+0.4	Slaughtering and meat packing	−0.8	−0.4
Carriages and wagons	+1.5	+2.4	Hardware	−1.2	+3.2
Agricultural implements	+1.2	+0.3	Woolen and worsted goods	−1.3	+3.4
Stamped and enameled ware	+1.2	+1.3	Automobile tires	−1.6	+0.3
Confectionery	+1.1	+1.0	Boots and shoes	−1.9	−4.8
Iron and steel	+1.0	+3.4	Leather	−2.3	−2.1
Lumber, sawmills	+1.0	−3.4	Chewing and smoking tobacco and snuff	−4.4	−0.1
Clothing, women's	+0.9	+0.1	Fertilizers	−4.7	−0.5
Foundry and machine-shop products	+0.9	+5.2	Cast-iron pipe	−6.5	−4.7
Hosiery and knit goods	+0.7	+3.5	**All industries**	**+0.9**	**+3.7**
Silk goods	+0.6	+1.7			

[1] Less than one-tenth of 1 per cent.

Wage Changes in Manufacturing Industries

ONE HUNDRED AND EIGHTEEN establishments in 21 manufacturing industries reported wage-rate increases made during the month ending March 15, 1929. These increases averaged 7.1 per cent and affected more than 24,000 employees, or 58 per cent of all employees in the establishments concerned.

Twelve establishments in 8 industries reported wage-rate decreases during the same period. These decreases averaged 10.2 per cent and affected 473 employees or 33 per cent of all employees in the establishments concerned.

Seventy-two of the 118 establishments reporting increases were in the two car-building-and-repairing industries. These establishments

reported increases to more than 22,000 of their employees. These increases combined with February's report make a total of 30,000 employees in 111 car shops who received wage-rate increases between January 15 and March 15, 1929.

TABLE 5.—WAGE ADJUSTMENTS IN **MANUFACTURING** INDUSTRIES OCCURRING BETWEEN FEBRUARY 15 AND MARCH 15, 1929

Industry	Establishments		Per cent of increase or decrease in wage rate		Employees affected		
	Total number reporting	Number reporting increase or decrease in wage rates	Range	Average	Total number	Per cent of employees: In establishments reporting increase or decrease in wage rates	Per cent of employees: In all establishments reporting
			Increases				
Slaughtering and meat packing	198	2	1.1– 3.0	1.6	24	8	(1)
Baking	588	2	5.9–12.5	9.1	52	6	(1)
Iron and steel	204	1	4.9	4.9	120	100	(1)
Foundry and machine-shop products	995	6	4.0–15.0	5.7	183	42	(1)
Hardware	68	2	4.8–10.0	5.2	62	4	(1)
Machine tools	146	5	5.0– 9.3	6.7	42	7	(1)
Furniture	424	3	2.0–10.0	8.1	19	6	(1)
Paper and pulp	217	1	1.0	1.0	20	9	(1)
Paper boxes	185	2	3.5– 5.0	4.2	18	7	(1)
Printing, newspapers	430	4	1.0– 9.9	4.7	232	23	(1)
Chemicals	144	1	10.0	10.0	142	8	(1)
Fertilizers	176	4	4.5–30.0	10.4	371	35	2
Brick, tile, and terra cotta	580	1	5.0	5.0	27	100	(1)
Glass	129	4	7.0–20.0	14.7	166	10	(1)
Brass, bronze, and copper products	154	1	4.0	4.0	22	96	(1)
Car building and repairing, electric-railroad	419	3	4.4–10.0	5.0	123	92	(1)
Car building and repairing, steam-railroad	560	69	4.4– 9.3	7.1	22,179	79	16
Agricultural implements	78	1	10.8	10.8	14	6	(1)
Electrical machinery, apparatus, and supplies	180	4	2.8– 9.0	3.6	171	8	(1)
Automobile tires	44	1	5.0	5.0	15	23	(1)
Shipbuilding	82	1	12.0	12.0	20	8	(1)
			Decreases				
Cotton goods	467	1	10.0	10.0	50	25	(1)
Clothing, men's	311	1	10.0	10.0	70	6	(1)
Iron and steel	204	2	10.0	10.0	55	15	(1)
Foundry and machine-shop products	995	1	12.5	12.5	46	17	(1)
Lumber, sawmills	635	2	5.0–20.0	5.7	113	100	(1)
Boots and shoes	232	1	10.0	10.0	16	22	(1)
Brick, tile, and terra cotta	580	3	5.0–20.0	10.0	75	39	(1)
Glass	129	1	20.0	20.0	48	60	(1)

[1] Less than one-half of 1 per cent.

Indexes of Employment and Pay-Roll Totals in Manufacturing Industries

INDEX NUMBERS for March, 1928, and for January, February, and March, 1929, showing relatively the variation in number of persons employed and in pay-roll totals in each of the 54 manufacturing industries surveyed by the Bureau of Labor Statistics, together with

general indexes for the combined 12 groups of industries, appear in Table 6.

TABLE 6.—INDEXES OF EMPLOYMENT AND PAY-ROLL TOTALS IN **MANUFACTURING** INDUSTRIES, MARCH, 1928, AND JANUARY, FEBRUARY, AND MARCH, 1929

[Monthly average, 1926=100]

Industry	Employment				Pay-roll totals			
	1928	1929			1928	1929		
	March	January	February	March	March	January	February	March
General index	**93.7**	**95.2**	**97.4**	**98.6**	**95.2**	**94.5**	**101.8**	**103.9**
Food and kindred products	**97.3**	**98.4**	**98.6**	**97.4**	**98.9**	**99.6**	**99.8**	**98.6**
Slaughtering and meat packing	100.7	105.9	103.4	98.3	101.1	108.4	103.9	97.9
Confectionery	90.3	90.9	90.5	88.5	91.9	91.9	91.8	90.8
Ice cream	82.8	79.9	79.3	80.6	82.9	78.9	81.1	82.7
Flour	100.1	101.1	104.2	101.5	101.4	101.5	104.1	103.1
Baking	99.4	98.7	100.5	101.7	100.7	98.5	101.3	102.2
Sugar refining, cane	89.5	90.4	92.4	98.1	96.9	92.8	95.8	104.0
Textiles and their products	**100.3**	**96.9**	**98.8**	**99.9**	**101.2**	**96.3**	**102.2**	**104.3**
Cotton goods	99.5	98.6	99.1	98.6	95.4	97.6	100.3	100.1
Hosiery and knit goods	98.3	92.9	95.5	97.1	101.5	93.8	101.6	104.1
Silk goods	101.6	95.2	97.9	99.9	106.6	92.8	103.7	106.4
Woolen and worsted goods	93.9	98.3	97.6	96.5	91.4	98.6	99.6	97.2
Carpets and rugs	103.2	107.9	108.4	109.6	101.3	102.0	103.3	104.0
Dyeing and finishing textiles	102.2	102.0	104.7	105.2	105.7	104.2	110.0	109.8
Clothing, men's	96.3	89.3	92.2	93.7	94.7	86.9	94.8	97.9
Shirts and collars	96.6	91.6	92.5	94.4	95.4	86.1	91.4	95.1
Clothing, women's	113.3	105.6	110.9	117.2	120.3	107.4	117.0	124.7
Millinery and lace goods	102.9	92.6	98.4	101.8	104.5	89.9	98.8	107.5
Iron and steel and their products	**90.0**	**94.8**	**97.2**	**99.2**	**92.5**	**95.5**	**102.5**	**105.2**
Iron and steel	91.5	93.4	94.0	95.0	95.3	95.5	100.2	102.2
Cast-iron pipe	80.8	73.3	69.1	73.4	80.5	67.0	70.3	69.9
Structural ironwork	89.4	97.7	97.6	98.1	91.0	96.3	99.2	99.3
Foundry and machine-shop products	89.9	97.6	101.3	104.4	90.8	97.7	106.7	111.0
Hardware	89.1	92.2	94.8	95.3	89.0	93.0	99.1	98.4
Machine tools	92.6	120.1	124.3	129.0	98.2	129.1	138.0	142.3
Steam fittings and steam and hot-water heating apparatus	84.3	81.2	84.3	82.6	84.9	78.4	88.0	85.7
Stoves	84.8	81.1	88.4	90.6	82.1	73.8	85.2	87.3
Lumber and its products	**86.2**	**85.2**	**85.5**	**86.2**	**87.6**	**81.9**	**84.9**	**86.8**
Lumber, sawmills	84.5	82.2	82.1	83.1	86.2	77.9	80.1	82.0
Lumber, millwork	83.4	83.3	83.6	86.0	83.2	79.1	81.1	86.4
Furniture	93.5	94.2	95.4	94.6	94.8	92.0	97.0	96.7
Leather and its products	**96.5**	**91.0**	**93.1**	**91.8**	**96.8**	**87.1**	**91.2**	**88.2**
Leather	99.1	90.8	91.3	90.0	99.7	87.6	92.0	88.6
Boots and shoes	95.6	91.0	93.5	92.2	95.6	86.9	91.0	88.1
Paper and printing	**98.8**	**99.6**	**100.4**	**100.1**	**101.4**	**103.2**	**104.7**	**106.4**
Paper and pulp	94.6	94.5	95.0	95.0	95.9	95.7	98.5	98.4
Paper boxes	93.2	92.2	92.6	92.6	97.3	97.4	99.1	101.3
Printing, book and job	99.1	100.8	102.9	102.5	102.2	103.2	105.3	108.4
Printing, newspapers	104.5	107.1	107.0	106.6	106.3	110.1	110.0	111.5
Chemicals and allied products	**101.7**	**94.4**	**97.3**	**103.2**	**100.7**	**95.1**	**99.5**	**102.5**
Chemicals	100.0	102.7	106.1	105.0	105.4	104.8	110.2	109.1
Fertilizers	146.1	92.0	95.1	138.6	133.2	90.4	90.2	125.3
Petroleum refining	83.6	86.1	88.3	90.4	85.3	86.8	90.9	92.4
Stone, clay, and glass products	**87.3**	**81.6**	**81.7**	**84.0**	**87.1**	**77.5**	**79.6**	**83.3**
Cement	83.5	78.5	77.5	79.5	81.0	72.0	74.1	77.5
Brick, tile, and terra cotta	79.8	72.7	70.2	72.9	76.7	67.6	65.2	69.9
Pottery	97.0	94.3	95.4	97.1	102.0	85.2	92.7	94.0
Glass	91.9	89.7	93.9	96.0	92.5	91.2	96.8	100.7
Metal products, other than iron and steel	**90.7**	**97.2**	**100.7**	**101.9**	**92.1**	**102.4**	**109.4**	**112.3**
Stamped and enameled ware	89.8	87.8	91.4	93.0	93.9	84.8	95.7	98.6
Brass, bronze, and copper products	90.9	101.7	105.1	106.1	91.4	109.3	114.8	117.7

TABLE 6.—INDEXES OF EMPLOYMENT AND PAY-ROLL TOTALS IN **MANUFACTURING** INDUSTRIES, MARCH, 1928, AND JANUARY, FEBRUARY, AND MARCH, 1929—Continued

Industry	Employment				Pay-roll totals			
	1928	1929			1928	1929		
	March	January	February	March	March	January	February	March
Tobacco products	**96.0**	**86.3**	**94.2**	**94.2**	**91.4**	**81.0**	**87.2**	**89.2**
Chewing and smoking tobacco and snuff	100.8	95.1	96.2	94.3	96.3	96.8	96.0	89.9
Cigars and cigarettes	95.1	85.2	93.9	94.2	90.7	79.1	86.1	89.1
Vehicles for land transportation	**93.2**	**99.8**	**105.6**	**106.9**	**99.1**	**95.5**	**114.8**	**117.2**
Automobiles	104.9	121.1	132.5	134.2	114.1	111.4	143.3	144.2
Carriages and wagons	74.9	69.2	71.0	80.8	78.9	74.3	75.6	87.2
Car building and repairing, electric-railroad	98.3	90.5	90.5	93.8	101.2	90.6	91.3	94.8
Car building and repairing, steam-railroad	83.5	81.6	82.8	83.6	87.1	79.6	87.6	91.3
Miscellaneous industries	**89.7**	**102.8**	**104.6**	**107.4**	**90.4**	**101.7**	**107.3**	**112.6**
Agricultural implements	106.8	121.3	126.8	129.4	113.8	124.1	134.3	138.5
Electrical machinery, apparatus, and supplies	90.0	103.4	106.1	109.4	92.3	103.8	108.0	115.8
Pianos and organs	78.0	76.3	74.3	72.1	74.0	71.8	69.0	70.3
Rubber boots and shoes	99.1	99.8	96.1	94.3	98.5	96.1	91.0	91.6
Automobile tires	100.7	108.2	109.5	111.4	106.0	103.4	117.8	118.0
Shipbuilding	82.0	94.1	94.3	101.1	81.4	93.6	96.2	102.8

Table 7 shows the general index of employment in manufacturing industries and the general index of pay-roll totals, by months, from January, 1923, to March, 1929.

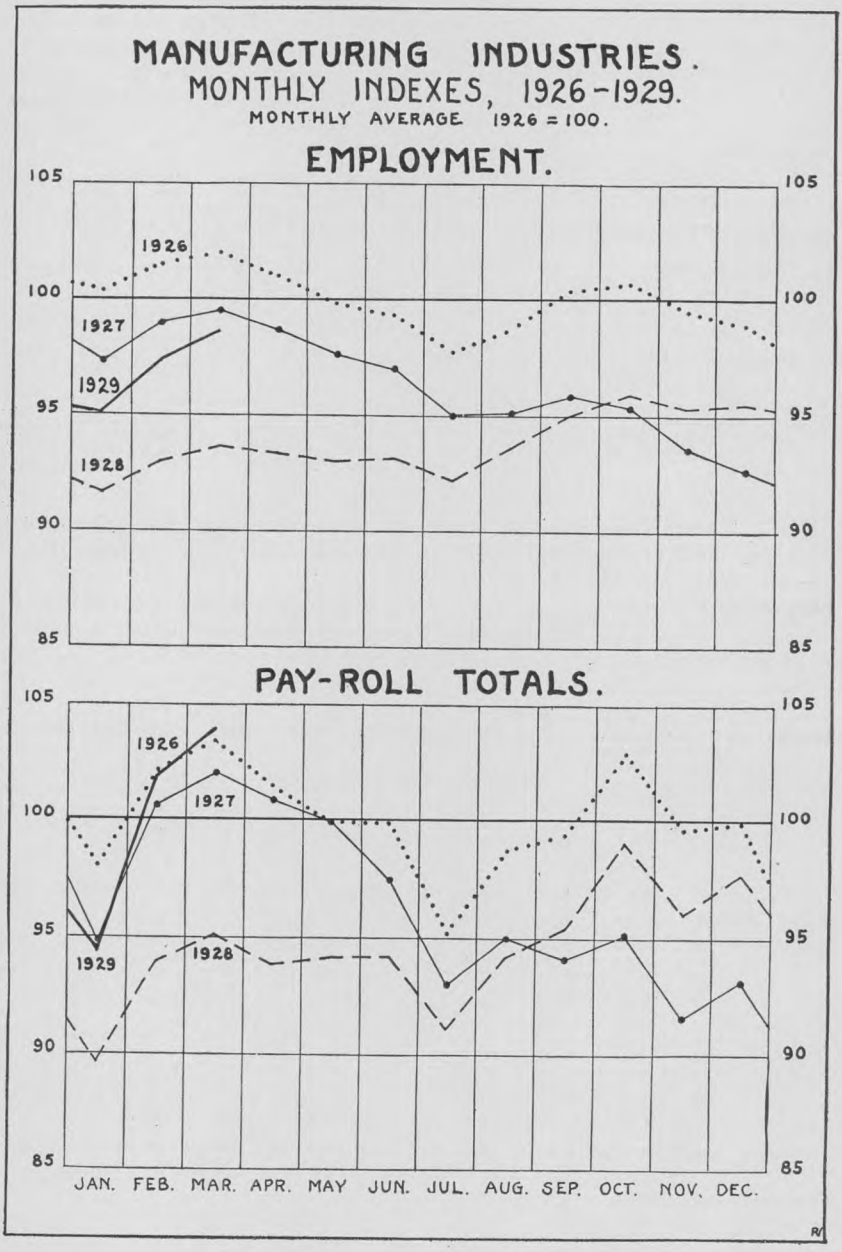
Following Table 7 is a chart which represents the 54 industries combined and shows, by months, the course of pay-roll totals as well as the course of employment. It includes the years 1926 and 1927, as well as 1928, and January, February, and March, 1929.

TABLE 7.—GENERAL INDEXES OF EMPLOYMENT AND PAY-ROLL TOTALS IN **MANUFACTURING** INDUSTRIES, JANUARY, 1923, TO MARCH, 1929

[Monthly average, 1926=100]

Month	Employment							Pay-roll totals						
	1923	1924	1925	1926	1927	1928	1929	1923	1924	1925	1926	1927	1928	1929
January	106.6	103.8	97.9	100.4	97.3	91.6	95.2	95.8	98.6	93.9	98.0	94.9	89.6	94.5
February	108.4	105.1	99.7	101.5	99.0	93.0	97.4	99.4	103.8	99.3	102.2	100.6	93.9	101.8
March	110.8	104.9	100.4	102.0	99.5	93.7	98.6	104.7	103.3	100.8	103.4	102.0	95.2	103.9
April	110.8	102.8	100.2	101.0	98.6	93.3	------	105.7	101.1	98.3	101.5	100.8	93.8	------
May	110.8	98.8	98.9	99.8	97.6	93.0	------	109.4	96.5	98.5	99.8	99.8	94.1	------
June	110.9	95.6	98.0	99.3	97.0	93.1	------	109.3	90.8	95.7	99.7	97.4	94.2	------
July	109.2	92.3	97.2	97.7	95.0	92.2	------	104.3	84.3	93.5	95.2	93.0	91.2	------
August	108.5	92.5	97.8	98.7	95.1	93.6	------	103.7	87.2	95.4	98.7	95.0	94.2	------
September	108.6	94.3	98.9	100.3	95.8	95.0	------	104.4	89.8	94.4	99.3	94.1	95.4	------
October	108.1	95.6	100.4	100.7	95.3	95.9	------	106.8	92.4	100.4	102.9	95.2	99.0	------
November	107.4	95.5	100.7	99.5	93.5	95.4	------	105.4	91.4	100.4	99.6	91.6	96.1	------
December	105.4	97.3	100.8	98.9	92.6	95.5	------	103.2	95.7	101.6	99.8	93.2	97.7	------
Average	**108.8**	**98.2**	**99.2**	**100.0**	**96.4**	**93.8**	[1] **97.1**	**104.3**	**94.6**	**97.7**	**100.0**	**96.5**	**94.5**	[1] **100.1**

[1] Average for 3 months.



Time Worked and Force Employed in Manufacturing Industries in March, 1929

REPORTS as to working time and force employed in March, 1929, were received from 9,503 establishments in the 54 separate industries. Employees in 82 per cent of these establishments were working full time and employees in 17 per cent were working part time, while 1 per cent of the establishments were idle; 36 per cent of the establishments had a full normal force of employees and 63 per cent were operating with reduced forces.

The establishments in operation had an average of 92 per cent of a full normal force of employees who were working an average of 98 per cent of full time.

TABLE 8.—PROPORTION OF TIME WORKED AND FORCE EMPLOYED IN **MANUFACTURING** INDUSTRIES IN MARCH, 1929

Industry	Establishments reporting		Operating establishments only—					
			Per cent of establishments in which employees worked—		Average per cent of full time worked by employees in establishments operating	Per cent of establishments operating with—		Average per cent of full normal force employed in establishments operating
	Total number	Per cent idle	Full time	Part time		Full normal force	Part normal force	
Food and kindred products	**1,355**	(1)	**84**	**16**	**98**	**33**	**67**	**86**
Slaughtering and meat packing	148	------	87	13	99	43	57	90
Confectionery	252	------	70	30	94	12	88	71
Ice cream	164	2	84	15	98	7	91	65
Flour	276	------	80	20	96	42	58	91
Baking	503	(1)	91	8	100	44	56	97
Sugar refining, cane	12	------	92	8	99	25	75	88
Textiles and their products	**1,521**	(1)	**87**	**13**	**99**	**40**	**60**	**91**
Cotton goods	408	------	88	12	98	38	62	88
Hosiery and knit goods	173	1	83	16	97	40	59	95
Silk goods	179	------	91	9	100	41	59	95
Woolen and worsted goods	162	------	85	15	98	30	70	83
Carpets and rugs	26	------	77	23	97	50	50	102
Dyeing and finishing	92	------	80	20	99	39	61	93
Clothing, men's	221	1	88	11	99	38	62	91
Shirts and collars	73	------	92	8	99	51	49	98
Clothing, women's	138	------	89	11	100	52	48	98
Millinery and lace goods	49	------	88	12	98	41	59	96
Iron and steel and their products	**1,617**	(1)	**78**	**22**	**97**	**38**	**62**	**92**
Iron and steel	155	------	74	26	95	34	66	90
Cast-iron pipe	24	------	54	46	88	21	79	70
Structural ironwork	151	1	81	19	98	31	68	89
Foundry and machine-shop products	908	------	80	20	98	39	61	93
Hardware	52	------	73	27	97	23	77	86
Machine tools	130	------	92	8	103	68	32	121
Steam fittings and steam and hot-water heating apparatus	95	------	76	24	96	33	67	83
Stoves	102	------	60	40	91	27	73	90
Lumber and its products	**1,020**	**1**	**73**	**26**	**95**	**30**	**69**	**84**
Lumber, sawmills	400	3	76	21	95	34	64	81
Lumber, millwork	251	------	62	38	94	20	80	78
Furniture	369	------	76	24	97	34	66	92
Leather and its products	**325**	------	**83**	**17**	**97**	**38**	**62**	**88**
Leather	116	------	87	13	99	28	72	81
Boots and shoes	209	------	80	20	96	44	56	90
Paper and printing	**907**	(1)	**92**	**8**	**99**	**53**	**47**	**97**
Paper and pulp	153	------	88	12	99	33	67	92
Paper boxes	153	------	80	20	98	31	69	88
Printing, book and job	285	------	96	4	100	47	53	100
Printing, newspapers	316	(1)	96	4	100	78	21	102

(1) Less than one-half of 1 per cent.

TABLE 8.—PROPORTION OF TIME WORKED AND FORCE EMPLOYED IN MANUFACTURING INDUSTRIES IN MARCH, 1929—Continued

Industry	Establishments reporting		Operating establishments only—					
			Per cent of establishments in which employees worked—		Average per cent of full time worked by employees in establishments operating	Per cent of establishments operating with—		Average per cent of full normal force employed in establishments operating
	Total number	Per cent idle	Full time	Part time		Full normal force	Part normal force	
Chemicals and allied products	**275**		**89**	**11**	**99**	**36**	**64**	**88**
Chemicals	108		94	6	99	51	49	100
Fertilizers	135		87	13	100	25	75	78
Petroleum refining	32		78	22	91	28	72	85
Stone, clay, and glass products	**689**	8	**75**	**16**	**97**	**25**	**67**	**84**
Cement	87		89	11	98	22	78	76
Brick, tile, and terra cotta	383	15	68	17	96	16	69	78
Pottery	116	1	74	25	97	46	53	93
Glass	103		94	6	100	36	64	91
Metal products, other than iron and steel	**189**		**83**	**17**	**98**	**39**	**61**	**97**
Stamped and enameled ware	63		84	16	98	40	60	90
Brass, bronze, and copper products	126		82	18	99	39	61	100
Tobacco products	**230**	**5**	**60**	**35**	**93**	**35**	**60**	**91**
Chewing and smoking tobacco and snuff	25		76	24	96	40	60	89
Cigars and cigarettes	205	5	58	37	92	35	60	91
Vehicles for land transportation	**1,002**		**88**	**12**	**99**	**28**	**72**	**102**
Automobiles	154		86	14	100	47	53	116
Carriages and wagons	48		73	27	96	17	83	67
Car building and repairing, electric-railroad	312		88	13	100	33	67	88
Car building and repairing, steam-railroad	488		90	10	99	20	80	84
Miscellaneous industries	**373**	**1**	**80**	**19**	**98**	**46**	**54**	**100**
Agricultural implements	67	1	70	28	98	49	49	112
Electrical machinery, apparatus, and supplies	130		88	12	100	62	38	101
Pianos and organs	55		62	38	93	15	85	78
Rubber boots and shoes	10		60	40	93	20	80	89
Automobile tires	38		82	18	98	45	55	106
Shipbuilding	73	1	90	8	99	41	58	87
All industries	**9,503**	**1**	**82**	**17**	**98**	**36**	**63**	**92**

2. Employment in Coal Mining in March, 1929

EMPLOYMENT in coal mining—anthracite and bituminous coal combined—decreased 3.3 per cent in March, 1929, as compared with February, and pay-roll totals decreased 15.3 per cent.

The 1,310 mines for which reports were received had 305,786 employees in March whose combined earnings in one week were $8,056,001.

Anthracite

EMPLOYMENT in anthracite mines alone was 7.5 per cent lower in March, 1929, than in February, and pay-roll totals were 25.6 per cent smaller. Owing to market conditions a considerable number of collieries were idle during the first half of March.

All anthracite mines reported are in Pennsylvania—the Middle Atlantic division. The details for February and March are shown in Table 1.

TABLE 1.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **ANTHRACITE** MINES IN FEBRUARY AND MARCH, 1929

Geographic division	Mines	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
Middle Atlantic[1]	158	120,004	110,984	−7.5	$4,277,475	$3,184,169	−25.6

[1] See footnote 5, p. 201.

Bituminous Coal

EMPLOYMENT in bituminous coal mines was 0.8 per cent lower in March, 1929, than in February, and pay-roll totals were 6.9 per cent smaller. These figures are based upon reports from 1,152 mines in which there were in March 194,802 employees whose combined earnings in one week were $4,871,832.

There was an increase in employment of 1.2 per cent in the Middle Atlantic geographic division and an increase of 0.2 per cent in the East South Central division, but decreases appeared in the remaining divisions from which bituminous coal was reported.

The details for each geographic division are shown in Table 2.

TABLE 2.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **BITUMINOUS COAL** MINES IN FEBRUARY AND MARCH, 1929

Geographic division[1]	Mines	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
New England							
Middle Atlantic	318	55,537	56,203	+1.2	$1,426,850	$1,432,636	+0.4
East North Central	170	31,392	30,415	−3.1	968,097	772,723	−20.2
West North Central	57	5,528	5,118	−7.4	158,806	130,990	−17.5
South Atlantic	259	43,550	43,342	−0.5	1,097,040	1,080,908	−1.5
East South Central	230	44,814	44,905	+0.2	1,005,008	980,071	−2.5
West South Central	27	2,086	1,891	−9.3	58,386	48,227	−17.4
Mountain	80	11,791	11,367	−3.6	457,420	381,366	−16.6
Pacific	11	1,601	1,561	−2.5	61,582	44,911	−27.1
All divisions	**1,152**	**196,299**	**194,802**	**−0.8**	**5,233,189**	**4,871,832**	**−6.9**

[1] See footnotes 4 to 12, p. 201.

3. Employment in Metalliferous Mining in March, 1929

EMPLOYMENT in metalliferous mining was 2.5 per cent greater in March, 1929, than in February, and pay-roll totals were 8 per cent greater. These percentages are based on returns from 307 mines which in March had 53,983 employees whose combined earnings in one week were $1,667,340.

Notable increases in employment were shown in 4 of the 6 geographic divisions represented in metalliferous mining, and even more

pronounced gains in pay-roll totals were shown in each of the 6 divisions.

The details for each geographic division are shown in the following table:

COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **METALLIFEROUS** MINES IN FEBRUARY AND MARCH, 1929

Geographic division [1]	Mines	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
New England							
Middle Atlantic							
East North Central	39	10,824	11,060	+2.2	$270,023	$290,213	+7.5
West North Central	46	6,474	7,013	+8.3	190,036	218,318	+14.9
South Atlantic							
East South Central	8	3,110	3,178	+2.2	56,061	63,818	+13.8
West South Central	62	4,575	4,560	−0.3	112,991	123,124	+9.0
Mountain	129	25,678	26,211	+2.1	849,590	905,895	+6.6
Pacific	23	1,982	1,961	−1.1	65,208	65,972	+1.2
All divisions	**307**	**52,643**	**53,983**	**+2.5**	**1,543,909**	**1,667,340**	**+8.0**

[1] See footnotes 4 to 12, p. 201.

4. Employment in Public Utilities in March, 1929

EMPLOYMENT in public utilities was slightly increased in March, 1929, as compared with February, while pay-roll totals were 3.7 per cent greater. Reports were received from 8,870 establishments having in March 645,810 employees whose combined earnings in one week were $19,530,952.

The establishments reporting include electric railway, electric power and light, gas, water, telephone, and telegraph companies.

Details for each geographic division are shown in the table following.

COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **PUBLIC UTILITIES** ESTABLISHMENTS IN FEBRUARY AND MARCH, 1929

Geographic division [1]	Establishments	Number on pay roll		Per cent of change	Amount of pay roll (1 week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
New England	333	34,911	34,781	−0.4	$1,156,923	$1,152,598	−0.4
Middle Atlantic	1,448	191,689	193,394	+0.9	5,892,079	6,192,601	+5.1
East North Central	1,528	172,285	171,595	−0.4	5,260,978	5,429,656	+3.2
West North Central	1,433	69,109	69,182	+0.1	1,856,811	1,894,530	+2.0
South Atlantic	819	49,751	49,777	+0.1	1,346,333	1,391,129	+3.3
East South Central	651	18,969	18,834	−0.7	428,705	442,123	+3.1
West South Central	992	36,152	35,757	−1.1	849,679	873,082	+2.8
Mountain	569	16,599	17,316	+4.3	422,291	450,189	+6.6
Pacific	1,097	55,129	55,174	+0.1	1,620,691	1,705,044	+5.2
All divisions	**8,870**	**644,594**	**645,810**	**+0.2**	**18,834,490**	**19,530,952**	**+3.7**

[1] See footnotes 4 to 12, p. 201.

5. Employment in Wholesale and Retail Trade in March, 1929

EMPLOYMENT in 3,253 establishments—wholesale and retail trade combined—increased 1.5 per cent in March, 1929, as compared with February, and pay-roll totals increased 1.8 per cent.

These establishments in March had 187,421 employees with total pay rolls in one week of $4,716,332.

The establishments reporting are so carefully selected, from every State and from nearly every class of wholesale and retail trade, as to be reasonably representative of general conditions in each geographic division and, consequently, in the United States as a whole.

Wholesale Trade

EMPLOYMENT in wholesale trade in March was 0.5 per cent greater than in February and pay-roll totals were 2.2 per cent higher, as shown by reports from 1,329 establishments having in March 38,279 employees whose combined earnings in one week were $1,152,494.

The details by geographic divisions are shown in Table 1.

TABLE 1.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **WHOLESALE TRADE** ESTABLISHMENTS IN FEBRUARY AND MARCH, 1929

Geographic division [1]	Establishments	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
New England	69	1,640	1,641	+0.1	$49,123	$49,861	+1.5
Middle Atlantic	193	6,584	6,573	−0.2	205,678	206,189	+0.2
East North Central	192	7,770	7,860	+1.2	233,042	236,694	+1.6
West North Central	154	7,454	7,489	+0.5	205,534	216,467	+5.3
South Atlantic	193	3,195	3,189	−0.2	91,020	91,432	+0.5
East South Central	235	2,113	2,162	+2.3	61,821	63,024	+1.9
West South Central	80	3,358	3,365	+0.2	90,691	93,473	+3.1
Mountain	30	714	715	+0.1	23,724	24,425	+3.0
Pacific	183	5,276	5,285	+0.2	167,515	170,929	+2.0
All divisions	**1,329**	**38,104**	**38,279**	**+0.5**	**1,128,148**	**1,152,494**	**+2.2**

[1] See footnotes 4 to 12, p. 201.

Retail Trade

EMPLOYMENT and pay-roll totals in retail trade were each 1.7 per cent greater in March, 1929, than in February, as shown by returns from 1,924 establishments which in March had 149,142 employees whose combined earnings in one week were $3,563,838.

Details for each geographic division are shown in Table 2.

TABLE 2.—COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **RETAIL TRADE** ESTABLISHMENTS IN FEBRUARY AND MARCH, 1929

Geographic division [1]	Establishments	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
New England	29	8,241	8,259	+0.2	$198,818	$203,274	+2.2
Middle Atlantic	224	37,003	36,798	−0.6	895,904	912,839	+1.9
East North Central	201	39,385	39,995	+1.5	1,035,669	1,068,821	+3.2
West North Central	92	9,569	9,831	+2.7	214,419	221,877	+3.5
South Atlantic	513	15,092	15,321	+1.5	321,950	323,716	+0.5
East South Central	161	4,409	4,567	+3.6	79,094	85,319	+7.9
West South Central	62	4,761	4,913	+3.2	97,986	96,360	−1.7
Mountain	25	1,364	1,352	−0.9	23,573	24,110	+2.3
Pacific	617	26,809	28,106	+4.8	637,914	627,522	−1.6
All divisions	**1,924**	**146,633**	**149,142**	**+1.7**	**3,505,327**	**3,563,838**	**+1.7**

[1] See footnotes 4 to 12, p. 201.

6. Employment in Hotels in March, 1929

EMPLOYMENT in hotels was 1.1 per cent greater in March, 1929, than in February and pay-roll totals were 1.4 per cent higher, as shown by reports from 1,734 hotels having in March 142,912 employees and total pay rolls of $2,418,428.

The South Atlantic and Pacific geographic divisions in March continued to show pronounced gains both in people employed and in pay-roll totals.

Per capita earnings, obtained by dividing the total number of employees into the total amount of pay roll, should not be interpreted as being the entire earnings of hotel employees. The pay-roll totals here reported are cash payments only, with no regard to the value of board or room furnished employees, and of course no satisfactory estimate can be made of additional recompense in the way of tips. The additions to the money wages granted vary greatly, not only among localities but among hotels in one locality and among employees in one hotel. Some employees are furnished board and room, others are given board only for one, two, or three meals, while the division of tips is made in many ways.

Per capita earnings are further reduced by the considerable amount of part-time employment in hotels caused by conventions and banquets or other functions.

The details for each geographic division are shown in the table following.

COMPARISON OF EMPLOYMENT AND PAY-ROLL TOTALS IN IDENTICAL **HOTELS** IN FEBRUARY AND MARCH, 1929

Geographic division [1]	Hotels	Number on pay roll		Per cent of change	Amount of pay roll (one week)		Per cent of change
		February, 1929	March, 1929		February, 1929	March, 1929	
New England	101	8,293	8,256	−0.4	$139,174	$138,991	−0.1
Middle Atlantic	307	43,613	43,131	−1.1	796,043	791,163	−0.6
East North Central	277	23,800	23,895	+0.4	398,284	402,202	+1.0
West North Central	206	12,772	12,949	+1.4	190,813	191,244	+0.2
South Atlantic	208	16,967	17,989	+6.0	246,200	269,390	+9.4
East South Central	63	4,856	4,812	−0.9	65,067	66,630	+2.4
West South Central	108	9,213	9,217	+(2)	135,496	131,260	−3.1
Mountain	91	3,676	3,658	−0.5	60,085	60,399	+0.5
Pacific	373	18,236	19,005	+4.2	352,817	367,149	+4.1
All divisions	**1,734**	**141,426**	**142,912**	**+1.1**	**2,383,979**	**2,418,428**	**+1.4**

[1] See footnotes 4 to 12, p. 201. [2] Less than one-tenth of 1 per cent.

Employment on Class I Steam Railroads in the United States

THE monthly trend of employment from January, 1923, to February, 1929, on Class I railroads—that is, all roads having operating revenues of $1,000,000 or over—is shown by the index numbers published in Table 1. These index numbers are constructed from monthly reports of the Interstate Commerce Commission, using the monthly average for 1926 as 100.

TABLE 1.—INDEX OF EMPLOYMENT ON **CLASS I STEAM RAILROADS** IN THE UNITED STATES, JANUARY, 1923, TO FEBRUARY, 1929

[Monthly average, 1926=100]

Month	1923	1924	1925	1926	1927	1928	1929
January	98.3	96.9	95.6	95.8	95.5	89.3	88.2
February	98.6	97.0	95.4	96.0	95.3	89.0	88.9
March	100.5	97.4	95.2	96.7	95.8	89.9	
April	102.0	98.9	96.6	98.9	97.4	91.7	
May	105.0	99.2	97.8	100.2	99.4	94.5	
June	107.1	98.0	98.6	101.6	100.9	95.9	
July	108.2	98.1	99.4	102.9	101.0	95.6	
August	109.4	99.0	99.7	102.7	99.5	95.7	
September	107.8	99.7	99.9	102.8	99.1	95.3	
October	107.3	100.8	100.7	103.4	98.9	95.3	
November	105.2	99.0	99.1	101.2	95.7	92.9	
December	99.4	96.0	97.1	98.2	91.9	89.7	
Average	**104.1**	**98.3**	**97.9**	**100.0**	**97.5**	**92.9**	[1] 88.6

[1] Average for 2 months.

Table 2 shows the total number of employees on the 15th day each of February, 1928, and January and February, 1929, and pay-roll totals for the entire month of each month considered, by principal occupational groups and various important occupations.

In these tabulations data for the occupational group reported as "executives, officials, and staff assistants" are omitted from the totals.

TABLE 2.—EMPLOYMENT AND EARNINGS OF RAILROAD EMPLOYEES—FEBRUARY, 1928, JANUARY, 1929, AND FEBRUARY, 1929

[From monthly reports of Interstate Commerce Commission. As data for only the more important occupations are shown separately, the group totals are not the sum of the items under the respective groups]

Occupation	Number of employees at middle of month			Total earnings		
	February, 1928	January, 1929	February, 1929	February, 1928	January, 1929	February, 1929
Professional, clerical, and general	**271,818**	**267,553**	**267,771**	**$38,267,873**	**$39,183,444**	**$37,699,617**
Clerks	155,933	152,245	152,307	20,671,125	21,182,018	20,084,708
Stenographers and typists	24,699	24,536	24,663	3,125,116	3,200,083	3,110,677
Maintenance of way and structures	**329,452**	**333,704**	**331,957**	**29,871,638**	**32,351,690**	**29,536,043**
Laborers, extra gang and work train	38,277	37,511	36,910	2,606,479	2,801,880	2,431,711
Laborers, track and roadway section	168,998	173,191	173,578	11,402,057	12,874,207	11,457,324
Maintenance of equipment and stores	**466,490**	**454,981**	**459,213**	**59,062,209**	**62,365,302**	**58,422,336**
Carmen	99,018	98,071	99,268	14,093,144	15,172,035	14,221,518
Machinists	56,906	54,970	55,350	8,561,092	9,133,396	8,457,816
Skilled trades helpers	101,747	99,824	101,140	10,869,511	11,713,054	10,988,786
Laborers (shops, engine houses, power plants, and stores)	39,320	37,574	38,206	3,604,074	3,707,626	3,445,020
Common laborers (shops, engine houses, power plants, and stores)	53,241	52,806	53,001	4,097,319	4,343,166	3,964,665
Transporation, other than train, engine, and yard	**195,613**	**190,625**	**192,982**	**23,702,681**	**24,469,914**	**23,019,000**
Station agents	30,045	29,466	29,446	4,591,430	4,784,475	4,438,704
Telegraphers, telephoners, and tower men	23,475	23,027	23,076	3,473,768	3,646,533	3,304,772
Truckers (stations, warehouses, and platforms)	33,195	31,314	33,056	3,015,428	3,026,591	2,930,011
Crossing and bridge flagmen and gatemen	21,455	20,689	20,642	1,637,760	1,594,465	1,577,479
Transportation (yard masters, switch tenders, and hostlers)	**22,444**	**21,829**	**21,917**	**4,236,398**	**4,363,883**	**4,146,648**
Transportation, train and engine	**305,584**	**309,182**	**315,511**	**58,839,303**	**65,854,708**	**62,349,539**
Road conductors	34,353	34,878	35,273	7,799,576	8,655,888	8,174,358
Road brakemen and flagmen	68,511	68,707	69,603	11,228,372	12,440,066	11,770,127
Yard brakemen and yard helpers	51,306	52,307	53,463	8,785,954	9,771,328	9,339,676
Road engineers and motormen	40,946	41,124	42,039	10,487,908	11,803,989	11,098,903
Road firemen and helpers	41,967	42,082	42,618	7,782,953	8,726,808	8,207,809
All employees	**1,591,401**	**1,577,874**	**1,589,351**	**213,980,102**	**228,588,941**	**215,173,183**

Changes in Employment and Pay Rolls in Various States

THE following data as to changes in employment and pay rolls have been compiled from reports received from the various State labor offices:

PER CENT OF CHANGE IN EMPLOYMENT AND PAY ROLLS IN SPECIFIED STATES

Monthly period

State, and industry group	Per cent of change, January to February, 1929	
	Employment	Pay roll
Illinois		
Stone, clay, and glass products	−0.4	+2.0
Metals, machinery, and conveyances	+4.3	+10.3
Wood products	−.8	+9.4
Furs and leather goods	+2.8	+5.7
Chemicals, oils, paints, etc.	+2.3	+4.8
Printing and paper goods	−.9	−3.2
Textiles	−3.0	+4.7
Clothing and millinery	+3.1	+8.1
Food, beverages, and tobacco	−.7	−.5
Miscellaneous	.0	+1.2
All manufacturing industries	+2.2	+6.3
Trade, wholesale and retail	−1.2	−1.2
Services	−.5	+1.2
Public utilities	+.5	+3.9
Coal mining	+.7	+12.1
Building and contracting	−4.9	+14.0
All industries	+1.4	+5.6
Iowa	February to March, 1929	
Food and kindred products	−7.3	
Textiles	−2.8	
Iron and steel works	+5.3	
Lumber products	−1.5	
Leather products	−1.7	
Paper products, printing and publishing	+.3	
Patent medicines, chemicals, and compounds	+2.1	
Stone and clay products	+13.1	
Tobacco and cigars	+4.2	
Railway car shops	+5.2	
Various industries	+.9	
All industries	+.6	
Maryland		
Food products	−1.4	−0.4
Textiles	+3.4	+3.4
Iron and steel and their products	+1.8	+4.7
Lumber and its products	+2.2	+3.4
Leather and its products	+2.0	+5.4
Rubber tires	+1.0	−16.3
Paper and printing	+.9	+.2
Chemicals and allied products	+8.4	+6.5
Stone, clay, and glass products	+6.3	+5.8

State, and industry group	Per cent of change, February to March, 1929	
	Employment	Pay roll
Maryland—Continued		
Metal products, other than iron and steel	−1.5	−3.6
Tobacco products	+5.7	+4.5
Machinery (not including transportation equipment)	+3.1	+2.3
Musical instruments	−3.0	−2.0
Transportation equipment	+10.0	+24.4
Car building and repairing	+.6	+6.0
Miscellaneous	+2.2	+5.7
All manufacturing	+2.3	+1.0
Retail department stores	−2.3	−.3
Wholesale establishments		−.7
Public utilities	+1.7	−4.6
Coal mines	+1.6	+.4
Hotels	+.7	−19.9

	Employment—index numbers (1919–1923=100)	
	January, 1929	February, 1929
Massachusetts		
Boots and shoes	67.3	71.8
Bread and other bakery products	101.7	107.2
Cars and general shop construction and repairs, steam railroads	70.0	70.0
Clothing, men's and women's	90.6	96.4
Confectionery	85.1	81.1
Cotton goods	57.8	58.6
Dyeing and finishing textiles	103.6	107.2
Electrical machinery, apparatus, and supplies	104.9	104.9
Foundry and machine-shop products	67.4	68.5
Furniture	105.8	105.8
Hosiery and knit goods	67.6	66.8
Jewelry	102.7	101.7
Leather, tanned, curried and finished	76.7	79.0
Paper and wood pulp	89.5	93.2
Printing and publishing	106.9	108.5
Rubber footwear	95.1	89.0
Rubber goods, tires, and tubes	81.5	83.3
Silk goods	100.6	101.3
Textile machinery and parts	51.3	54.0
Woolen and worsted goods	78.8	78.5
All industries	78.1	79.4

PER CENT OF CHANGE IN EMPLOYMENT AND PAY ROLLS IN SPECIFIED STATES—Continued

Monthly period—Continued

State, and industry group	Per cent of change, January to February, 1929	
	Employment	Pay roll
New Jersey		
Food and kindred products	−3.4	−0.1
Textiles and their products	+3.1	+7.1
Iron and steel and their products	+2.0	+1.5
Lumber and its products	−1.6	−2.1
Leather and its products	+2.3	+4.9
Tobacco products	+1.9	+6.3
Paper and printing	−3.9	−5.4
Chemicals and allied products	+.7	+2.2
Stone, clay, and glass products	+4.3	+6.6
Metal products other than iron and steel	+.6	+5.0
Vehicles for land transportation	−.7	−2.1
Miscellaneous	+1.7	+4.5
All industries	+1.4	+2.9
New York		
Stone, clay, and glass	−2.6	+.2
Metals and machinery	+3.7	+5.5
Wood manufactures	−.6	+.3
Furs, leather and rubber goods	+2.1	−.8
Chemicals, oils, paints, etc	+1.3	+1.4
Paper	+1.2	+1.3
Printing and paper goods	+1.6	+.2
Textiles	+2.7	+3.3
Clothing and millinery	+6.2	+11.1
Food and tobacco	+1.3	+.2
Water, light, and power	+1.0	−.3
All industries	+2.8	+3.8
Oklahoma	February to March, 1929	
Cottonseed-oil mills	−14.2	−29.3
Food production:		
Bakeries	−.1	−2.9
Confections	.0	−.2
Creameries and dairies	+6.4	−6.8
Flour mills	+1.9	+4.9
Ice and ice cream	+6.3	+2.1
Meat and poultry	+2.5	+4.0
Lead and zinc:		
Mines and mills	+6.4	+23.3
Smelters	+6.6	+8.3
Metals and machinery:		
Auto repairs, etc	+.9	−.3
Machine shops and foundries	+1.4	+2.5
Tank construction and erection	+.3	+3.9
Oil industry:		
Producing and gasoline manufacture	−8.3	−15.1
Refineries	−3.1	−10.2
Printing: Job work	+.3	−1.1
Public utilities:		
Steam-railway shops	+3.4	−2.6
Street railways	+.6	+1.5
Water, light, and power	+1.2	+.7
Stone, clay, and glass:		
Brick and tile	−9.2	+1.9
Cement and plaster	+11.3	+10.1
Crushed stone	+37.1	+37.8
Glass manufacture	+10.3	+8.4

State, and industry group	Per cent of change, February, to March, 1929	
	Employment	Pay roll
Oklahoma—Continued		
Textiles and cleaning:		
Textile manufacture	+0.3	+7.5
Laundries, etc	+1.3	+2.0
Woodworking:		
Sawmills	−.2	+8.1
Millwork, etc	−4.2	−.9
All industries	+.8	−1.2

	Employment—index numbers (1923-1925=100)	
	February, 1929	March, 1929
Pennsylvania		
Metal products	90.6	88.6
Transportation equipment	77.5	84.8
Textile products	99.8	102.1
Foods and tobacco	94.7	94.6
Stone, clay, and glass products	82.5	81.0
Lumber products	77.6	72.0
Chemical products	97.6	98.0
Leather and rubber products	96.2	96.2
Paper and printing	91.3	90.8
All industries	91.6	91.9

	Pay roll	
Metal products	100.5	98.8
Transportation equipment	83.6	92.3
Textile products	110.1	113.7
Foods and tobacco	96.3	95.5
Stone, clay, and glass products	79.9	80.0
Lumber products	81.7	72.1
Chemical products	106.9	116.1
Leather and rubber products	101.3	98.8
Paper and printing	106.7	108.0
All industries	98.9	100.2

	Per cent of change, January to February, 1929	
	Employment	Pay roll
Wisconsin		
Manual		
Logging	−10.2	+13.0
Mining	+1.5	+4.2
Stone crushing and quarrying	−.9	−1.0
Manufacturing:		
Stone and allied industries	+25.3	+52.4
Metal	+5.4	+24.2
Wood	+2.6	+15.2

PER CENT OF CHANGE IN EMPLOYMENT AND PAY ROLLS IN SPECIFIED STATES—Continued

Monthly period—Continued

State, and industry group	Per cent of change, January to February, 1929	
	Employment	Pay roll
Wisconsin—Continued		
Manual—Continued		
Manufacturing—Continued.		
Rubber	+3.6	+9.9
Leather	+5.5	+17.7
Paper	+1.2	+3.9
Textiles	−.7	+6.3
Foods	−.2	−.1
Light and power	−1.8	+.5
Printing and publishing	+2.4	+1.0
Laundering, cleaning, and dyeing	+.4	+.4
Chemicals (including soap, glue, and explosives)	−.6	+1.5
All manufacturing	+3.1	+14.5
Construction:		
Building	−1.6	+3.3
Highway	−5.5	−7.3
Railroad	−2.5	+7.6
Marine dredging, sewer digging	−31.3	−4.9
Communication:		
Steam railways	+3.2	+16.6
Electric railways	+1.2	+1.8
Express, telephone, and telegraph	−8.0	−2.5
Wholesale trade	−8.5	+13.4
Hotels and restaurants	+.1	
Nonmanual		
Manufacturing, mines, and quarries	−.2	+.2
Construction	+1.6	+.6
Communication	+2.1	+4.0
Wholesale trade	+.1	−2.1
Retail trade—sales force only	−6.7	+2.7
Miscellaneous professional services	+1.9	+5.0
Hotels and restaurants	−1.4	

Yearly period

State, and industry group	Per cent of change, February, 1928, to February, 1929	
	Employment	Pay roll
California		
Stone, clay, and glass products	−4.4	−3.5
Metals, machinery, and conveyances	+23.7	+24.0
Wood manufactures	−4.6	−5.0
Leather and rubber goods	+19.1	+17.5
Chemicals, oils, paints, etc	+26.9	+28.2
Printing and paper goods	+1.7	+3.1
Textiles	+2.2	+3.0
Clothing, millinery, and laundering	−1.5	+.4
Foods, beverages, and tobacco	+2.4	+1.2
Water, light, and power	−8.6	−7.9
Miscellaneous	+1.1	−8.0
All industries	+9.4	+10.8

State, and industry group	Employment—index numbers (1922=100)	
	February, 1928	February, 1929
Illinois		
Stone, clay, and glass products	107.5	107.7
Metals, machinery, and conveyances	97.9	117.8
Wood products	80.0	74.3
Furs and leather goods	115.1	109.3
Chemicals, oils, paints, etc	115.2	124.5
Printing and paper goods	119.0	116.5
Textiles	113.0	95.4
Clothing and millinery	67.6	62.7
Food, beverages, and tobacco	91.7	88.8
All manufacturing industries	91.3	98.4
Trade, wholesale and retail	74.7	68.9
Public utilities	133.8	139.3
Coal mining	75.2	62.2
Building and contracting	77.1	91.8
All industries	97.7	103.1

PER CENT OF CHANGE IN EMPLOYMENT AND PAY ROLLS IN SPECIFIED STATES—Continued

Yearly period—Continued

State, and industry group	Employment—index numbers (1919–1923=100)	
	February, 1928	February, 1929
Massachusetts		
Boots and shoes	73.2	71.8
Bread and other bakery products	99.2	107.2
Cars and general shop construction and repairs, steam railroads	75.2	70.0
Clothing, men's and women's	96.6	96.4
Confectionery	76.8	81.1
Cotton goods	68.5	58.6
Dyeing and finishing	102.5	107.2
Electrical machinery, apparatus, and supplies	102.6	104.9
Foundry and machine-shop products	64.6	68.5
Furniture	105.4	105.8
Hosiery and knit goods	89.6	66.8
Jewelry	100.9	101.7
Leather, tanned, curried, and finished	88.8	79.0
Paper and wood pulp	93.1	93.2
Printing and publishing	104.0	108.5
Rubber footwear	104.9	89.0
Rubber goods, tires, and tubes	95.1	83.3
Silk goods	115.9	101.3
Textile machinery and parts	62.1	54.0
Woolen and worsted goods	82.6	78.5
All industries	83.3	79.4

State, and industry group	Per cent of change, March, 1928, to March, 1929	
	Employment	Pay roll
Oklahoma—Continued		
Metals and machinery:		
Auto repairs, etc	+321.5	+313.0
Machine shops and foundries	+35.0	+50.2
Tank construction and erection	+76.3	+74.6
Oil industry:		
Producing and gasoline manufacture	+11.5	+6.7
Refineries	+14.0	+32.3
Printing: Job work	+48.8	+63.4
Public utilities:		
Steam-railway shops	+3.8	+1.6
Street railways	+28.2	+30.4
Water, light, and power	+253.6	+241.3
Stone, clay, and glass:		
Brick and tile	+52.3	+36.4
Cement and plaster	+18.3	+9.5
Crushed stone	+21.1	+48.0
Glass manufacture	+8.7	+5.7
Textiles and cleaning:		
Textile manufacture	+36.3	−1.7
Laundries, etc	−.4	+6.5
Woodworking:		
Sawmills	+5.6	+.0
Millwork, etc	+.8	+7.0
All industries	+32.5	+37.9

State, and industry group	Per cent of change, February, 1928, to February, 1929	
	Employment	Pay roll
New York		
Stone, clay, and glass	+2.9	+6.6
Metals and machinery	+12.6	+17.8
Wood manufactures	−4.1	−2.4
Furs, leather, and rubber goods	+2.6	−.6
Chemicals, oils, paints, etc	+.7	+1.7
Paper	+3.9	+7.8
Printing and paper goods	+.7	+5.9
Textiles	−.7	+1.2
Clothing and millinery	−2.6	−1.5
Food and tobacco	+2.6	+1.1
Water, light, and power	−6.8	−9.4
All industries	+4.4	+7.4

State, and industry group	Employment—index numbers (1923–1925=100)	
	March, 1928	March, 1929
Pennsylvania		
Metal products	82.2	88.6
Transportation equipment	76.9	84.8
Textile products	105.8	102.1
Foods and tobacco	92.8	94.6
Stone, clay, and glass products	81.4	81.0
Lumber products	73.1	72.0
Chemical products	95.8	98.0
Leather and rubber products	100.5	96.2
Paper and printing	95.3	90.8
All industries	87.9	91.9

State, and industry group	March, 1928, to March, 1929	
		Pay roll
Oklahoma		
Cottonseed-oil mills	+27.3	+4.2
Food production:		
Bakeries	+22.0	+20.0
Confections	−6.5	+8.3
Creameries and dairies	−8.9	−21.3
Flour mills	+9.0	−.3
Ice and ice cream	+208.5	+150.9
Meat and poultry	−8.0	+9.3
Lead and zinc:		
Mines and mills	+123.9	+118.1
Smelters	+2.0	−20.5

State, and industry group	Pay roll
Metal products	88.0	98.8
Transportation equipment	74.1	92.3
Textile products	115.0	113.7
Foods and tobacco	94.3	95.5
Stone, clay, and glass products	79.5	80.0
Lumber products	74.3	72.1
Chemical products	104.4	116.1
Leather and rubber products	104.4	98.8
Paper and printing	109.0	108.0
All industries	90.7	100.2

PER CENT OF CHANGE IN EMPLOYMENT AND PAY ROLLS IN SPECIFIED STATES—Continued

Yearly period—Continued

State, and industry group	Per cent of change, February, 1928, to February, 1929	
	Employment	Pay roll
Wisconsin		
Manual		
Logging	−4.5	−1.8
Mining	−17.9	−19.7
Stone crushing and quarrying	−44.2	−35.3
Manufacturing:		
Stone and allied industries	−37.9	−28.4
Metal	+11.9	+20.3
Wood	+4.9	+1.5
Rubber	+7.0	+25.5
Leather	+5.2	+1.7
Paper	−2.1	−2.5
Textiles	−11.7	−6.8
Foods	+3.8	+10.0
Light and power	+13.1	+20.1
Printing and publishing	+10.3	+11.3
Laundering, cleaning, and dyeing	+4.9	+5.3
Chemical (including soap, glue, and explosives)	−14.5	−15.9
All manufacturing	+5.5	+11.0
Construction:		
Building	+10.6	−2.2
Highway	+49.7	+37.7
Wisconsin—Continued		
Manual—Continued		
Construction—Continued.		
Railroad	+1.0	+3.7
Marine dredging, sewer digging	−5.8	−23.2
Communication:		
Steam railways	+8.5	+13.7
Electric railways	.0	−1.6
Express, telephone, and telegraph	−.6	−.1
Wholesale trade	−8.4	+9.2
Hotels and restaurants	+3.0	
Nonmanual		
Manufacturing, mines, and quarries	+2.8	+7.2
Construction	−2.0	−5.3
Communication	+12.1	+12.0
Wholesale trade	+3.1	+10.6
Retail trade, sales force only	+.7	+5.9
Miscellaneous professional services	+8.9	+15.0
Hotels and restaurants	−17.9	

WHOLESALE AND RETAIL PRICES

Retail Prices of Food in the United States

THE following tables are compiled from monthly reports of actual selling prices [1] received by the Bureau of Labor Statistics from retail dealers.

Table 1 shows for the United States retail prices of food March 15, 1928, and February 15, and March 15, 1929, as well as the percentage changes in the year and in the month. For example, the retail price per pound of sugar was 7.1 cents on March 15, 1928; 6.6 cents on February 15, 1929; and 6.5 cents on March 15, 1929. These figures show decreases of 8 per cent in the year and 2 per cent in the month.

The cost of various articles of food combined shows an increase of 1.1 per cent March 15, 1929, as compared with March 15, 1928, and a decrease of 0.9 per cent March 15, 1929, as compared with February 15, 1929.

TABLE 1.—AVERAGE RETAIL PRICES OF SPECIFIED FOOD ARTICLES AND PER CENT OF INCREASE OR DECREASE MARCH 15, 1929, COMPARED WITH FEBRUARY 15, 1929, AND MARCH 15, 1928

[Percentage changes of five-tenths of 1 per cent and over are given in whole numbers]

Article	Unit	Average retail price on—			Per cent of increase (+) or decrease (−) Mar. 15, 1929, compared with—	
		Mar. 15, 1928	Feb. 15, 1929	Mar. 15, 1929	Mar. 15, 1928	Feb. 15, 1929
		Cents	*Cents*	*Cents*		
Sirloin steak	Pound	44.9	47.8	47.9	+7	+0.2
Round steak	do	39.1	42.1	42.2	+8	+0.2
Rib roast	do	33.1	35.4	35.5	+7	+0.3
Chuck roast	do	25.8	28.7	28.8	+12	+0.3
Plate beef	do	17.7	20.3	20.3	+15	0
Pork chops	do	28.6	33.0	35.2	+23	+7
Bacon, sliced	do	43.0	42.7	42.9	−0.2	+0.4
Ham, sliced	do	50.5	53.7	54.3	+8	+1
Lamb, leg of	do	38.2	40.3	40.9	+7	+1
Hens	do	37.2	39.7	40.5	+9	+2
Salmon, canned, red	do	35.4	31.7	31.4	−11	−1
Milk, fresh	Quart	14.2	14.3	14.3	+1	0
Milk, evaporated	16-oz. can	11.2	11.4	11.4	+2	0
Butter	Pound	57.3	58.5	58.3	+2	−0.4
Oleomargarine (all butter substitutes)	do	27.4	27.6	27.5	+0.4	−0.4
Cheese	do	38.5	38.2	38.2	−1	0
Lard	do	17.8	18.4	18.4	+3	0
Vegetable lard substitute	do	24.9	24.7	24.8	−0.4	+0.4
Eggs, strictly fresh	Dozen	37.0	49.1	42.1	+14	−14
Bread	Pound	9.1	9.0	9.0	−1	0

[1] In addition to monthly retail prices of food and coal, the bureau publishes the prices of gas and electricity from each of 51 cities for the dates for which these data are secured.

TABLE 1.—AVERAGE RETAIL PRICES OF SPECIFIED FOOD ARTICLES AND PER CENT OF INCREASE OR DECREASE MARCH 15, 1929, COMPARED WITH FEBRUARY 15, 1929, AND MARCH 15, 1928—Continued

Article	Unit	Average retail price on—			Per cent of increase (+) or decrease (−) Mar. 15, 1929, compared with—	
		Mar. 15, 1928	Feb. 15, 1929	Mar. 15, 1929	Mar. 15, 1928	Feb. 15, 1929
		Cents	*Cents*	*Cents*		
Flour	Pound	5.3	5.1	5.1	−4	0
Corn meal	do	5.2	5.3	5.3	+2	0
Rolled oats	do	9.0	8.9	8.9	−1	0
Corn flakes	8-oz. package	9.7	9.5	9.5	−2	0
Wheat cereal	28-oz. package	25.6	25.5	25.5	−0.4	0
Macaroni	Pound	19.9	19.6	19.6	−2	0
Rice	do	10.1	9.8	9.8	−3	0
Beans, navy	do	10.7	13.8	14.0	+31	+1
Potatoes	do	3.4	2.3	2.3	−32	0
Onions	do	6.3	8.2	8.4	+33	+2
Cabbage	do	5.2	5.9	5.7	+10	−3
Beans, baked	No. 2 can	11.4	11.8	11.9	+4	+1
Corn, canned	do	15.9	15.9	15.9	0	0
Peas, canned	do	16.7	16.7	16.7	0	0
Tomatoes, canned	do	11.7	12.7	13.0	+11	+2
Sugar	Pound	7.1	6.6	6.5	−8	−2
Tea	do	77.4	77.6	77.7	+0.4	+0.1
Coffee	do	48.8	49.5	49.6	+2	+0.2
Prunes	do	13.5	14.2	14.3	+6	+1
Raisins	do	13.6	11.6	11.6	−15	0
Bananas	Dozen	33.8	33.3	32.1	−5	−4
Oranges	do	52.9	43.6	38.7	−27	−11
Weighted food index					+1.1	−0.9

Table 2 shows for the United States average retail prices of specified food articles on March 15, 1913, and on March 15, of each year from 1923 to 1929, together with percentage changes in March of each of these specified years, compared with March, 1913. For example, the retail price per quart of fresh milk was 8.9 cents in March, 1913; 13.6 cents in March, 1923; 13.9 cents in March, 1924; 13.8 cents in March, 1925; 14 cents in March, 1926; 14.1 cents in March, 1927; 14.2 cents in March, 1928; and 14.3 cents in March, 1929.

As compared with March, 1913, these figures show increases of 53 per cent in March, 1923; 56 per cent in March, 1924; 55 per cent in March, 1925; 57 per cent in March, 1926; 58 per cent in March, 1927; 60 per cent in March, 1928; 61 per cent in March, 1929.

The cost of the various articles of food combined showed an increase of 57.8 per cent in March, 1929, as compared with March, 1913.

TABLE 2.—AVERAGE RETAIL PRICES OF SPECIFIED FOOD ARTICLES AND PER CENT OF INCREASE MARCH 15 OF CERTAIN SPECIFIED YEARS COMPARED WITH MARCH 15, 1929

[Percentage changes of five-tenths of 1 per cent and over are given in whole numbers]

Article	Average retail price on Mar. 15—								Per cent of increase on Mar. 15 of each specified year compared with Mar. 15, 1913						
	1913	1923	1924	1925	1926	1927	1928	1929	1923	1924	1925	1926	1927	1928	1929
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*							
Sirloin steak--pound--	24.7	37.3	38.9	39.6	40.7	41.1	44.9	47.9	51	57	60	65	66	82	94
Round steak----do----	21.3	31.7	33.1	33.6	34.9	35.6	39.1	42.2	49	55	58	64	67	84	98
Rib roast----------do----	19.4	27.6	28.6	29.1	29.9	30.4	33.1	35.5	42	47	50	54	57	71	83
Chuck roast-----do----	15.6	19.5	20.6	21.0	22.1	22.8	25.8	28.8	25	32	35	42	46	65	85
Plate beef-------do----	11.8	12.8	13.3	13.5	14.6	14.9	17.7	20.3	8	13	14	24	26	50	72
Pork chops------do----	20.3	28.3	26.9	37.4	37.2	36.6	28.6	35.2	39	33	84	83	80	41	73
Bacon, sliced----do----	26.1	39.2	36.3	44.4	48.4	48.4	43.0	42.9	50	39	70	85	85	65	64
Ham, sliced------do----	26.0	45.0	44.0	51.2	54.0	56.5	50.5	54.3	73	69	97	108	117	94	109
Lamb, leg of----do----	19.1	36.0	37.1	39.0	37.9	38.4	38.2	40.9	88	94	104	98	101	100	114
Hens-------------do----	21.4	35.8	35.9	36.9	39.4	38.7	37.2	40.5	67	68	72	84	81	74	89
Salmon, canned, red ----------pound--	-----	31.2	31.1	31.2	37.6	33.0	35.4	31.4	-----	-----	-----	-----	-----	-----	-----
Milk, fresh----quart--	8.9	13.6	13.9	13.8	14.0	14.1	14.2	14.3	53	56	55	57	58	60	61
Milk, evaporated ----------16-oz. can--	-----	12.2	12.1	11.2	11.6	11.4	11.2	11.4	-----	-----	-----	-----	-----	-----	-----
Butter--------pound--	41.4	57.6	58.0	55.5	53.6	59.2	57.3	58.3	39	40	34	29	43	38	41
Oleomargarine (all butter substitutes) ----------pound--	-----	28.2	29.7	30.1	30.9	28.7	27.4	27.5	-----	-----	-----	-----	-----	-----	-----
Cheese----------do----	22.1	37.1	36.7	36.5	37.2	37.3	38.5	38.2	68	66	65	68	69	74	73
Lard-------------do----	15.6	17.4	17.5	23.1	21.9	19.4	17.8	18.4	12	12	48	40	24	14	18
Vegetable lard substitute---------pound--	-----	22.4	24.5	25.8	25.6	25.2	24.9	24.8	-----	-----	-----	-----	-----	-----	-----
Eggs, strictly fresh ----------dozen--	26.4	38.5	34.8	39.1	38.5	35.4	37.0	42.1	46	32	48	46	34	40	59
Bread----------pound--	5.6	8.7	8.7	9.4	9.4	9.4	9.1	9.0	55	55	68	68	68	63	61
Flour------------do----	3.3	4.8	4.6	6.4	6.2	5.5	5.3	5.1	45	39	94	88	67	61	55
Corn meal------do----	2.9	4.0	4.4	5.5	5.2	5.1	5.2	5.3	38	52	90	79	76	79	83
Rolled oats------do----	-----	8.8	8.8	9.2	9.1	9.1	9.0	8.9	-----	-----	-----	-----	-----	-----	-----
Corn flakes --8-ounce package--	-----	9.7	9.7	11.1	11.0	10.8	9.7	9.5	-----	-----	-----	-----	-----	-----	-----
Wheat cereal --28-ounce package--	-----	24.7	24.3	24.7	25.4	25.5	25.6	25.5	-----	-----	-----	-----	-----	-----	-----
Macaroni-----pound--	-----	19.8	19.5	20.4	20.3	20.1	19.9	19.6	-----	-----	-----	-----	-----	-----	-----
Rice-------------do----	8.6	9.4	9.7	10.9	11.7	10.8	10.1	9.8	9	13	27	36	26	17	14
Beans, navy----do----	-----	11.4	9.9	10.4	9.4	9.1	10.7	14.0	-----	-----	-----	-----	-----	-----	-----
Potatoes--------do----	1.5	2.2	2.8	2.5	5.6	3.7	3.4	2.3	47	87	67	273	147	127	53
Onions----------do----	-----	5.4	5.9	6.3	5.9	5.9	6.3	8.4	-----	-----	-----	-----	-----	-----	-----
Cabbage--------do----	-----	6.6	6.2	5.2	7.2	5.2	5.2	5.7	-----	-----	-----	-----	-----	-----	-----
Beans, baked ----------No. 2 can--	-----	13.0	12.8	12.6	12.1	11.6	11.4	11.9	-----	-----	-----	-----	-----	-----	-----
Corn, canned----do----	-----	15.4	15.7	17.9	16.6	15.9	15.9	15.9	-----	-----	-----	-----	-----	-----	-----
Peas, canned-----do----	-----	17.4	18.0	18.5	17.7	17.0	16.7	16.7	-----	-----	-----	-----	-----	-----	-----
Tomatoes, canned ----------No. 2 can--	-----	12.9	12.9	13.9	12.2	12.2	11.7	13.0	-----	-----	-----	-----	-----	-----	-----
Sugar, granulated ----------pound--	5.4	10.2	10.4	7.7	6.7	7.4	7.1	6.5	89	93	43	24	37	31	20
Tea--------------do----	54.3	68.9	70.9	75.1	76.1	77.6	77.4	77.7	27	31	38	40	43	43	43
Coffee----------do----	29.8	37.9	40.8	52.3	51.3	49.3	48.8	49.6	27	37	76	72	65	64	66
Prunes----------do----	-----	19.8	17.8	17.3	17.1	15.8	13.5	14.3	-----	-----	-----	-----	-----	-----	-----
Raisins---------do----	-----	18.4	15.7	14.6	14.6	14.3	13.6	11.6	-----	-----	-----	-----	-----	-----	-----
Bananas-------dozen--	-----	36.7	39.0	37.6	35.3	34.1	33.8	32.1	-----	-----	-----	-----	-----	-----	-----
Oranges---------do----	-----	47.9	38.3	48.3	47.8	46.9	52.9	38.7	-----	-----	-----	-----	-----	-----	-----
All articles combined [1]	-----	-----	-----	-----	-----	-----	-----	-----	46.4	48.2	55.9	64.9	58.5	56.1	57.8

[1] Beginning with January, 1921, index numbers showing the trend in the retail cost of food have been composed of the articles shown in Tables 1 and 2, weighted according to the consumption of the average family. From January, 1913, to December, 1920, the index numbers included the following articles: Sirloin steak, round steak, rib roast, chuck roast, plate beef, pork chops, bacon, ham, lard, hens, flour, corn meal, eggs, butter, milk, bread, potatoes, sugar, cheese, rice, coffee, and tea.

Table 3 shows the trend in the retail cost of three important groups of food commodities, viz, cereals, meats, and dairy products, by years, from 1913 to 1928, and by months for 1927, 1928, and 1929. The articles within these groups are as follows:

Cereals: Bread, flour, corn meal, rice, rolled oats, corn flakes, wheat cereal, and macaroni.

Meats: Sirloin steak, round steak, rib roast, chuck roast, plate beef, pork chops, bacon, ham, hens, and leg of lamb.

Dairy products: Butter, cheese, fresh milk, and evaporated milk.

TABLE 3.—INDEX NUMBERS OF RETAIL COST OF CEREALS, MEATS, AND DAIRY PRODUCTS FOR THE UNITED STATES, 1913 TO MARCH, 1929

[Average cost in 1913=100.0]

Year and month	Cereals	Meats	Dairy products	Year and month	Cereals	Meats	Dairy products
1913: Average for year	100.0	100.0	100.0	1927: Average for year—Continued.			
1914: Average for year	106.7	103.4	97.1	October	170.5	173.7	149.4
1915: Average for year	121.6	99.6	96.1	November	169.8	169.9	150.2
1916: Average for year	126.8	108.2	103.2	December	168.6	168.1	152.8
1917: Average for year	186.5	137.0	127.6				
1918: Average for year	194.3	172.8	153.4				
1919: Average for year	198.0	184.2	176.6	1928: Average for year	167.2	179.2	150.0
1920: Average for year	232.1	185.7	185.1	January	168.0	168.3	152.2
1921: Average for year	179.8	158.1	149.5	February	168.0	167.8	150.7
1922: Average for year	159.3	150.3	135.9	March	166.8	167.1	150.7
1923: Average for year	156.9	149.0	147.6	April	167.2	170.3	147.8
1924: Average for year	160.4	150.2	142.8	May	168.3	175.4	147.3
1925: Average for year	176.2	163.0	147.1	June	169.8	177.7	146.1
1926: Average for year	175.5	171.3	145.5	July	169.3	184.4	147.1
1927: Average for year	170.7	169.9	148.7	August	168.2	189.5	148.3
January	172.8	168.1	151.4	September	166.7	195.8	151.2
February	172.7	167.6	151.8	October	165.9	188.9	151.1
March	172.1	168.5	152.2	November	165.3	184.9	152.5
April	171.7	170.6	150.8	December	164.2	179.1	153.5
May	171.6	170.7	145.3	1929:			
June	170.7	168.3	143.7	January	164.1	180.9	151.9
July	170.6	169.3	143.9	February	164.1	180.3	152.6
August	171.2	171.0	144.5	March	164.1	182.8	152.4
September	170.6	173.0	146.6				

Index Numbers of Retail Prices of Food in the United States

IN TABLE 4 index numbers are given which show the changes in the retail prices of specified food articles, by years, for 1913 and 1920 to 1928,[2] and by months for 1928 through March, 1929. These index numbers, or relative prices, are based on the year 1913 as 100 and are computed by dividing the average price of each commodity for each month and each year by the average price of that commodity for 1913. These figures must be used with caution. For example, the relative price of sirloin steak for the year 1928 was 188.2, which means that the average money price for the year 1928 was 88.2 per cent higher than the average money price for the year 1913. As compared with the relative price, 167.7 in 1927, the figures for 1928 show an increase of 20½ points, but an increase of 12.2 per cent in the year.

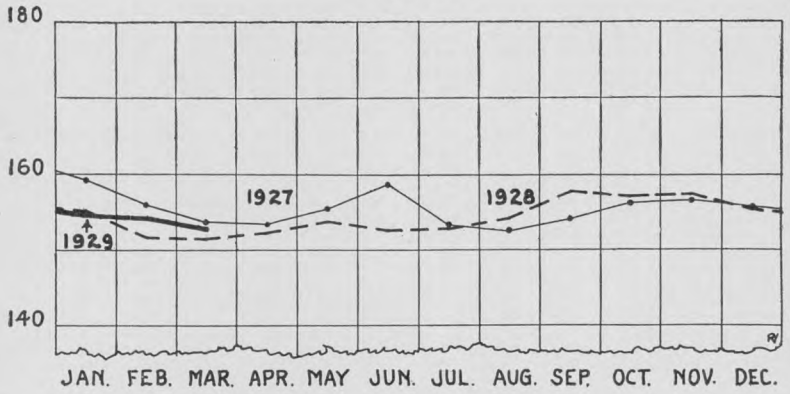
In the last column of Table 4 are given index numbers showing changes in the retail cost of all articles of food combined. Since January, 1921, these index numbers have been computed from the average prices of the articles of food shown in Tables 1 and 2, weighted

[2] For index numbers of each month, January, 1913, to December, 1926, see Bulletin No. 396, pp. 44 to 61; Bulletin No. 418, pp. 38 to 51; and Bulletin No. 445, pp. 36 to 49.

according to the average family consumption in 1918. (See March, 1921, issue, p. 25.) Although previous to January, 1921, the number of food articles has varied, these index numbers have been so computed as to be strictly comparable for the entire period. The index numbers based on the average for the year 1913 as 100 are 154.4 for February, 1929, and 153.0 for March, 1929.

TREND OF RETAIL PRICES OF FOOD

1913=100]



The curve shown in the accompanying chart pictures more readily to the eye the changes in the cost of the food budget than do the index numbers given in the table.

TABLE 4.—INDEX NUMBERS OF RETAIL PRICES OF PRINCIPAL ARTICLES OF FOOD, BY YEARS, 1913, 1920 TO 1928, AND BY MONTHS FOR JANUARY, 1928, THROUGH MARCH, 1929

Average for year 1913=100.0]

Year and month	Sirloin steak	Round steak	Rib roast	Chuck roast	Plate beef	Pork chops	Bacon	Ham	Hens	Milk	Butter	Cheese
1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1920	172.1	177.1	167.7	163.8	151.2	201.4	193.7	206.3	209.9	187.6	183.0	188.2
1921	152.8	154.3	147.0	132.5	118.2	166.2	158.2	181.4	186.4	164.0	135.0	153.9
1922	147.2	144.8	139.4	123.1	105.8	157.1	147.4	181.4	169.0	147.2	125.1	148.9
1923	153.9	150.2	143.4	126.3	106.6	144.8	144.8	169.1	164.3	155.1	144.7	167.0
1924	155.9	151.6	145.5	130.0	109.1	146.7	139.6	168.4	165.7	155.1	135.0	159.7
1925	159.8	155.6	149.5	135.0	114.1	174.3	173.0	195.5	171.8	157.3	143.1	166.1
1926	162.6	159.6	153.0	140.6	120.7	188.1	186.3	213.4	182.2	157.3	138.6	165.6
1927	167.7	166.4	158.1	148.1	127.3	175.2	174.8	204.5	173.2	158.4	145.2	170.1
1928	188.2	188.3	176.8	174.4	157.0	165.7	163.0	196.7	175.6	159.6	147.5	174.2
1928: January	174.8	173.1	165.2	158.8	142.1	149.0	165.2	192.2	172.8	160.7	150.9	177.4
February	176.4	174.4	167.2	160.6	144.6	140.5	161.9	190.3	174.6	160.7	147.0	177.4
March	176.8	175.3	167.2	161.3	146.3	136.2	159.3	187.7	174.6	159.6	149.6	174.2
April	178.3	177.6	168.7	163.1	147.9	149.0	158.9	188.1	177.0	158.4	143.9	172.9
May	181.5	181.2	172.2	166.3	150.4	168.6	159.6	190.3	177.0	158.4	142.6	172.4
June	186.6	186.5	175.3	172.5	152.9	165.7	160.0	192.2	174.2	157.3	140.7	172.4
July	195.7	196.9	181.8	180.6	157.9	177.6	162.6	198.5	172.3	158.4	141.8	173.3
August	200.8	202.2	184.8	185.0	162.0	190.0	165.9	204.5	172.8	158.4	144.7	173.8
September	203.9	205.4	188.9	190.0	170.2	211.0	168.1	208.2	177.9	159.6	150.4	175.1
October	198.0	200.0	185.9	188.8	171.9	179.0	167.8	206.7	177.9	159.6	150.1	175.6
November	193.3	194.6	183.3	185.6	171.9	170.0	164.8	203.0	178.4	160.7	152.2	174.2
December	189.8	191.5	180.3	181.9	168.6	149.0	160.4	198.5	177.9	160.7	154.8	174.2
1929: January	190.6	191.0	180.8	181.3	170.2	153.8	159.3	200.0	184.0	160.7	150.7	173.8
February	188.2	188.8	178.8	179.4	167.8	157.1	158.2	199.6	186.4	160.7	152.7	172.9
March	188.6	189.2	179.3	180.0	167.8	167.6	158.9	201.9	190.1	160.7	152.2	172.9

TABLE 4.—INDEX NUMBERS OF RETAIL PRICES OF PRINCIPAL ARTICLES OF FOOD, BY YEARS, 1913, 1920 TO 1928, AND BY MONTHS FOR JANUARY, 1928, THROUGH MARCH, 1929—Continued

[Average for year 1913=100.0]

Year and month	Lard	Eggs	Bread	Flour	Corn meal	Rice	Potatoes	Sugar	Tea	Coffee	All articles [1]
1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1920	186.7	197.4	205.4	245.5	216.7	200.0	370.6	352.7	134.7	157.7	203.4
1921	113.9	147.5	176.8	175.8	150.0	109.2	182.4	145.5	128.1	121.8	153.3
1922	107.6	128.7	155.4	154.5	130.0	109.2	164.7	132.7	125.2	121.1	141.6
1923	112.0	134.8	155.4	142.4	136.7	109.2	170.6	183.6	127.8	126.5	146.2
1924	120.3	138.6	157.1	148.5	156.7	116.1	158.8	167.3	131.4	145.3	145.9
1925	147.5	151.0	167.9	184.8	180.0	127.6	211.8	130.9	138.8	172.8	157.4
1926	138.6	140.6	167.9	181.8	170.0	133.3	288.2	125.5	141.0	171.1	160.6
1927	122.2	131.0	166.1	166.7	173.3	123.0	223.5	132.7	142.5	162.1	155.4
1928	117.7	134.5	162.5	163.6	176.7	114.9	158.8	129.1	142.3	165.1	154.3
1928: January	119.6	162.0	164.3	160.6	173.3	117.2	176.5	129.1	142.3	162.8	155.1
February	115.8	124.9	164.3	160.6	173.3	117.2	176.5	129.1	142.1	163.1	151.6
March	112.7	107.2	162.5	160.6	173.3	116.1	200.0	129.1	142.3	163.8	151.4
April	112.7	103.8	162.5	163.6	176.7	114.9	205.9	129.1	141.9	164.1	152.1
May	114.6	108.7	162.5	169.7	176.7	114.9	194.1	130.9	141.9	164.4	153.8
June	115.2	112.5	164.3	172.7	176.7	113.8	170.6	132.7	142.1	165.1	152.6
July	116.5	120.6	164.3	169.7	176.7	114.9	135.3	132.7	142.3	165.1	152.8
August	118.4	130.4	164.3	163.6	176.7	113.8	129.4	129.1	142.3	165.8	154.2
September	122.2	146.1	162.5	160.6	176.7	114.9	129.4	127.3	142.3	166.1	157.8
October	123.4	157.4	162.5	157.6	176.7	113.8	129.4	125.5	142.5	166.4	156.8
November	120.9	171.9	162.5	154.5	176.7	112.6	129.4	123.6	142.3	166.8	157.3
December	118.4	169.3	160.7	154.5	176.7	113.8	129.4	121.8	142.1	166.8	155.8
1929: January	117.1	146.7	160.7	154.5	176.7	112.6	135.3	121.8	142.6	166.1	154.6
February	116.5	142.3	160.7	154.5	176.7	112.6	135.3	120.0	142.6	166.1	154.4
March	116.5	122.0	160.7	154.5	176.7	112.6	135.3	118.2	142.8	166.4	153.0

[1] 22 articles in 1913–1920; 43 articles in 1921–1929.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929

[Exact comparisons of prices in different cities can not be made for some articles, particularly meats and vegetables, owing to differences in trade practices]

Article	Atlanta, Ga.			Baltimore, Md.			Birmingham, Ala.			Boston, Mass.			Bridgeport, Conn.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Sirloin steak, pound	42.4	48.2	48.3	42.8	45.0	44.8	43.0	49.5	48.6	[1]72.1	[1]72.8	[1]73.1	53.5	54.2	53.6
Round steak, do	38.3	43.0	43.3	39.0	41.4	40.6	37.3	42.1	41.4	55.4	56.2	56.3	47.2	49.3	49.0
Rib roast, do	32.6	34.6	34.9	32.8	34.1	33.6	30.5	35.1	34.7	39.5	42.9	42.8	40.6	40.0	40.1
Chuck roast, do	26.4	28.6	28.5	24.9	27.7	27.5	24.7	28.1	28.8	30.5	32.8	33.2	31.8	33.3	33.5
Plate beef, do	16.8	19.3	19.3	18.4	20.2	19.6	16.2	18.9	18.6	21.3	22.4	22.3	13.4	16.3	16.6
Pork chops, do	28.5	32.7	34.0	25.0	29.1	33.7	27.8	31.6	33.2	29.8	33.9	37.4	31.5	34.3	36.8
Bacon, sliced, do	41.9	41.8	41.3	38.0	37.2	37.5	40.5	41.1	41.1	41.4	42.2	43.3	49.4	47.9	47.2
Ham, sliced, do	53.3	55.7	56.0	51.2	54.8	55.0	49.3	52.4	53.1	54.4	60.1	60.1	54.6	54.8	55.3
Lamb, leg of, do	39.5	41.1	41.6	37.8	38.4	39.3	39.4	44.6	44.8	38.5	39.9	40.7	37.7	39.5	40.3
Hens, do	35.0	36.2	36.7	39.5	42.0	41.9	31.8	35.1	34.8	39.4	42.3	42.9	40.2	42.8	43.4
Salmon, canned, red, do	34.3	34.5	34.2	33.7	28.0	28.2	36.3	32.7	32.2	33.7	30.4	30.1	32.9	30.3	29.9
Milk, fresh, quart	18.0	16.5	16.5	14.0	14.0	14.0	18.7	18.7	16.7	15.5	15.5	15.5	16.0	16.0	16.0
Milk, evaporated, 16-ounce can	13.1	13.8	13.8	11.1	11.1	11.6	12.1	12.4	12.2	11.8	11.9	11.8	11.5	11.5	11.4
Butter, pound	58.2	59.5	59.3	60.9	61.9	62.3	58.2	60.0	59.9	58.8	60.2	60.4	57.5	57.9	59.1
Oleomargarine (all butter substitutes), pound	27.1	29.9	29.6	27.5	28.9	29.1	30.9	31.5	31.9	28.7	29.8	29.3	25.5	25.5	25.8
Cheese, do	36.6	37.1	37.2	36.9	37.3	36.7	36.7	37.2	37.8	40.5	40.7	41.0	44.1	42.8	42.7
Lard, do	16.7	18.4	18.5	16.3	15.8	16.2	17.5	18.1	17.9	18.0	17.8	17.8	17.3	17.3	17.4
Vegetable lard substitute, pound	21.8	22.1	22.4	23.1	23.1	23.1	19.7	20.9	21.4	25.0	25.3	25.5	25.5	25.2	25.2
Eggs, strictly fresh, dozen	33.9	46.2	39.1	34.5	51.1	41.9	34.6	44.8	39.4	54.3	64.6	55.9	52.0	63.0	55.9
Bread, pound	10.8	10.8	10.8	9.6	8.5	8.5	10.1	10.0	10.0	8.6	8.6	8.6	8.8	8.8	8.7
Flour, do	6.4	6.6	6.6	5.0	4.7	4.8	6.6	6.5	6.5	5.8	5.4	5.4	5.4	5.1	5.1
Corn meal, do	4.1	4.4	4.5	4.0	4.2	4.2	4.1	4.2	4.0	6.6	6.8	6.7	7.2	7.0	7.0
Rolled oats, do	9.6	9.9	9.9	8.1	8.2	8.1	9.8	10.0	9.7	9.0	8.8	8.9	8.6	8.3	8.3
Corn flakes, 8-ounce package	9.7	9.8	9.8	9.1	8.6	8.7	10.0	9.8	9.8	9.7	9.3	9.4	9.6	9.3	9.3
Wheat cereal, 28-ounce package	26.6	26.9	26.9	24.4	24.0	23.9	27.4	27.3	27.3	24.5	25.0	25.1	24.5	24.2	24.6
Macaroni, pound	21.3	21.5	21.5	19.1	19.0	18.8	18.1	18.5	18.4	21.6	21.3	21.2	22.3	22.5	22.5
Rice, do	8.9	9.5	9.5	9.5	9.2	9.1	9.7	9.0	8.9	11.4	10.6	10.5	10.7	10.6	10.2
Beans, navy, do	11.2	15.9	16.2	10.7	13.7	13.8	11.1	14.8	14.7	10.7	13.4	13.7	10.3	13.0	13.5
Potatoes, do	4.4	3.4	3.4	3.2	2.1	2.0	4.4	3.6	3.4	3.7	2.1	2.1	3.4	1.9	1.9
Onions, do	8.3	9.3	9.8	6.2	8.8	8.8	7.3	8.7	9.1	7.1	8.2	8.5	5.7	8.0	8.3
Cabbage, do	5.1	6.4	5.4	5.6	5.8	5.2	5.3	5.7	5.1	6.8	6.4	6.2	5.4	6.0	5.8
Beans, baked, No. 2 can	11.0	11.6	11.5	10.9	11.0	11.0	11.2	11.8	11.8	12.6	12.8	12.7	11.4	11.6	11.6
Corn, canned, do	17.5	18.3	18.3	15.0	16.6	16.5	16.9	16.7	16.5	17.9	17.9	17.4	19.1	18.7	18.5
Peas, canned, do	18.9	18.8	18.5	14.6	15.2	15.2	19.3	18.9	19.4	19.5	20.0	20.2	21.5	19.9	19.9
Tomatoes, canned, do	10.3	12.9	13.3	10.5	11.7	11.6	10.4	12.2	12.8	12.1	13.1	13.0	13.5	14.2	14.6
Sugar, pound	7.5	7.3	7.0	6.4	5.6	5.5	7.4	6.9	6.8	7.1	6.5	6.4	6.9	6.4	6.4
Tea, do	104.3	105.6	103.6	71.9	72.6	72.3	99.7	97.4	97.4	72.4	77.1	75.8	61.0	55.6	55.6
Coffee, do	48.8	52.7	52.7	44.2	45.5	45.5	50.5	51.7	52.1	53.1	54.3	53.7	47.3	47.1	47.3
Prunes, do	14.1	15.5	15.5	11.5	12.1	12.1	16.1	16.4	16.7	12.9	14.2	13.9	15.1	14.7	15.2
Raisins, do	15.4	13.1	13.5	12.9	10.5	10.6	14.9	12.4	13.0	12.7	10.7	10.5	14.0	12.8	12.5
Bananas, dozen	29.4	28.1	26.9	25.5	23.5	23.1	38.2	38.3	36.4	47.0	42.5	42.0	37.5	33.8	32.5
Oranges, do	44.5	31.8	31.2	50.5	37.2	33.6	52.3	33.4	34.2	55.8	48.0	43.7	61.5	48.2	42.4

[1] The steak for which prices are here quoted is called "sirloin" in this city, but in most of the other cities included in this report it would be known as "porterhouse" steak.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Buffalo, N. Y.			Butte, Mont.			Charleston, S. C.			Chicago, Ill.			Cincinnati, Ohio		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Sirloin steak..pound..	44.3	46.6	46.6	34.7	36.6	36.1	34.3	36.5	37.7	48.0	52.5	52.4	41.0	45.2	45.2
Round steak....do....	37.4	39.8	40.5	32.9	32.7	33.6	32.5	35.0	35.8	38.8	42.6	42.9	36.8	42.3	42.6
Rib roast....do....	33.2	35.1	35.1	30.4	30.8	30.9	28.5	30.0	30.4	37.7	38.7	38.2	33.8	37.5	37.3
Chuck roast....do....	26.7	29.5	29.2	23.0	25.3	25.3	22.3	24.8	25.6	28.4	32.0	32.1	24.6	27.8	28.0
Plate beef....do....	17.1	19.2	20.4	16.3	17.5	18.0	16.3	19.4	19.1	17.5	19.8	20.0	18.4	22.0	22.3
Pork chops....do....	30.8	34.8	39.7	28.9	31.5	33.6	30.7	33.7	35.0	26.5	32.0	38.8	26.2	29.5	34.2
Bacon, sliced....do....	39.4	39.5	39.8	49.6	47.9	48.3	36.8	36.9	36.2	46.8	46.6	47.5	37.8	37.6	37.9
Ham, sliced....do....	48.6	52.5	52.5	52.5	54.2	54.5	44.5	46.8	46.8	50.2	52.7	53.6	48.2	53.1	53.3
Lamb, leg of....do....	35.6	36.4	37.4	34.8	41.1	40.5	41.4	44.0	44.0	38.1	41.1	41.1	38.2	41.3	42.0
Hens....do....	39.7	41.4	41.9	36.2	35.9	37.7	37.0	38.3	38.6	38.5	41.8	43.7	38.4	42.4	43.6
Salmon, canned, red ....pound..	34.5	30.0	29.5	32.4	32.4	30.8	34.6	28.3	27.8	36.7	33.1	33.0	36.1	29.4	29.1
Milk, fresh....quarts..	13.0	14.0	14.0	14.0	14.0	14.0	19.0	19.0	19.0	14.0	14.0	14.0	14.0	14.0	14.0
Milk, evaporated ....16-ounce can..	10.7	11.1	11.0	10.7	11.1	11.4	11.6	11.7	11.7	11.0	11.0	11.1	10.9	11.2	11.2
Butter....pound..	57.9	59.3	59.2	52.8	54.2	54.0	55.6	57.3	57.4	56.3	57.4	57.1	60.8	60.7	60.7
Oleomargarine (all butter substitutes) ....pound..	27.6	26.1	26.3	----	----	----	27.4	29.0	29.1	27.0	26.6	26.6	27.9	28.4	28.5
Cheese....do....	39.6	39.8	39.2	37.7	37.5	37.5	35.4	34.8	34.7	42.7	42.3	41.9	39.8	39.7	39.3
Lard....do....	16.9	17.5	17.5	21.8	21.7	21.4	18.8	19.1	18.7	17.9	18.3	18.7	16.0	17.2	17.2
Vegetable lard substitute....pound..	25.6	24.8	25.0	30.3	30.7	30.7	21.6	21.1	21.3	26.3	25.8	26.0	25.6	25.2	25.2
Eggs, strictly fresh ....dozen..	42.1	53.8	47.5	37.3	54.3	48.6	34.3	44.6	41.9	39.9	54.3	43.5	35.6	50.1	37.1
Bread....pound..	8.7	8.3	8.3	9.8	9.8	9.8	10.9	11.0	11.0	9.6	9.9	9.9	7.6	8.6	8.6
Flour....do....	4.8	4.5	4.6	5.4	4.9	4.8	6.7	6.5	6.4	4.7	4.5	4.6	5.4	5.2	5.3
Corn meal....do....	5.1	5.1	5.2	6.2	6.4	6.2	3.9	4.0	4.0	6.8	6.7	6.7	4.5	4.5	4.5
Rolled oats....do....	8.8	8.7	8.6	8.0	7.9	8.0	9.5	9.3	9.4	8.6	8.2	8.2	8.8	9.0	9.0
Corn flakes ....8-ounce package..	9.4	9.3	9.1	10.5	10.2	10.3	9.9	10.0	10.0	9.4	9.1	9.1	9.5	9.6	9.6
Wheat cereal ....28-ounce package..	24.8	24.8	24.9	28.7	27.9	27.9	25.6	25.8	25.9	25.4	24.9	24.8	24.8	25.0	24.9
Macaroni....pound..	21.4	21.4	21.4	19.5	19.9	19.9	18.5	18.5	18.5	18.9	18.7	18.7	18.3	18.2	18.4
Rice....do....	10.1	9.6	9.4	11.1	10.7	10.6	6.7	6.6	6.5	10.4	10.7	10.7	9.5	9.8	9.7
Beans, navy....do....	10.0	13.7	14.2	10.1	12.7	13.0	11.2	15.0	15.0	10.7	13.4	13.5	10.5	13.6	14.0
Potatoes....do....	3.2	1.8	1.7	1.7	1.7	1.7	3.9	2.6	2.5	3.2	2.4	2.4	3.4	2.6	2.6
Onions....do....	7.0	8.6	9.0	5.6	8.0	8.2	7.4	9.3	9.3	6.3	8.0	7.7	6.6	8.0	8.3
Cabbage....do....	5.4	5.8	6.3	6.1	7.5	6.8	4.8	5.8	5.5	5.4	6.1	5.9	5.5	6.3	5.8
Beans, baked ....No. 2 can..	9.9	10.3	10.3	13.5	13.9	13.9	9.8	11.1	11.3	12.4	12.6	12.5	10.4	11.4	11.5
Corn, canned....do....	15.8	16.1	16.0	14.3	14.3	14.8	15.0	15.0	14.8	16.3	15.9	15.9	15.7	15.4	15.7
Peas, canned....do....	16.1	15.9	15.7	13.6	14.2	14.2	16.5	16.2	16.1	16.8	16.7	16.7	16.8	16.4	16.4
Tomatoes, canned ....No. 2 can..	12.6	13.7	13.4	12.8	12.4	12.9	9.8	11.2	11.5	13.7	13.7	14.0	11.5	13.3	13.5
Sugar....pound..	6.7	6.3	6.1	8.4	7.9	7.7	6.7	6.3	6.1	6.9	6.4	6.3	7.3	6.8	6.7
Tea....do....	68.5	68.4	68.6	82.4	82.6	82.6	80.7	85.3	82.8	69.5	70.8	70.4	80.1	80.5	80.7
Coffee....do....	46.3	47.8	48.1	54.4	55.1	55.1	44.4	46.8	46.8	47.7	47.5	47.5	44.2	46.3	46.3
Prunes....do....	13.0	14.2	14.2	14.7	14.0	13.7	10.3	12.3	12.5	15.3	16.4	16.2	13.3	14.4	14.5
Raisins....do....	13.0	11.3	11.1	14.6	13.0	13.2	12.9	9.8	9.8	14.0	11.5	11.4	14.2	12.0	12.1
Bananas....dozen..	41.8	41.6	40.2	[2] 13.6	[2] 13.6	[2] 12.3	26.0	23.0	22.5	40.4	37.8	36.7	36.7	37.7	35.0
Oranges....do....	56.9	54.7	44.8	52.2	50.8	41.8	38.8	25.3	21.9	56.8	46.0	44.8	50.7	40.6	38.2

[2] Per pound.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Cleveland, Ohio			Columbus, Ohio			Dallas, Tex.			Denver, Colo.			Detroit, Mich.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Sirloin steak, pound	42.9	44.9	44.9	44.2	46.3	46.0	40.0	44.0	44.5	37.2	38.9	38.8	46.3	49.6	50.0
Round steak, do	36.5	39.6	39.0	38.2	41.6	40.9	37.3	42.0	42.0	34.2	35.5	35.9	38.1	40.9	41.3
Rib roast, do	30.1	33.1	33.5	32.8	36.1	36.9	32.5	36.5	37.0	27.6	29.7	29.9	33.5	37.0	37.8
Chuck roast, do	26.8	29.9	30.1	27.3	30.8	30.5	26.2	30.2	30.1	22.5	25.6	26.0	26.2	30.2	29.4
Plate beef, do	17.8	19.6	20.3	18.8	21.7	21.9	19.6	22.7	23.7	13.9	17.0	17.0	16.8	19.4	19.6
Pork chops, do	27.8	31.2	38.6	27.8	31.1	35.5	31.5	34.3	35.3	25.8	31.0	34.4	27.7	34.4	38.7
Bacon, sliced, do	41.8	41.0	42.4	44.6	42.8	43.0	45.9	44.3	45.3	43.0	41.6	40.9	44.9	43.5	43.9
Ham, sliced, do	51.7	54.4	56.7	50.0	52.5	53.2	53.1	57.0	57.0	51.4	54.0	54.3	53.9	59.4	61.1
Lamb, leg of, do	36.9	38.9	40.2	45.3	44.5	47.0	43.9	46.3	46.9	36.5	37.4	37.5	38.9	40.9	41.6
Hens, do	38.5	41.1	42.1	38.0	40.4	40.8	32.3	34.2	34.3	30.8	33.1	33.7	39.1	42.4	43.4
Salmon, canned, red, do	35.6	31.1	31.3	37.1	33.7	32.2	38.8	33.7	33.9	38.1	31.1	31.0	36.1	31.0	30.3
Milk, fresh, quart	13.7	13.7	12.0	10.5	12.0	12.0	12.7	13.0	13.0	12.0	12.0	12.0	14.0	14.0	14.0
Milk, evaporated, 16-ounce can	11.1	11.2	11.2	11.2	11.5	11.5	13.4	13.5	13.5	10.1	10.6	10.6	10.9	11.2	11.1
Butter, pound	61.3	60.8	60.9	55.8	59.0	58.8	58.4	58.4	58.4	51.3	53.8	54.2	59.1	59.6	59.7
Oleomargarine (all butter substitutes), pound	28.5	28.5	28.7	27.3	27.7	27.7	28.6	28.6	28.6	24.3	24.8	24.6	25.7	26.3	26.1
Cheese, do	40.1	40.7	40.7	37.0	36.3	37.4	38.3	38.5	38.5	39.2	39.0	39.4	40.6	38.8	38.9
Lard, do	19.3	20.0	20.1	14.5	15.3	15.7	21.8	21.2	20.6	17.8	18.5	19.3	17.3	18.0	18.0
Vegetable lard substitute, pound	26.8	26.3	26.4	26.5	26.6	25.7	23.9	24.1	23.9	20.6	21.2	21.2	26.5	26.2	26.1
Eggs, strictly fresh, dozen	39.4	55.1	41.7	32.4	48.6	37.2	32.0	45.3	46.8	31.1	42.9	34.7	38.3	53.5	43.4
Bread, pound	7.7	7.8	7.8	7.2	7.7	7.7	9.3	9.2	9.2	8.1	7.6	7.6	8.0	8.1	8.1
Flour, do	5.4	5.1	5.0	4.9	4.9	4.8	5.6	5.2	5.2	4.4	3.9	3.8	5.1	4.7	4.8
Corn meal, do	5.6	5.4	5.3	3.9	4.3	4.2	4.4	4.4	4.5	4.5	4.6	4.6	6.1	6.0	6.1
Rolled oats, do	9.3	8.9	9.0	9.6	9.1	8.9	10.1	9.9	9.9	7.5	7.5	7.5	9.4	9.1	9.2
Corn flakes, 8-ounce package	10.0	9.7	9.7	10.1	10.0	10.2	10.4	10.2	10.2	9.5	9.7	9.8	9.8	9.8	9.8
Wheat cereal, 28-ounce package	26.2	25.8	25.9	26.4	26.4	26.1	27.6	27.4	27.5	24.6	24.5	24.6	26.2	26.1	26.1
Macaroni, pound	21.4	20.8	20.8	19.6	19.8	20.0	21.7	21.1	21.5	19.3	19.3	19.2	22.1	20.7	21.0
Rice, do	10.4	10.2	10.1	11.6	11.5	11.0	11.6	11.4	11.6	9.3	8.9	8.9	11.4	11.2	11.3
Beans, navy, do	10.3	13.9	14.6	10.2	14.1	14.4	12.1	14.5	14.8	10.9	12.4	12.9	10.5	13.8	14.1
Potatoes, do	3.6	2.2	2.3	3.3	2.1	1.9	4.9	4.2	4.1	2.7	2.0	1.9	2.9	1.5	1.5
Onions, do	6.3	7.7	7.6	7.2	8.8	9.3	7.3	8.2	8.8	4.7	6.6	7.0	5.8	8.1	8.1
Cabbage, do	5.4	6.2	6.4	5.3	6.1	6.2	4.8	5.9	5.6	4.8	4.8	4.4	5.3	6.8	5.7
Beans, baked, No. 2 can	13.0	12.0	12.1	11.9	11.8	11.8	12.2	12.6	12.7	11.2	11.5	11.6	11.1	11.9	11.9
Corn, canned, do	17.1	16.3	16.0	14.5	13.9	13.8	18.6	17.8	18.1	14.2	14.2	14.1	15.6	15.3	15.3
Peas, canned, do	17.6	17.3	17.2	14.8	14.8	14.8	22.2	22.0	21.4	15.2	15.0	14.7	16.3	15.5	16.0
Tomatoes, canned, pound	13.8	13.5	13.9	12.7	13.2	13.5	11.9	13.7	14.2	11.8	11.8	11.7	12.2	12.9	13.1
Sugar, do	7.6	7.3	7.1	7.6	7.3	7.1	7.6	7.3	7.2	7.5	7.1	7.1	7.4	6.9	6.7
Tea, do	80.0	80.2	81.5	86.7	84.5	87.8	105.6	104.1	105.1	69.6	69.3	69.3	75.2	71.9	71.9
Coffee, do	51.7	51.3	51.6	48.5	49.2	49.3	57.2	58.3	58.8	49.6	49.6	49.8	47.7	48.5	49.9
Prunes, do	13.7	14.1	14.4	15.6	16.0	15.6	16.6	16.6	16.7	14.3	14.9	14.9	14.3	15.4	15.8
Raisins, do	13.2	11.6	11.8	14.1	11.1	11.2	15.3	12.6	13.4	13.2	10.9	10.9	13.5	11.5	11.4
Bananas, dozen	[2]10.7	[2]10.0	[2]9.9	36.0	40.6	37.5	37.5	35.0	35.0	[2]8.8	[2]10.1	[2]8.8	34.2	34.0	34.0
Oranges, do	57.1	48.5	42.2	56.7	48.0	38.5	50.3	50.2	48.3	50.1	42.5	37.9	56.5	46.8	39.3

[2] Per pound.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Fall River, Mass.			Houston, Tex.			Indianapolis, Ind.			Jacksonville, Fla.			Kansas City, Mo.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Sirloin steak--pound	[3] 67.9	[3] 68.5	[3] 68.7	37.0	40.0	39.8	41.7	47.5	46.6	38.1	39.5	39.0	41.7	46.7	46.9
Round steak----do	52.1	53.7	53.7	36.3	39.1	38.8	40.2	44.5	44.1	34.1	34.1	34.3	36.6	40.6	40.9
Rib roast----do	35.6	37.2	37.5	29.7	30.7	31.1	30.5	34.8	34.5	28.1	30.8	31.3	28.5	33.4	33.4
Chuck roast----do	26.7	28.9	29.5	23.9	25.4	25.8	26.5	30.9	30.5	21.5	24.2	24.9	22.3	26.9	27.1
Plate beef----do	17.7	19.3	16.7	21.2	23.5	23.2	17.8	21.2	21.1	13.5	15.6	15.3	16.5	20.7	20.7
Pork chops----do	29.2	34.1	35.4	27.5	31.4	33.6	27.3	31.6	35.3	26.5	29.8	32.0	24.3	31.0	36.7
Bacon, sliced----do	41.6	38.5	40.0	41.8	39.8	40.0	40.2	40.3	40.3	38.0	35.3	35.6	42.8	41.2	40.7
Ham, sliced----do	50.0	51.6	52.5	46.2	50.0	50.0	51.3	54.1	53.6	44.2	48.0	48.0	49.1	50.9	52.5
Lamb, leg of----do	40.3	41.5	42.5	33.3	33.3	33.3	40.0	42.0	43.0	37.7	40.8	40.8	34.9	35.2	36.9
Hens----do	42.8	44.4	47.2	32.1	39.4	41.0	40.4	44.2	44.2	33.7	36.0	37.2	33.3	35.9	36.4
Salmon, canned, red ----pound	36.4	33.8	33.6	34.5	29.6	29.5	35.9	32.3	32.0	34.0	31.3	30.8	37.2	35.1	35.0
Milk, fresh----quart	14.7	15.0	15.0	15.6	15.4	15.4	12.0	13.0	13.0	20.3	20.3	20.3	13.0	13.0	13.0
Milk, evaporated ----16-ounce can	12.6	12.5	12.5	10.9	11.3	11.3	10.7	10.5	10.6	11.2	11.7	11.4	11.3	11.4	11.5
Butter----pound	56.5	57.7	58.9	55.9	58.8	58.9	57.3	59.3	58.8	57.0	58.5	58.9	56.7	58.2	57.9
Oleomargarine (all butter substitutes) ----pound	27.4	28.8	28.4	25.4	25.8	25.7	29.3	28.0	28.2	30.1	28.6	28.5	25.7	25.4	25.5
Cheese----do	41.5	41.6	41.8	33.2	33.5	33.6	39.2	42.0	40.5	35.5	34.5	34.1	37.8	37.9	37.5
Lard----do	16.8	17.2	17.5	19.7	20.8	20.8	15.0	15.6	16.1	17.9	18.9	18.7	17.3	18.5	18.5
Vegetable lard substitute----pound	26.6	27.0	26.7	15.4	16.8	16.4	26.9	26.4	26.7	21.9	21.8	21.8	26.8	25.6	25.9
Eggs, strictly fresh ----dozen	46.2	60.3	57.8	29.0	39.6	30.3	32.4	48.6	36.9	33.3	39.9	42.3	35.0	49.0	37.5
Bread----pound	8.7	8.5	8.5	8.5	8.2	8.4	8.0	7.9	7.9	10.1	10.0	10.0	9.8	9.5	9.5
Flour----do	5.7	5.5	5.5	5.2	4.9	4.9	5.5	5.2	5.2	6.5	6.0	6.1	5.0	4.8	4.8
Corn meal----do	7.0	6.9	6.9	4.0	4.0	4.1	4.0	3.8	4.1	4.2	4.3	4.1	5.3	5.3	5.3
Rolled oats----do	9.4	9.5	9.6	8.7	8.4	8.5	8.7	8.7	8.7	9.1	9.1	9.1	8.8	9.2	9.0
Corn flakes ---8-ounce package	10.2	10.0	10.3	9.1	9.0	8.8	9.4	9.1	9.1	9.8	9.6	9.7	9.9	9.7	9.7
Wheat cereal ---28-ounce package	25.3	25.0	25.0	25.2	25.6	25.6	26.6	25.1	25.1	24.2	25.0	25.2	26.9	27.0	27.3
Macaroni----pound	23.3	23.8	24.5	17.9	18.3	18.7	18.8	18.9	18.1	18.9	19.0	19.3	20.2	19.8	20.2
Rice----do	11.2	10.9	10.4	7.5	7.1	7.2	10.2	10.8	10.8	8.1	7.6	7.7	9.3	9.2	9.4
Beans, navy----do	11.2	13.4	13.6	11.1	14.3	14.5	10.7	14.5	14.3	10.8	14.1	14.2	11.1	14.4	14.3
Potatoes----do	3.7	1.9	1.9	4.2	3.6	3.6	3.1	2.0	2.3	4.1	2.7	2.6	3.2	2.3	2.2
Onions----do	6.4	8.4	8.4	5.7	7.6	8.4	7.3	8.3	8.6	7.8	9.3	9.3	7.1	9.4	8.8
Cabbage----do	6.4	7.1	6.5	4.7	4.0	3.9	4.7	6.5	6.4	4.2	4.4	4.2	4.9	5.8	5.3
Beans, baked ----No. 2 can	12.1	12.5	12.5	10.7	11.4	11.3	10.2	11.0	11.1	10.4	10.8	10.8	11.8	12.8	12.8
Corn, canned----do	17.1	16.8	16.9	13.6	14.5	14.6	13.7	14.7	14.7	17.8	17.0	17.2	14.1	14.9	14.9
Peas, canned----do	19.3	18.6	18.8	14.0	15.7	15.7	14.2	15.0	15.0	17.3	17.8	18.0	15.4	15.6	15.6
Tomatoes, canned ----No. 2 can	12.3	13.7	13.7	9.9	11.5	12.0	12.0	13.5	13.3	9.9	11.4	11.0	11.5	13.0	13.6
Sugar----pound	7.2	6.7	6.3	6.9	6.7	6.6	7.3	7.0	6.9	7.3	6.9	6.2	7.6	7.1	7.1
Tea----do	60.4	57.9	58.3	82.4	85.7	86.2	87.8	90.8	90.8	98.9	96.4	95.2	91.7	92.2	91.9
Coffee----do	49.5	49.8	50.7	42.4	45.1	45.1	48.1	48.2	48.2	47.8	48.8	49.2	51.4	51.9	52.2
Prunes----do	14.1	13.3	13.8	12.8	13.8	13.8	14.6	15.8	16.5	15.4	14.2	13.8	14.4	14.6	14.7
Raisins----do	13.3	12.3	11.9	12.3	10.5	10.3	14.8	13.1	13.5	15.0	12.2	12.0	14.5	12.5	12.5
Bananas----dozen	[2] 10.2	[2] 10.0	[2] 10.0	25.8	26.1	24.6	30.6	29.4	30.6	29.3	27.9	27.1	[2] 10.3	[2] 10.8	[2] 10.2
Oranges----do	54.5	39.5	35.8	42.0	39.7	36.3	51.2	47.8	42.5	46.4	16.3	16.1	50.5	45.4	41.2

[2] Per pound.

[3] The steak for which prices are here quoted is called "rump" in this city, but in most of the other cities included in this report it would be known as "porterhouse" steak.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Little Rock, Ark.			Los Angeles, Calif.			Louisville, Ky.			Manchester, N. H.			Memphis, Tenn.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Sirloin steak--pound	40.0	44.5	44.0	41.1	45.0	45.6	39.3	43.3	44.2	[1] 62.2	[1] 63.5	[1] 63.2	40.5	45.2	45.0
Round steak----do	36.8	40.7	41.0	34.3	38.3	38.3	36.4	38.8	40.0	47.5	51.8	50.6	36.2	41.8	41.0
Rib roast----do	30.8	34.3	35.6	33.0	35.4	35.6	28.9	32.4	32.4	30.5	33.8	33.7	28.8	32.5	31.9
Chuck roast----do	24.5	28.8	28.9	24.6	27.8	27.8	23.8	26.9	26.9	25.8	28.6	28.6	23.1	26.6	26.6
Plate beef----do	20.2	21.6	21.4	18.0	20.7	20.3	19.2	22.5	23.0	19.0	22.1	21.3	18.3	20.9	20.8
Pork chops----do	26.5	32.3	35.3	34.0	41.0	44.6	24.2	30.1	35.0	25.9	31.8	34.4	23.4	30.0	31.5
Bacon, sliced----do	42.4	42.1	43.3	49.1	50.2	50.0	43.4	43.9	43.3	36.2	36.2	35.2	36.4	35.5	35.2
Ham, sliced----do	47.4	50.9	53.2	63.7	68.2	67.6	47.3	48.8	50.4	41.5	45.2	45.6	47.1	51.9	53.1
Lamb, leg of----do	36.7	39.3	38.7	37.4	38.9	40.1	36.7	37.7	42.5	36.8	40.1	40.0	36.1	38.3	39.1
Hens----do	29.9	32.1	32.6	43.4	46.2	46.2	35.4	39.1	38.3	42.2	44.0	43.9	30.6	34.4	35.6
Salmon, canned, red ----pound	36.1	32.5	31.9	33.6	29.8	29.6	35.2	29.5	29.8	35.0	29.7	29.9	33.1	35.6	35.6
Milk, fresh----quart	15.0	15.0	15.0	15.0	15.0	15.0	13.0	13.0	13.0	15.0	15.0	15.0	15.0	15.0	15.0
Milk, evaporated ----16-ounce can	11.9	11.9	11.6	10.0	10.0	10.1	11.8	11.8	11.9	12.7	12.6	12.8	11.6	11.6	11.6
Butter----pound	56.1	57.5	57.5	53.0	56.5	54.3	58.9	61.5	60.8	59.1	59.1	59.0	57.9	58.7	59.0
Oleomargarine (all butter substitutes) ----pound	27.5	28.0	27.8	25.4	25.3	25.3	27.0	27.8	27.9	25.6	28.6	28.3	24.3	26.0	26.0
Cheese----do	38.8	36.2	36.3	38.8	38.3	38.5	38.1	37.1	38.0	38.9	38.9	39.1	33.9	35.6	35.2
Lard----do	21.0	20.4	20.8	18.5	20.4	20.0	15.7	17.4	17.8	17.4	17.6	17.4	14.3	15.5	15.9
Vegetable lard substitute----pound	21.3	21.0	20.6	23.7	24.8	25.1	26.7	26.4	27.1	26.5	26.0	26.0	22.5	21.5	21.4
Eggs, strictly fresh ----dozen	30.1	48.2	34.2	33.8	37.0	36.8	32.8	47.6	38.8	45.1	57.4	54.6	33.3	43.3	35.5
Bread----pound	9.3	9.7	9.7	8.7	8.6	8.6	9.1	9.3	9.3	8.6	8.2	8.2	9.5	9.4	9.3
Flour----do	6.1	6.0	6.0	5.3	4.8	4.8	6.3	6.1	6.0	5.5	4.8	4.8	6.0	6.1	6.0
Corn meal----do	3.8	4.2	4.1	5.7	5.7	5.7	4.1	4.0	4.0	5.2	5.3	5.3	3.7	3.9	3.9
Rolled oats----do	10.5	10.3	10.4	10.0	10.0	10.0	8.6	8.6	8.7	9.1	8.6	8.6	9.0	9.1	9.0
Corn flakes ---8-ounce package	10.3	9.8	9.8	9.4	9.4	9.5	9.6	9.4	9.4	9.7	8.9	9.1	9.8	9.8	9.8
Wheat cereal ---28-ounce package	27.8	27.0	27.1	25.0	25.0	25.0	27.0	27.0	26.6	25.8	25.5	25.6	25.6	25.8	25.8
Macaroni----pound	20.5	20.2	20.2	18.4	17.9	17.9	18.7	18.8	18.8	23.4	23.2	23.1	19.7	19.7	19.9
Rice----do	8.1	8.0	8.1	10.0	9.9	9.9	10.8	10.6	10.4	9.2	8.5	8.5	8.9	8.5	8.5
Beans, navy----do	10.6	13.8	13.9	11.2	13.1	13.3	10.7	14.5	14.5	11.0	13.9	13.8	10.6	14.1	14.0
Potatoes----do	4.0	3.0	2.9	3.2	2.5	2.4	3.3	2.6	2.5	3.4	1.7	1.7	3.9	3.0	2.8
Onions----do	6.6	8.6	8.8	6.3	8.1	7.8	6.4	8.8	9.0	6.0	7.9	8.3	5.8	7.8	8.0
Cabbage----do	5.0	5.4	5.0	3.9	5.2	5.1	5.6	6.4	5.5	4.9	6.1	7.1	4.3	4.9	4.2
Beans, baked ----No. 2 can	10.5	12.1	12.3	11.0	11.7	12.0	10.4	11.3	11.5	13.2	13.4	13.4	11.1	11.7	11.8
Corn, canned----do	16.3	16.1	15.8	16.5	16.0	15.9	15.3	15.5	15.3	16.4	16.5	16.7	14.6	14.8	14.6
Peas, canned----do	17.1	18.2	18.6	16.9	16.8	16.8	15.0	15.4	15.2	18.3	17.6	17.6	16.2	15.4	15.2
Tomatoes, canned ----No. 2 can	10.0	12.6	12.7	[4] 14.8	[4] 14.7	[4] 14.9	10.5	13.1	13.4	12.3	12.8	13.6	9.7	11.5	11.6
Sugar----pound	7.7	7.2	7.1	6.9	6.2	6.1	7.3	7.2	7.0	7.1	6.6	6.7	7.0	6.8	6.7
Tea----do	105.4	104.9	104.9	74.0	74.9	74.0	90.5	95.0	95.0	64.1	65.2	64.9	97.9	95.6	95.6
Coffee----do	53.3	54.1	54.0	53.3	54.1	53.9	50.2	49.9	50.0	50.7	50.9	50.5	48.4	49.2	49.8
Prunes----do	13.8	15.4	15.6	12.1	13.1	13.5	14.3	16.0	15.9	12.6	13.5	13.3	13.7	14.4	14.5
Raisins----do	15.0	13.8	13.8	12.2	10.4	10.2	14.1	11.6	11.4	13.4	11.0	11.0	14.5	12.3	12.3
Bananas----dozen	[2] 8.9	[2] 8.7	[2] 8.3	[2] 9.2	[2] 9.0	[2] 9.4	[2] 9.8	[2] 10.0	[2] 9.3	[2] 9.5	[2] 9.9	[2] 9.8	[2] 8.9	[2] 8.5	[2] 7.3
Oranges----do	51.4	52.1	45.3	43.6	44.9	40.8	45.0	33.2	29.7	53.8	41.5	36.1	49.2	32.9	29.5

[1] The steak for which prices are here quoted is called "sirloin" in this city, but in most of the other cities included in this report it would be known as "porterhouse" steak.
[2] Per pound.
[4] No. 2½ can.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Milwaukee, Wis.			Minneapolis, Minn.			Mobile, Ala.			Newark, N. J.			New Haven, Conn.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Sirloin steak..pound..	40.5	44.0	43.6	38.1	40.9	41.9	38.5	41.9	42.5	50.4	49.3	50.8	58.2	60.5	60.9
Round steak....do....	36.2	39.2	39.6	33.1	37.8	38.2	37.5	39.4	40.0	47.3	47.3	47.0	47.3	52.2	51.4
Rib roast.....do....	30.9	32.5	32.7	29.7	33.0	33.3	30.3	31.9	32.5	39.4	38.5	38.5	38.8	41.1	41.1
Chuck roast....do....	27.1	30.4	30.4	25.0	28.9	28.8	24.5	25.6	26.3	29.4	30.3	30.6	29.2	33.4	33.6
Plate beef.....do....	17.3	19.9	20.1	15.5	19.4	19.5	20.0	20.6	21.0	18.5	18.0	18.1	17.3	17.6	17.8
Pork chops.....do....	26.5	31.0	38.8	29.7	33.2	38.0	34.5	33.8	33.1	30.0	33.2	36.3	27.9	33.8	36.5
Bacon, sliced....do....	42.3	43.6	43.0	46.4	45.3	46.9	43.1	38.2	37.7	43.3	42.7	43.0	44.8	44.5	45.3
Ham, sliced.....do....	46.0	48.4	48.9	45.9	51.9	52.9	49.2	50.0	48.9	51.5	54.8	56.5	56.1	58.9	59.4
Lamb, leg of....do....	38.0	41.9	42.7	34.8	38.1	38.4	40.0	43.8	43.8	39.0	40.4	40.3	39.3	40.0	41.1
Hens.....do....	35.4	38.2	39.6	35.4	38.2	38.8	33.4	35.0	33.8	37.3	40.5	41.6	41.3	42.5	43.5
Salmon, canned, red ..pound..	34.8	36.9	36.7	36.7	34.7	35.0	35.8	29.1	29.0	33.4	30.0	29.4	34.6	31.5	31.2
Milk, fresh.....quart..	11.0	11.0	11.0	12.0	12.0	12.0	18.0	18.0	18.0	16.0	16.0	16.0	16.0	16.0	16.0
Milk, evaporated ..16-ounce can..	11.0	11.2	11.3	11.6	11.8	11.6	11.2	11.5	11.3	10.6	11.0	11.0	12.0	11.9	11.9
Butter.....pound..	56.0	57.5	57.3	55.3	57.0	56.5	59.4	58.0	59.2	59.5	59.8	59.6	56.9	58.8	59.1
Oleomargarine (all butter substitutes) ..pound..	26.6	26.6	26.7	25.5	25.8	25.6	29.1	29.2	29.2	30.1	29.9	29.8	29.4	28.9	28.9
Cheese.....do....	37.5	37.7	37.4	37.3	36.6	36.6	37.8	35.6	35.6	39.0	41.3	41.8	41.3	41.4	41.4
Lard.....do....	18.0	18.9	18.8	17.4	19.2	18.9	18.6	18.7	18.7	17.7	18.4	18.4	18.4	18.7	18.9
Vegetable lard substitute.....pound..	26.4	26.2	26.4	27.3	26.4	25.9	20.6	20.0	20.1	25.6	25.5	25.5	26.1	26.0	25.8
Eggs, strictly fresh ..dozen..	32.9	47.0	38.1	33.9	43.5	38.9	30.2	38.5	36.6	45.6	56.2	48.9	50.9	64.1	60.6
Bread.....pound..	8.8	8.7	8.7	8.9	8.9	8.9	10.1	10.1	10.1	9.1	9.0	9.0	9.2	8.7	8.7
Flour.....do....	4.8	4.4	4.4	5.0	4.5	4.5	6.1	6.0	5.9	5.1	4.8	4.8	5.3	5.0	5.1
Corn meal.....do....	5.8	6.2	6.1	5.7	5.5	5.6	4.0	3.9	3.9	6.9	6.7	6.7	6.9	6.9	6.9
Rolled oats.....do....	8.2	8.0	8.1	8.1	7.8	7.8	8.5	8.4	8.4	8.3	8.7	8.7	9.1	9.3	9.1
Corn flakes ..8-ounce package..	9.5	9.4	9.2	9.7	9.6	9.0	9.5	9.3	9.3	9.2	8.9	8.9	10.0	9.9	10.1
Wheat cereal ..28-ounce package..	24.5	24.5	24.4	25.3	25.4	25.4	24.4	24.2	24.2	24.7	26.2	26.2	24.7	24.7	24.8
Macaroni.....pound..	17.7	17.4	17.4	18.3	17.2	17.3	21.1	20.9	20.9	21.4	21.5	21.5	22.4	21.9	21.8
Rice.....do....	10.2	9.7	9.7	9.6	9.7	10.0	9.3	8.2	7.8	9.0	9.0	9.3	10.2	10.2	10.4
Beans, navy....do....	11.1	14.3	14.2	11.0	13.9	14.4	11.0	12.8	13.4	10.6	13.6	14.4	10.5	13.4	14.0
Potatoes.....do....	2.9	1.8	1.7	2.7	1.6	1.6	4.1	2.8	2.8	3.9	2.5	2.3	3.5	2.1	2.1
Onions.....do....	5.6	8.2	8.3	5.9	8.8	9.1	6.2	7.6	8.6	6.4	8.6	8.4	6.9	8.6	8.7
Cabbage.....do....	5.1	7.3	6.3	5.0	5.7	5.3	4.9	4.1	3.6	5.3	5.5	5.5	5.9	6.3	6.2
Beans, baked ..No. 2 can..	11.3	11.2	11.2	12.3	12.6	12.8	10.2	10.7	10.8	10.3	10.8	10.8	11.5	11.9	12.0
Corn, canned....do....	15.8	15.9	16.0	14.4	15.1	15.3	16.0	14.6	14.4	16.5	16.8	16.4	18.1	18.5	18.3
Peas, canned....do....	15.6	15.7	15.8	14.6	16.0	16.1	15.4	15.2	15.2	18.3	17.1	17.1	19.3	21.4	21.4
Tomatoes, canned ..No. 2 can..	13.1	13.3	13.5	13.0	14.0	13.8	10.2	10.7	11.4	10.5	11.1	11.5	12.8	14.4	14.6
Sugar.....pound..	6.8	6.4	6.3	7.2	6.7	6.6	7.0	6.5	6.4	6.5	6.1	6.1	6.9	6.6	6.5
Tea.....do....	70.6	68.6	68.3	63.2	69.4	69.1	78.5	81.9	81.9	59.3	56.9	58.1	59.6	60.3	59.9
Coffee.....do....	43.8	45.5	45.7	52.0	53.6	53.5	47.9	47.5	48.5	47.8	50.0	48.8	51.9	51.4	51.4
Prunes.....do....	13.8	14.5	14.5	13.8	15.0	15.0	12.9	12.3	13.0	12.6	14.0	14.0	13.2	14.6	14.7
Raisins.....do....	13.6	12.1	12.7	14.3	11.8	11.8	13.4	10.3	10.3	13.8	10.8	11.0	13.7	12.5	12.3
Bananas.....dozen..	[2] 9.5	[2] 9.7	[2] 9.6	[2] 11.3	[2] 11.6	[2] 10.8	24.5	22.5	24.0	38.0	37.5	37.5	33.5	33.7	33.1
Oranges.....do....	53.0	49.8	39.8	52.5	41.4	35.8	52.5	31.1	30.7	54.7	46.0	44.7	55.8	48.3	48.8

[2] Per pound.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	New Orleans, La.			New York, N. Y.			Norfolk, Va.			Omaha, Nebr.			Peoria, Ill.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Sirloin steak...pound..	38.9	42.4	43.2	49.8	51.4	51.5	43.1	46.7	46.5	38.8	43.3	44.3	36.4	37.8	39.3
Round steak...do....	34.7	38.1	38.7	46.7	48.7	48.5	37.4	40.5	40.2	36.6	40.9	41.5	35.0	36.7	37.9
Rib roast...do....	33.3	35.5	35.8	42.7	43.0	42.4	33.2	38.5	38.8	26.7	31.1	31.5	25.5	28.9	29.3
Chuck roast...do....	23.7	25.3	26.4	27.7	29.7	29.2	24.6	28.8	28.8	23.0	27.2	27.6	23.2	26.3	26.9
Plate beef...do....	19.2	22.2	22.6	23.3	24.6	24.0	17.2	20.9	20.6	14.5	18.3	19.0	16.8	19.0	18.8
Pork chops...do....	29.8	33.5	36.0	34.1	36.1	39.1	28.6	30.2	31.8	25.4	30.9	35.9	24.8	29.5	34.4
Bacon, sliced...do....	40.6	41.2	43.4	45.2	44.6	44.7	42.2	40.0	41.0	44.4	42.8	42.9	43.3	43.3	43.3
Ham, sliced...do....	47.7	51.3	51.0	54.8	56.5	57.0	45.6	42.5	43.8	46.8	52.8	53.4	48.8	48.3	49.2
Lamb, leg of...do....	39.3	40.3	41.1	36.9	38.6	39.2	40.0	43.3	42.5	36.2	37.4	37.7	37.2	41.9	41.9
Hens...do....	34.9	36.7	38.8	39.5	41.3	42.3	36.5	38.1	39.6	31.3	34.7	35.5	32.9	36.9	37.5
Salmon, canned, red ...pound..	37.9	35.8	36.0	34.4	30.5	29.9	35.9	33.9	33.2	35.9	34.0	34.3	35.5	33.8	32.8
Milk, fresh...quart..	14.0	14.0	14.0	15.0	16.0	16.0	18.0	18.0	18.0	10.3	11.3	11.3	13.0	13.0	13.0
Milk, evaporated ...16-ounce can..	10.9	11.0	10.9	10.7	10.9	10.9	11.4	11.5	11.4	11.4	11.6	11.6	11.2	11.3	11.4
Butter...pound..	58.2	59.4	59.2	57.9	59.2	58.9	59.8	60.8	60.3	52.9	54.3	54.7	53.7	55.2	55.4
Oleomargarine (all butter substitutes)...pound..	29.2	28.4	28.3	27.8	28.7	28.5	25.0	27.4	26.3	25.9	26.2	26.4	28.0	28.0	27.7
Cheese...do....	39.0	38.4	38.8	40.4	40.8	40.8	35.9	35.2	35.1	37.2	34.9	35.0	37.4	36.3	36.6
Lard...do....	17.0	18.3	18.5	18.9	19.1	20.0	17.5	18.1	18.2	18.4	19.5	19.7	17.8	18.5	18.3
Vegetable lard substitute...pound..	19.4	20.1	19.8	25.8	25.7	25.7	22.4	21.8	21.9	25.5	25.2	25.8	27.7	27.6	27.6
Eggs, strictly fresh ...dozen..	35.3	44.4	37.4	46.8	57.2	52.6	33.6	46.9	44.4	31.3	44.1	34.7	31.6	47.7	35.7
Bread...pound..	8.7	8.8	8.8	8.8	8.6	8.6	9.9	9.6	9.6	9.6	9.7	9.8	10.0	10.0	10.0
Flour...do....	6.6	6.6	6.7	5.1	4.9	5.0	5.5	5.4	5.3	4.3	4.2	4.2	5.0	4.7	4.8
Corn meal...do....	4.1	4.1	4.1	6.7	6.8	6.8	4.7	4.7	4.7	4.5	4.6	4.6	4.9	4.9	4.8
Rolled oats...do....	8.8	8.6	8.5	8.7	8.7	8.6	8.6	8.8	8.9	9.9	10.1	9.8	9.0	8.6	8.6
Corn flakes ...8-ounce package..	9.4	9.5	9.4	9.2	9.0	9.0	9.7	9.7	9.7	10.1	10.0	10.3	9.7	9.6	9.6
Wheat cereal ...28-ounce package..	24.8	25.0	25.2	24.2	24.3	24.5	25.1	25.1	24.9	28.2	27.6	27.3	26.1	25.5	25.7
Macaroni...pound..	10.7	9.9	9.7	20.7	20.6	20.2	19.0	19.0	19.0	20.9	20.8	21.4	19.0	18.8	18.8
Rice...do....	9.4	8.6	8.4	10.0	9.6	9.7	11.1	10.9	10.7	10.8	9.9	10.1	10.6	9.6	9.3
Beans, navy...do....	9.6	13.2	13.7	11.2	14.2	14.4	9.8	13.5	13.8	11.0	13.7	13.8	10.7	14.0	14.1
Potatoes...do....	3.8	3.1	2.9	4.0	2.6	2.5	4.1	2.9	2.8	2.8	1.9	2.0	2.9	1.9	1.9
Onions...do....	5.7	7.2	7.3	6.2	7.9	8.2	5.5	7.6	8.6	6.3	8.5	9.1	5.8	8.9	9.0
Cabbage...do....	3.9	4.4	4.1	6.1	5.8	6.2	5.2	5.6	5.9	5.1	6.0	5.6	4.5	6.1	5.8
Beans, baked ...No. 2 can..	10.8	11.0	11.2	11.1	11.5	11.6	9.7	10.5	10.7	13.0	12.8	13.1	10.3	11.1	11.3
Corn, canned...do....	15.1	15.5	15.7	15.1	15.3	15.1	14.4	15.2	15.2	16.1	15.7	15.8	15.3	14.3	14.6
Peas, canned...do....	17.2	17.6	17.2	15.0	15.6	15.3	16.8	17.8	17.6	15.7	15.4	15.4	17.2	17.3	17.3
Tomatoes, canned ...No. 2 can..	10.5	11.9	12.3	11.1	12.1	12.7	9.7	10.7	11.7	13.3	13.9	14.3	12.5	12.8	13.4
Sugar...pound..	6.5	6.0	6.0	6.3	6.0	5.7	6.7	6.5	6.4	7.1	7.0	6.7	8.0	7.4	7.3
Tea...do....	79.2	83.8	83.6	67.1	67.1	67.1	95.4	94.7	95.6	77.5	78.7	77.7	67.2	66.1	66.1
Coffee...do....	35.4	37.6	37.9	46.7	45.2	45.0	50.2	50.9	50.3	53.7	53.6	53.6	48.6	49.5	48.8
Prunes...do....	13.9	13.9	14.0	12.4	13.4	13.2	13.7	13.5	13.5	14.2	14.4	14.5	16.0	16.8	16.8
Raisins...do....	12.9	10.2	10.2	13.3	11.4	11.4	13.5	11.2	11.3	14.7	13.2	13.3	13.5	12.4	11.9
Bananas...dozen..	17.1	16.7	15.8	38.5	39.7	38.6	33.9	32.3	32.7	[2] 11.2	[2] 11.5	[2] 10.6	[2] 9.8	[2] 9.9	[2] 9.7
Oranges...do....	52.5	43.6	42.4	62.2	57.3	52.0	59.0	46.6	37.0	49.5	39.2	37.2	50.7	43.2	40.9

[2] Per pound.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Philadelphia, Pa.			Pittsburgh, Pa.			Portland, Me.			Portland, Oreg.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Sirloin steak, pound	[1] 60.3	[1] 61.4	[1] 61.1	49.8	53.0	53.3	[1] 65.3	[1] 68.5	[1] 69.8	34.4	36.3	36.5
Round steak, do	46.4	47.4	47.5	41.9	44.3	44.6	48.5	52.5	51.6	32.2	34.7	35.2
Rib roast, do	41.0	40.5	40.0	37.0	40.5	39.6	33.1	35.9	35.8	30.1	29.5	29.8
Chuck roast, do	30.2	32.7	32.9	29.4	31.1	31.9	24.7	27.6	28.1	23.8	25.6	25.6
Plate beef, do	17.9	19.3	18.7	17.0	19.5	19.7	19.2	24.5	24.0	18.6	20.7	20.3
Pork chops, do	31.4	36.1	38.9	29.4	34.4	38.6	27.5	32.2	35.1	30.3	35.9	36.6
Bacon, sliced, do	40.9	41.3	41.4	46.9	47.2	46.6	40.4	39.0	38.8	48.8	50.6	50.6
Ham, sliced, do	52.5	56.8	58.1	56.8	58.5	59.7	49.8	52.5	54.4	53.4	52.2	53.8
Lamb, leg of, do	39.6	42.3	42.2	40.7	42.2	42.6	37.5	39.9	41.6	37.0	40.3	40.4
Hens, do	40.1	42.7	44.1	43.6	48.2	48.6	41.3	42.6	43.0	34.4	36.7	36.1
Salmon, canned, red, do	32.4	28.7	27.7	34.6	29.2	29.2	35.6	29.4	29.4	35.7	33.2	32.9
Milk, fresh, quart	13.0	13.0	13.0	14.0	15.0	15.0	15.0	15.0	15.0	12.0	12.0	12.0
Milk, evaporated, 16-ounce can	11.7	11.5	11.4	10.3	11.0	11.0	12.3	12.3	12.4	10.3	10.1	10.1
Butter, pound	60.7	61.6	62.1	60.7	60.9	61.0	58.6	60.2	61.0	55.3	56.5	54.9
Oleomargarine (all butter substitutes), pound	28.6	29.0	28.8	28.6	28.0	28.0	27.3	26.9	27.1	25.5	26.4	26.3
Cheese, do	42.3	42.3	42.4	41.4	42.1	41.2	39.5	39.1	38.9	38.5	38.4	38.4
Lard, do	16.6	17.5	17.6	17.9	18.3	18.1	17.2	17.5	17.3	19.4	19.5	18.8
Vegetable lard substitute, do	25.0	25.1	25.2	27.0	27.2	27.3	26.2	25.8	25.8	28.7	27.4	28.4
Eggs, strictly fresh, dozen	40.3	54.6	46.0	39.1	53.7	45.8	43.6	58.0	52.2	30.4	39.5	32.8
Bread, pound	9.4	8.3	8.3	8.6	8.9	8.9	10.1	9.0	9.0	9.2	9.3	9.3
Flour, do	4.9	4.7	4.8	4.9	4.6	4.6	5.3	5.0	5.1	4.9	4.7	4.7
Corn meal, do	5.1	5.3	5.1	5.7	5.9	6.0	5.0	5.3	5.3	6.2	5.9	5.7
Rolled oats, do	8.4	8.3	8.2	9.0	9.1	9.2	8.1	7.7	7.7	10.7	10.2	10.1
Corn flakes, 8-ounce package	9.4	8.8	8.8	9.8	9.8	9.7	9.9	9.8	9.6	9.6	9.6	9.6
Wheat cereal, 28-ounce package	25.2	24.4	24.6	25.2	24.6	24.7	25.6	25.8	25.8	27.2	26.8	27.0
Macaroni, pound	20.9	20.2	20.2	22.9	22.5	22.6	23.2	23.0	22.9	18.5	18.0	18.5
Rice, do	11.0	10.3	10.3	11.2	11.0	11.2	11.4	11.3	11.3	10.4	9.8	10.0
Beans, navy, do	10.1	14.0	14.5	10.7	14.1	14.6	11.2	13.6	12.8	11.1	14.0	14.3
Potatoes, do	3.9	2.4	2.4	3.6	2.2	2.5	3.4	1.8	1.7	2.2	2.1	2.1
Onions, do	5.8	8.2	8.2	7.3	8.1	8.5	6.6	8.5	8.4	5.1	7.4	6.8
Cabbage, do	5.3	5.5	5.5	6.1	7.0	5.7	2.5	5.0	5.6	5.3	7.2	7.0
Beans, baked, No. 2 can	11.0	11.4	11.3	12.4	13.2	13.1	14.8	15.5	15.5	11.7	12.5	12.9
Corn, canned, do	14.7	15.2	15.3	16.4	16.3	15.8	14.8	14.3	14.6	18.0	18.1	17.7
Peas, canned, do	15.7	15.9	15.7	17.0	16.5	16.3	17.5	17.7	17.4	17.5	17.5	17.1
Tomatoes, canned, do	11.6	12.6	12.8	11.5	13.3	13.3	12.1	12.2	12.9	[4] 16.1	[4] 15.0	[4] 15.6
Sugar, pound	6.5	5.9	5.7	7.3	7.0	6.8	7.1	6.4	6.2	7.0	6.7	6.5
Tea, do	68.5	70.5	70.3	82.5	81.7	83.4	62.2	61.5	62.6	79.9	77.8	77.8
Coffee, do	42.9	43.7	43.7	47.7	49.9	49.7	51.6	52.5	52.9	52.9	53.6	53.6
Prunes, do	12.8	12.5	12.6	13.0	14.5	14.2	11.2	12.1	12.0	10.7	14.1	14.3
Raisins, do	13.3	10.8	10.9	13.4	11.7	11.7	12.8	10.9	10.8	12.9	11.7	11.3
Bananas, dozen	30.3	31.7	29.6	38.2	38.8	36.4	[2] 11.7	[2] 11.5	[2] 11.3	[2] 12.0	[2] 11.0	[2] 10.2
Oranges, do	53.5	36.9	35.3	53.6	40.8	36.3	58.0	47.4	39.7	49.1	36.5	26.3

[1] The steak for which prices are here quoted is called "sirloin" in this city, but in most of the other cities included in this report it would be known as "porterhouse" steak.
[2] Per pound.
[4] No. 2½ can.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Providence, R. I.			Richmond, Va.			Rochester, N. Y.			St. Louis, Mo.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Sirloin steak, pound	[1] 77.5	[1] 77.3	[1] 77.7	43.4	46.4	46.2	45.0	45.3	45.4	39.5	44.6	44.7
Round steak, do	51.5	55.6	55.4	38.8	41.7	41.3	37.9	39.0	39.1	38.7	43.0	43.1
Rib roast, do	41.2	42.4	42.7	33.9	35.1	35.4	33.6	34.8	34.9	32.1	35.7	35.9
Chuck roast, do	32.6	33.8	34.1	25.5	27.5	27.8	28.1	30.2	30.4	24.2	28.2	28.1
Plate beef, do	20.8	25.0	25.4	18.8	21.2	21.2	16.6	18.9	19.2	17.6	21.4	21.5
Pork chops, do	30.9	35.0	39.6	29.1	31.6	35.3	31.0	33.9	38.3	22.4	29.4	34.7
Bacon, sliced, do	39.2	40.1	40.0	40.8	40.1	39.1	37.8	37.4	37.2	39.0	40.3	40.2
Ham, sliced, do	53.5	54.1	55.3	44.3	45.4	44.7	50.4	51.8	52.9	48.8	52.8	54.7
Lamb, leg of, do	39.9	41.8	41.9	44.4	44.0	44.8	38.9	39.8	41.2	37.3	39.5	40.4
Hens, do	40.8	44.0	44.2	36.1	38.9	40.1	40.7	41.8	42.3	33.9	38.7	40.3
Salmon, canned, red, do	33.5	30.4	30.2	34.7	32.8	32.3	36.3	31.1	31.4	35.8	32.4	32.0
Milk, fresh, quart	15.7	15.7	15.7	14.0	14.0	14.0	13.5	13.5	13.5	13.0	13.0	13.0
Milk, evaporated, 16-ounce can	11.7	11.9	11.8	12.3	12.5	12.5	11.3	11.4	11.3	10.2	10.8	10.8
Butter, pound	56.6	57.6	58.4	59.8	63.4	62.8	56.6	58.3	58.2	59.8	60.5	60.3
Oleomargarine (all butter substitutes), pound	27.1	26.8	26.7	29.6	31.1	29.9	28.4	28.3	28.5	26.9	26.6	26.5
Cheese, do	38.5	37.8	39.3	37.0	37.3	37.2	38.8	39.8	39.8	37.2	37.0	37.0
Lard, do	17.2	17.1	17.4	17.3	17.8	17.6	17.1	17.0	17.2	13.6	14.8	15.0
Vegetable lard substitute, do	26.3	26.5	26.5	25.5	25.1	25.5	26.2	26.0	26.0	25.2	25.3	25.5
Eggs, strictly fresh, dozen	48.2	55.8	56.4	32.9	46.1	37.9	39.4	54.4	46.1	35.4	47.0	38.0
Bread, pound	9.0	9.0	9.0	9.1	8.8	8.9	9.1	8.6	8.5	9.8	9.3	9.3
Flour, do	5.5	5.1	5.2	5.2	5.2	5.1	5.2	5.0	5.0	5.1	4.7	4.8
Corn meal, do	5.1	5.1	5.1	4.8	5.0	5.0	6.2	5.9	5.9	4.2	4.5	4.5
Rolled oats, do	9.0	8.9	8.9	8.6	8.7	8.7	9.1	9.0	9.0	8.2	8.1	8.1
Corn flakes, 8-ounce package	9.5	9.6	9.5	9.7	9.6	9.7	9.4	9.2	9.2	9.2	9.1	9.1
Wheat cereal, 28-ounce package	24.4	24.8	24.8	26.2	26.1	25.9	25.4	25.6	25.6	24.8	24.6	24.4
Macaroni, pound	22.9	22.8	22.7	20.2	20.0	19.8	21.2	19.9	19.9	19.3	19.8	19.8
Rice, do	10.3	9.7	9.7	11.4	11.4	11.4	9.6	8.9	8.8	9.7	10.2	10.1
Beans, navy, do	10.9	13.6	13.8	11.1	14.4	14.5	10.6	13.8	14.2	10.0	13.7	14.1
Potatoes, do	3.6	1.8	1.8	3.8	2.7	3.3	3.2	1.5	1.4	3.4	2.5	2.5
Onions, do	6.7	8.2	8.5	6.4	9.2	9.3	6.4	6.9	7.8	6.0	7.9	8.2
Cabbage, do	5.5	6.2	5.9	5.9	6.1	6.2	4.0	4.7	5.5	4.8	5.2	5.0
Beans, baked, No. 2 can	10.8	11.4	11.4	10.1	11.2	11.2	10.2	10.6	10.8	10.2	10.3	10.5
Corn, canned, do	17.1	17.1	16.2	14.6	15.6	15.8	16.3	16.1	16.3	15.3	15.5	15.6
Peas, canned, do	18.5	17.3	17.6	18.1	18.1	18.5	17.9	17.4	17.4	15.3	14.8	14.7
Tomatoes, canned, do	12.9	13.4	13.6	10.5	11.4	11.9	14.5	14.9	15.1	11.1	12.0	12.6
Sugar, pound	6.8	6.1	5.9	7.0	6.7	6.4	6.4	6.1	5.7	7.1	6.6	6.6
Tea, do	60.0	58.8	60.4	90.5	93.2	94.8	69.0	70.9	69.6	75.8	77.5	78.1
Coffee, do	51.0	52.3	52.4	47.2	49.3	48.6	46.4	48.2	48.2	46.7	46.2	47.3
Prunes, do	13.1	13.3	13.4	14.0	14.7	15.3	13.3	13.5	14.1	14.3	14.7	14.7
Raisins, do	13.7	11.9	11.7	13.1	11.5	11.1	13.6	12.2	11.9	13.7	11.1	11.0
Bananas, dozen	33.3	31.9	31.1	40.5	37.5	35.5	40.0	35.0	31.0	31.9	31.8	30.9
Oranges, do	63.0	49.8	42.6	55.0	34.9	34.6	55.1	56.0	43.5	50.5	47.8	45.1

[1] The steak for which prices are here quoted is called "sirloin" in this city, but in most of the other cities included in this report it would be known as "porterhouse" steak.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	St. Paul, Minn.			Salt Lake City, Utah			San Francisco, Calif.			Savannah, Ga.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*	*Cts.*
Sirloin steak, pound	39.7	40.1	40.7	35.9	37.5	38.0	37.7	40.9	41.1	37.8	40.5	4.8
Round steak, do	34.7	36.1	36.6	33.6	37.3	37.5	35.6	39.3	39.4	31.1	33.5	34.4
Rib roast, do	32.4	34.2	33.7	27.2	29.8	31.4	34.2	36.2	36.8	28.9	30.7	32.7
Chuck roast, do	26.2	28.2	28.3	22.1	26.2	26.2	23.7	26.5	26.9	20.6	23.2	25.5
Plate beef, do	16.1	17.9	18.1	16.7	19.0	20.0	18.8	21.0	21.0	18.7	18.8	18.8
Pork chops, do	25.4	30.9	35.3	30.2	36.7	38.1	36.0	38.9	40.7	29.0	28.3	29.8
Bacon, sliced, do	42.5	40.9	42.1	43.5	44.2	44.3	54.8	54.8	56.0	40.4	37.8	37.6
Ham, sliced, do	44.7	48.8	48.3	51.5	55.0	55.0	59.8	63.0	62.9	43.5	42.5	43.3
Lamb, leg of, do	33.9	35.7	36.0	36.4	39.8	40.8	39.5	42.8	43.4	39.0	41.1	42.6
Hens, do	33.9	36.4	36.8	31.6	35.1	34.8	43.2	44.8	44.5	30.0	32.9	36.3
Salmon, canned, red, do	39.9	35.5	34.8	34.5	33.4	33.5	32.1	28.5	28.1	35.3	32.9	33.1
Milk, fresh, quart	12.0	12.0	12.0	10.0	10.0	10.0	14.0	14.0	14.0	17.0	17.5	17.5
Milk, evaporated, 16-ounce can	12.2	11.5	11.5	10.2	10.3	10.1	10.0	10.0	10.0	10.9	11.4	11.3
Butter, pound	54.3	54.7	54.7	51.5	48.9	47.6	54.1	56.7	55.7	58.5	58.3	59.9
Oleomargarine (all butter substitutes), pound	24.2	24.9	24.0	26.4	25.3	25.5	25.4	24.8	24.8	30.7	30.7	30.8
Cheese, do	37.3	36.4	35.6	30.9	29.0	29.5	40.9	39.6	39.6	34.8	35.8	35.6
Lard, do	17.6	18.9	18.8	20.1	20.2	20.0	22.3	22.6	22.3	16.2	19.3	18.9
Vegetable lard substitute, do	28.5	27.0	27.5	29.1	29.5	29.5	27.6	27.4	27.5	16.5	17.0	17.0
Eggs, strictly fresh, dozen	33.8	42.3	37.3	26.8	40.1	35.1	33.6	35.5	35.3	31.7	41.9	37.8
Bread, pound	9.3	9.3	9.3	9.8	9.7	9.7	9.5	9.3	9.3	10.6	10.7	10.7
Flour, do	5.0	4.7	4.7	4.2	3.6	3.6	5.7	5.1	5.2	6.6	6.5	6.4
Corn meal, do	5.2	5.3	5.4	5.3	5.9	5.9	6.9	7.2	7.2	3.7	3.6	3.5
Rolled oats, do	9.8	10.1	10.1	8.4	8.9	8.8	10.0	10.0	10.0	8.7	8.6	8.4
Corn flakes, 8-ounce package	10.2	10.0	10.3	10.8	10.1	10.1	9.9	9.6	9.6	9.5	9.7	9.6
Wheat cereal, 28-ounce package	26.3	26.3	26.0	25.3	25.1	25.6	25.2	25.2	25.2	24.4	23.8	24.0
Macaroni, pound	18.7	18.5	18.5	19.6	19.9	19.6	15.7	16.3	16.2	18.0	18.0	17.8
Rice, do	10.9	10.6	10.5	9.2	8.7	9.0	10.6	9.0	9.3	9.2	8.9	9.5
Beans, navy, do	11.1	14.4	14.6	10.1	11.9	12.3	11.0	12.7	13.1	10.3	14.2	14.2
Potatoes, do	2.4	1.5	1.4	1.8	1.8	1.8	3.1	2.8	2.8	4.0	3.0	2.9
Onions, do	5.6	9.1	9.3	3.9	6.4	7.2	5.5	6.7	7.0	7.0	8.3	9.0
Cabbage, do	5.0	5.3	5.4	4.2	6.8	5.4				5.6	4.7	4.3
Beans, baked, No. 2 can	13.3	14.0	13.9	12.4	12.3	12.6	13.0	12.6	12.7	11.6	11.1	10.7
Corn, canned, do	14.8	15.0	15.0	14.0	14.4	14.3	17.7	17.3	17.3	14.9	15.2	15.2
Peas, canned, do	15.2	15.2	14.9	15.3	14.9	14.8	18.1	17.7	17.8	16.1	17.0	17.0
Tomatoes, canned, do	13.6	14.5	14.5	[4] 14.1	[4] 13.3	[4] 13.6	[4] 14.3	[4] 15.2	[4] 15.2	9.7	11.1	11.2
Sugar, pound	7.3	7.0	6.9	8.0	6.9	6.9	6.9	6.2	6.1	6.8	6.2	5.9
Tea, do	67.0	71.3	72.3	83.6	85.1	85.1	71.4	72.3	72.3	81.6	81.5	80.5
Coffee, do	52.5	52.8	52.8	54.5	54.7	54.7	53.3	53.2	53.5	44.7	47.2	46.7
Prunes, do	13.7	14.1	14.2	12.0	13.5	13.3	11.7	11.4	12.0	12.2	13.8	13.5
Raisins, do	14.5	13.7	13.6	12.9	11.6	11.6	11.9	10.3	10.2	13.6	12.0	11.6
Bananas, dozen	[2] 10.7	[2] 11.6	[2] 10.9	[2] 12.4	[2] 11.5	[2] 10.4	31.1	30.6	29.7	28.3	27.5	24.5
Oranges, do	57.5	56.0	45.5	47.3	40.7	36.3	53.6	51.1	40.7	46.2	27.9	22.7

[2] Per pound.

[4] No. 2½ can.

TABLE 5.—AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD IN 51 CITIES, MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

Article	Scranton, Pa.			Seattle, Wash.			Springfield, Ill.			Washington, D. C.		
	Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929		Mar. 15, 1928	1929	
		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15		Feb. 15	Mar. 15
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
Sirloin steak, pound	55.1	61.5	60.4	38.4	41.3	41.3	38.9	42.3	42.7	48.7	54.8	53.7
Round steak, do	46.8	50.3	49.7	35.0	38.1	38.0	38.5	42.3	42.7	42.0	48.4	47.1
Rib roast, do	38.8	43.3	41.3	31.1	34.5	34.0	25.6	30.5	31.3	35.5	38.7	38.0
Chuck roast, do	30.2	35.3	34.2	25.1	27.1	27.1	24.0	27.5	28.4	27.2	31.1	29.8
Plate beef, do	15.4	20.1	19.8	19.1	21.4	21.0	16.7	20.4	20.4	16.3	20.2	21.1
Pork chops, do	29.5	34.0	37.6	33.7	38.8	38.5	25.2	29.0	35.0	28.8	33.6	37.5
Bacon, sliced, do	44.2	47.4	46.9	53.0	55.1	53.7	43.6	42.1	42.5	39.6	40.0	40.2
Ham, sliced, do	54.3	58.3	59.5	55.9	59.8	58.9	45.9	48.2	49.5	53.7	57.5	57.6
Lamb, leg of, do	43.8	46.5	46.7	36.8	40.3	40.4	39.1	42.5	46.3	39.7	41.1	42.6
Hens, do	44.0	45.4	45.7	33.5	36.0	35.4	33.7	35.1	35.0	40.4	42.4	44.1
Salmon, canned, red, do	36.6	33.1	32.7	36.6	32.8	33.0	37.1	33.5	34.1	35.1	29.5	28.9
Milk, fresh, quart	13.0	13.0	13.0	12.0	12.0	12.0	14.4	14.4	14.4	15.0	14.8	14.8
Milk, evaporated, 16-ounce can	11.9	12.0	12.0	10.3	10.3	10.3	11.9	12.0	11.9	11.9	11.8	11.6
Butter, pound	57.3	59.5	59.6	55.6	56.3	55.0	55.6	58.0	57.6	61.0	61.6	61.4
Oleomargarine (all butter substitutes), pound	27.8	27.5	27.5	25.1	24.9	24.9	28.2	28.4	28.2	28.5	26.7	26.6
Cheese, do	38.1	38.6	38.7	36.2	35.4	35.5	38.5	36.7	36.5	40.7	40.6	40.5
Lard, do	18.5	19.7	19.4	20.5	19.8	19.8	17.3	18.1	18.2	16.6	16.8	17.0
Vegetable lard substitute, do	26.3	26.3	26.6	27.3	26.7	26.6	27.8	28.2	28.3	24.8	24.6	24.6
Eggs, strictly fresh, dozen	42.6	55.8	50.1	34.6	42.3	36.9	33.8	47.1	34.2	37.8	51.9	42.2
Bread, pound	10.6	9.9	9.8	9.7	9.6	9.6	10.2	10.1	10.1	8.9	8.9	8.9
Flour, do	5.8	5.4	5.4	4.9	4.7	4.7	5.2	4.6	4.6	5.5	5.3	5.3
Corn meal, do	7.5	7.6	7.6	5.5	6.0	5.9	4.6	4.8	4.7	5.3	5.0	4.9
Rolled oats, do	9.8	9.9	9.9	8.4	9.2	9.2	9.7	9.6	9.6	9.2	8.9	8.7
Corn flakes, 8-ounce package	10.1	9.9	10.1	9.8	9.7	9.6	10.1	9.4	9.5	9.5	9.3	9.2
Wheat cereal, 28-ounce package	25.3	25.5	25.5	26.4	26.7	26.8	27.9	27.6	27.5	24.9	24.3	24.2
Macaroni, pound	22.6	23.0	22.5	17.9	18.0	18.0	18.8	18.7	19.1	23.4	22.0	20.5
Rice, do	10.4	10.1	10.0	10.6	10.5	10.0	10.1	10.7	10.4	11.4	11.2	11.1
Beans, navy, do	11.2	13.2	13.8	11.1	14.0	14.3	11.7	14.8	14.6	10.1	13.8	14.2
Potatoes, do	3.4	1.9	1.8	2.2	1.8	1.9	3.2	2.0	2.0	4.0	2.4	2.4
Onions, do	6.2	7.3	8.4	5.1	7.6	7.6	6.3	9.1	9.4	6.8	8.5	8.7
Cabbage, do	5.9	7.9	7.0	5.3	7.5	7.2	5.1	5.8	6.0	5.9	5.5	5.3
Beans, baked, No. 2 can	11.2	12.0	12.2	11.5	12.5	12.8	10.1	11.7	11.6	10.5	10.8	10.8
Corn, canned, do	17.1	16.9	17.0	18.0	17.8	17.8	15.2	15.0	14.7	15.8	15.3	15.1
Peas, canned, do	17.3	17.6	18.1	19.2	18.0	17.8	16.3	16.1	16.1	15.4	14.7	14.9
Tomatoes, canned, do	12.2	12.9	13.3	[4] 16.0	[4] 15.5	[4] 15.9	13.7	13.6	13.9	10.6	11.3	12.2
Sugar, pound	7.0	6.6	6.4	7.0	6.5	6.4	7.6	7.2	6.9	6.7	6.2	6.0
Tea, do	72.1	67.0	67.0	76.4	78.9	79.5	84.6	82.3	82.7	95.5	90.7	92.4
Coffee, do	50.4	50.6	50.6	51.0	51.5	51.7	51.5	51.5	51.7	46.9	46.9	46.9
Prunes, do	14.3	13.8	14.6	12.0	13.8	14.0	14.0	14.6	14.4	14.4	15.4	15.2
Raisins, do	13.7	12.4	12.1	13.0	10.7	10.7	14.3	11.6	11.9	13.5	12.9	12.9
Bananas, dozen	32.0	31.5	31.2	[2] 11.7	[2] 11.2	[2] 10.6	[2] 9.4	[2] 9.8	[2] 8.9	33.9	33.3	31.8
Oranges, do	58.9	48.3	46.6	51.7	42.6	33.0	52.8	47.7	38.5	58.1	39.8	38.8

[2] Per pound.

[4] No. 2½ can.

Comparison of Retail Food Costs in 51 Cities

TABLE 6 shows for 39 cities the percentage of increase or decrease in the retail cost of food[3] in March, 1929, compared with the average cost in the year 1913, in March, 1928, and February, 1929. For 12 other cities comparisons are given for the 1-year and the 1-month periods; these cities have been scheduled by the bureau at different dates since 1913. The percentage changes are based on actual retail prices secured each month from retail dealers and on the average family consumption of these articles in each city.[4]

Effort has been made by the bureau each month to have all schedules for each city included in the average prices. For the month of March 99 per cent of all the firms supplying retail prices in the 51 cities sent in a report promptly. The following-named 36 cities had a perfect record; that is, every merchant who is cooperating with the bureau sent in his report in time for his prices to be included in the city averages: Atlanta, Baltimore, Birmingham, Boston, Buffalo, Chicago, Cleveland, Dallas, Denver, Detroit, Fall River, Houston, Indianapolis, Kansas City, Little Rock, Louisville, Manchester, Memphis, Minneapolis, Mobile, Newark, New Haven, New York, Norfolk, Omaha, Peoria, Philadelphia, Portland, Me., Providence, Richmond, Rochester, St. Louis, St. Paul, Scranton, Springfield, Ill., and Washington.

TABLE 6.—PERCENTAGE CHANGE IN THE RETAIL COST OF FOOD IN MARCH, 1929, COMPARED WITH THE COST IN FEBRUARY, 1929, MARCH, 1928, AND WITH THE AVERAGE COST IN THE YEAR 1913, BY CITIES

City	Percentage increase March, 1929, compared with—		Per centage decrease March, 1928, compared with February, 1929	City	Percentage increase March, 1929, compared with—		Percentage decrease March, 1929, compared with February, 1929
	1913	March, 1928			1913	March, 1928	
Atlanta	57.9	2.8	1.0	Minneapolis	55.5	2.0	0.1
Baltimore	55.4	0.2	1.3	Mobile		[a] 1.1	[b] 0.1
Birmingham	56.8	1.3	2.0	Newark	46.3	[a] 1.0	1.1
Boston	53.7	[a] 0.8	1.1	New Haven	54.7	0.8	0.1
Bridgeport		[a] 1.3	0.9	New Orleans	53.8	2.7	0.6
Buffalo	58.3	1.0	0.8	New York	55.4	0.2	0.8
Butte		3.3	1.2	Norfolk		1.3	0.4
Charleston, S. C	55.2	1.5	0.6	Omaha	48.9	4.5	0.1
Chicago	64.4	2.2	0.6	Peoria		1.7	0.9
Cincinnati	57.9	3.5	1.2	Philadelphia	53.7	[a] 1.7	1.1
Cleveland	48.7	[a] 1.4	2.2	Pittsburgh	57.5	2.7	0.6
Columbus		3.1	1.7	Portland, Me		[a] 0.6	0.6
Dallas	56.9	3.6	[b] 0.5	Portland, Oreg	38.7	1.4	1.9
Denver	36.6	0.8	1.5	Providence	54.6	[a] 0.1	[b] 0.6
Detroit	59.5	1.2	0.8	Richmond	61.0	2.3	0.4
Fall River	51.5	0.2	0.0	Rochester		[a] 1.6	1.4
Houston		3.0	0.7	St. Louis	57.5	2.2	0.3
Indianapolis	52.1	3.3	0.8	St. Paul		0.9	0.6
Jacksonville	41.1	0.0	[b] 0.3	Salt Lake City	31.5	2.9	1.1
Kansas City	51.9	1.9	1.2	San Francisco	49.7	1.1	0.0
Little Rock	49.1	3.2	1.9	Savannah		1.3	0.0
Los Angeles	41.6	1.7	0.6	Scranton	59.4	[a] 0.1	1.2
Louisville	55.1	3.9	1.0	Seattle	44.3	1.5	1.6
Manchester	50.7	[a] 0.3	0.3	Springfield, Ill		0.6	1.1
Memphis	47.3	2.4	1.7	Washington	59.0	0.5	1.5
Milwaukee	55.9	1.9	0.8				

[a] Decrease. [b] Increase.

[3] For list of articles see note 1, p. 223.

[4] The consumption figures used from January, 1913, to December, 1920, for each article in each city are given in the Labor Review for November, 1918, pp. 94 and 95. The consumption figures which have been used for each month, beginning with January, 1921, are given in the Labor Review for March, 1927, p. 26.

Retail Prices of Coal in the United States

THE following table shows the average retail prices of coal on March 15, 1928, and February 15 and March 15, 1929, for the United States and for each of the cities from which retail food prices have been obtained. The prices quoted are for coal delivered to consumers, but do not include charges for storing the coal in cellar or coal bin where an extra handling is necessary.

In addition to the prices for Pennsylvania anthracite, prices are shown for Colorado, Arkansas, and New Mexico anthracite in those cities where these coals form any considerable portion of the sales for household use.

The prices shown for bituminous coal are averages of prices of the several kinds sold for household use.

AVERAGE RETAIL PRICES OF COAL PER TON OF 2,000 POUNDS, FOR HOUSEHOLD USE, ON MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929

City, and kind of coal	1928	1929	
	Mar. 15	Feb. 15	Mar. 15
United States:			
Pennsylvania anthracite—			
Stove—			
Average price	$15.43	$15.40	$15.39
Index (1913=100)	199.8	199.3	199.2
Chestnut—			
Average price	$15.08	$15.07	$15.07
Index (1913=100)	190.5	190.4	190.4
Bituminous—			
Average price	$9.26	$9.07	$9.06
Index (1913=100)	170.4	166.9	166.7
Atlanta, Ga.:			
Bituminous, prepared sizes	$7.88	$8.05	$8.05
Baltimore, Md.:			
Pennsylvania anthracite—			
Stove	[1]16.00	[1]16.00	[1]16.00
Chestnut	[1]15.25	[1]15.50	[1]15.50
Bituminous, run of mine—			
High volatile	8.07	7.93	7.93
Birmingham, Ala.:			
Bituminous, prepared sizes	7.76	7.67	7.67
Boston, Mass.:			
Pennsylvania anthracite—			
Stove	16.25	16.25	16.25
Chestnut	16.00	16.00	16.00
Bridgeport, Conn.:			
Pennsylvania anthracite—			
Stove	14.88	14.88	14.88
Chestnut	14.88	14.88	14.88
Buffalo, N. Y.:			
Pennsylvania anthracite—			
Stove	14.01	14.02	14.02
Chestnut	13.61	13.53	13.53
Butte, Mont.:			
Bituminous, prepared sizes	10.89	10.91	10.91
Charleston, S. C.:			
Bituminous, prepared sizes	11.00	9.67	9.67
Chicago, Ill.:			
Pennsylvania anthracite—			
Stove	16.95	16.90	16.90
Chestnut	16.46	16.45	16.45
Bituminous—			
Prepared sizes—			
High volatile	8.66	8.20	8.20
Low volatile	11.85	11.88	11.88
Run of mine—			
Low volatile	8.25	8.25	8.25
Cincinnati, Ohio:			
Bituminous—			
Prepared sizes—			
High volatile	$6.50	$5.61	$5.61
Low volatile	7.85	7.73	7.73
Cleveland, Ohio:			
Pennsylvania anthracite—			
Stove	15.15	15.30	15.25
Chestnut	14.75	14.92	14.87
Bituminous—			
Prepared sizes—			
High volatile	7.77	7.30	7.24
Low volatile	9.75	10.00	9.94
Columbus, Ohio:			
Bituminous—			
Prepared sizes—			
High volatile	6.41	5.91	5.89
Low volatile	8.38	8.00	8.00
Dallas, Tex.:			
Arkansas anthracite—Egg	15.50	15.75	15.50
Bituminous, prepared sizes	12.70	13.17	13.08
Denver, Colo.:			
Colorado anthracite—			
Furnace, 1 and 2 mixed	16.00	16.00	16.00
Stove, 3 and 5 mixed	16.00	16.00	16.00
Bituminous, prepared sizes	10.45	10.51	10.51
Detroit, Mich.:			
Pennsylvania anthracite—			
Stove	16.00	16.00	16.00
Chestnut	15.50	15.50	15.42
Bituminous—			
Prepared sizes—			
High volatile	8.46	8.30	8.27
Low volatile	10.28	10.19	10.22
Run of mine—			
Low volatile	8.00	7.75	7.75
Fall River, Mass.:			
Pennsylvania anthracite—			
Stove	16.75	16.50	16.50
Chestnut	16.25	16.25	16.25
Houston, Tex.:			
Bituminous, prepared sizes	12.60	13.20	13.20
Indianapolis, Ind.:			
Bituminous—			
Prepared sizes—			
High volatile	6.51	6.24	6.18
Low volatile	9.00	9.00	9.00
Run of mine—			
Low volatile	7.25	7.00	7.00

[1] Per ton of 2,240 pounds.

[a] Prices of coal were formerly secured semiannually and published in the March and September issues of the Labor Review. Since June, 1920, these prices have been secured and published monthly.

AVERAGE RETAIL PRICES OF COAL PER TON OF 2,000 POUNDS, FOR HOUSEHOLD USE, ON MARCH 15, 1928, AND FEBRUARY 15 AND MARCH 15, 1929—Continued

City, and kind of coal	1928	1929	
	Mar. 15	Feb. 15	Mar. 15
Jacksonville, Fla.:			
Bituminous, prepared sizes	$14.00	$12.00	$12.00
Kansas City, Mo.:			
Arkansas anthracite—			
Furnace	13.50	12.60	12.60
Stove No. 4	15.17	14.33	14.33
Bituminous, prepared sizes	7.50	7.30	7.30
Little Rock, Ark.:			
Arkansas anthracite—Egg	13.50	13.50	13.50
Bituminous, prepared sizes	10.60	10.25	10.25
Los Angeles, Calif.:			
Bituminous, prepared sizes	16.50	16.25	16.50
Louisville, Ky.:			
Bituminous, prepared sizes—			
High volatile	7.11	7.16	7.05
Low volatile	9.40	9.75	9.75
Manchester, N. H.:			
Pennsylvania anthracite—			
Stove	17.50	17.25	17.25
Chestnut	17.25	17.00	17.00
Memphis, Tenn.:			
Bituminous, prepared sizes	8.33	7.39	7.39
Milwaukee, Wis.:			
Pennsylvania anthracite—			
Stove	16.65	16.30	16.30
Chestnut	16.20	15.90	15.90
Bituminous, prepared sizes—			
High volatile	8.00	7.80	7.80
Low volatile	11.12	11.08	11.08
Minneapolis, Minn.:			
Pennsylvania anthracite—			
Stove	18.15	18.28	18.28
Chestnut	17.70	17.90	17.90
Bituminous, prepared sizes—			
High volatile	10.98	10.90	10.90
Low volatile	13.75	13.50	13.50
Mobile, Ala.:			
Bituminous, prepared sizes	9.50	9.62	9.62
Newark, N. J.:			
Pennsylvania anthracite—			
Stove	14.00	14.00	14.00
Chestnut	13.50	13.50	13.50
New Haven, Conn.:			
Pennsylvania anthracite—			
Stove	15.10	14.90	14.90
Chestnut	15.10	14.90	14.90
New Orleans, La.:			
Bituminous, prepared sizes	11.29	11.21	11.21
New York, N. Y.:			
Pennsylvania anthracite—			
Stove	14.75	14.75	14.79
Chestnut	14.42	14.25	14.29
Norfolk, Va.:			
Pennsylvania anthracite—			
Stove	15.00	15.00	15.00
Chestnut	15.00	15.00	15.00
Bituminous—			
Prepared sizes—			
High volatile	7.81	7.88	7.81
Low volatile	10.50	10.50	10.50
Run of mine—			
Low volatile	7.00	7.00	7.00
Omaha, Nebr.:			
Bituminous, prepared sizes	10.13	9.50	9.47
Peoria, Ill.:			
Bituminous, prepared sizes	6.94	6.88	6.83
Philadelphia, Pa.:			
Pennsylvania anthracite—			
Stove	[1] 14.93	[1] 14.96	[1] 14.96
Chestnut	[1] 14.43	[1] 14.50	[1] 14.50
Pittsburgh, Pa.:			
Pennsylvania anthracite—			
Chestnut	$14.88	$15.00	$15.00
Bituminous, prepared sizes	5.44	5.25	5.25
Portland, Me.:			
Pennsylvania anthracite—			
Stove	16.80	16.80	16.80
Chestnut	16.80	16.80	16.80
Portland, Oreg.:			
Bituminous, prepared sizes	13.21	13.07	13.04
Providence, R. I.:			
Pennsylvania anthracite—			
Stove	[2] 16.25	[2] 16.00	[2] 16.00
Chestnut	[2] 16.00	[2] 16.00	[2] 16.00
Richmond, Va.:			
Pennsylvania anthracite—			
Stove	15.50	15.00	15.00
Chestnut	15.50	15.00	15.00
Bituminous—			
Prepared sizes—			
High volatile	8.75	8.25	8.13
Low volatile	10.21	9.83	9.83
Run of mine—			
Low volatile	8.00	7.50	7.50
Rochester, N. Y.:			
Pennsylvania anthracite—			
Stove	14.60	14.75	14.75
Chestnut	14.15	14.25	14.25
St. Louis, Mo.:			
Pennsylvania anthracite—			
Stove	16.90	16.80	16.80
Chestnut	16.45	16.50	16.50
Bituminous, prepared sizes	6.96	6.43	6.46
St. Paul, Minn.:			
Pennsylvania anthracite—			
Stove	18.15	18.30	18.30
Chestnut	17.70	17.90	17.90
Bituminous, prepared sizes—			
High volatile	10.68	10.68	10.68
Low volatile	13.75	13.50	13.50
Salt Lake City, Utah:			
Colorado anthracite—			
Furnace, 1 and 2 mixed	18.00	18.00	18.00
Stove, 3 and 5 mixed	18.00	18.00	18.00
Bituminous, prepared sizes	8.36	7.92	7.82
San Francisco, Calif.:			
New Mexico anthracite—			
Cerillos egg	26.50	26.00	26.00
Colorado anthracite—			
Egg	25.75	25.50	25.50
Bituminous, prepared sizes	16.88	16.75	16.75
Savannah, Ga.:			
Bituminous, prepared sizes	[3] 11.13	[3] 10.24	[3] 10.24
Scranton, Pa.:			
Pennsylvania anthracite—			
Stove	10.75	10.53	10.53
Chestnut	10.50	10.33	10.33
Seattle, Wash.:			
Bituminous, prepared sizes	10.18	10.48	10.48
Springfield, Ill.:			
Bituminous, prepared sizes	4.44	4.24	4.24
Washington, D. C.:			
Pennsylvania anthracite—			
Stove	[1] 15.51	[1] 15.63	[1] 15.62
Chestnut	[1] 15.01	[1] 15.13	[1] 15.13
Bituminous—			
Prepared sizes—			
High volatile	[1] 8.75	[1] 8.75	[1] 8.75
Low volatile	[1] 10.75	[1] 11.42	[1] 11.42
Run of mine—			
Mixed	[1] 7.88	[1] 7.63	[1] 7.63

[1] Per ton of 2,240 pounds.
[2] The average price of coal delivered in bin is 50 cents higher than here shown. Practically all coal is delivered in bin.
[3] All coal sold in Savannah is weighed by the city. A charge of 10 cents per ton or half ton is made. This additional charge has been included in the above price.

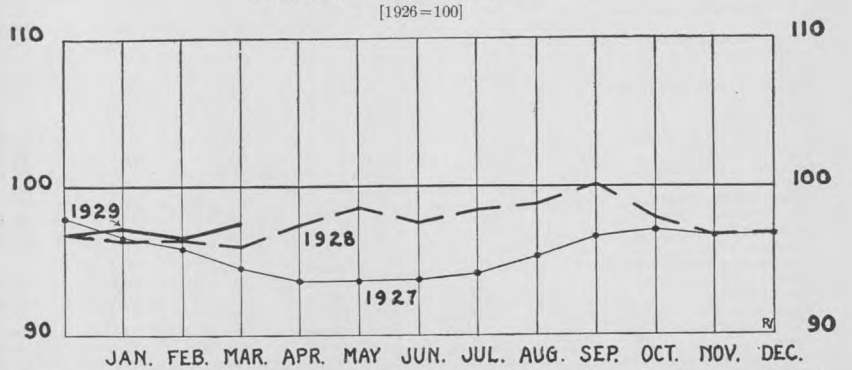
Indexed Numbers of Wholesale Prices in March, 1929

THE general level of wholesale prices in March was slightly above that of February, according to information collected in representative markets by the Bureau of Labor Statistics of the United States Department of Labor. The bureau's weighted index number stands at 97.5 for March compared with 96.7 for February, an increase of approximately three-fourths of 1 per cent. Compared with March, 1928, with an index number of 96.0, an increase of over 1½ per cent is shown. Based on these figures, the purchasing power of the dollar in March was 102.6 compared with 100.0 in the year 1926.

Farm products as a group were over 1½ per cent higher than in the preceding month, due to pronounced increases for beef cattle, hogs, sheep and lambs, poultry, and cotton. Grains, eggs, potatoes, and wool, on the other hand, were cheaper than in February.

Among foods there were increases for fresh and cured meats, and decreases for butter and flour. The group as a whole showed no change in the general price level.

TREND OF WHOLESALE PRICES
[1926=100]



Hides and skins advanced slightly, while leather declined sharply, resulting in a net decline for the group of hides and leather products. Boots and shoes showed no change in average prices.

In the group of textile products advances in cotton goods were offset by declines in silk and rayon. Prices of woolen and worsted goods were fairly stable, while prices of other textile products advanced. No change in the group as a whole was reported.

Prices of anthracite and bituminous coal, and petroleum products weakened in the month, causing a net decline for the group of fuel and lighting materials.

Among metals and metal products, iron and steel products advanced slightly, while more pronounced increases were recorded for ingot and sheet copper, copper wire, lead, quicksilver, and zinc. The increase for the group as a whole was nearly 2 per cent.

Advancing prices of lumber and shingles caused a small net increase in the group of building materials.

Small decreases were shown for the groups of chemicals and drugs, house-furnishing goods, and miscellaneous commodities.

Raw materials, semimanufactured articles, and finished products all averaged somewhat higher than in February, as did nonagricultural commodities considered as a whole.

Comparing prices in March with those of a year ago, as measured by changes in the index numbers, it is seen that metals and metal products and building materials were considerably higher, while farm products were somewhat higher. A negligible price increase was shown for foods, while no change in the price level was reported for chemicals and drugs. Small decreases between the two periods took place among textile products, fuel and lighting materials, and house-furnishing goods, and a considerable decrease among hides and leather products and articles classed as miscellaneous.

INDEX NUMBERS OF WHOLESALE PRICES BY GROUPS AND SUBGROUPS OF COMMODITIES

[1926=100.0]

Groups and subgroups	March, 1928	February, 1929	March, 1929	Purchasing power of the dollar, March, 1929
ALL COMMODITIES	96.0	96.7	97.5	102.6
Farm products	103.5	105.4	107.1	93.4
Grains	113.6	102.0	98.2	101.8
Livestock and poultry	96.3	101.8	111.0	90.1
Other farm products	105.0	109.2	107.5	93.0
Foods	98.0	98.1	98.1	101.9
Butter, cheese, and milk	104.2	109.9	109.2	91.6
Meats	94.7	102.3	108.5	92.2
Other foods	97.7	90.9	87.4	114.4
Hides and leather products	124.0	109.0	108.3	92.3
Hides and skins	157.3	106.4	107.9	92.7
Leather	129.3	117.1	112.8	88.7
Boots and shoes	109.5	106.6	106.6	93.8
Other leather products	108.4	107.6	107.3	93.2
Textile products	96.5	96.1	96.1	104.1
Cotton goods	100.9	100.8	101.3	98.7
Silk and rayon	84.7	83.1	81.9	122.1
Woolen and worsted goods	100.6	100.9	100.7	99.3
Other textile products	88.6	85.6	86.2	116.0
Fuel and lighting	80.8	81.3	80.6	124.1
Anthracite coal	94.8	91.6	91.4	109.4
Bituminous coal	93.8	93.7	92.0	108.7
Coke	84.4	85.1	85.2	117.4
Manufactured gas	95.8	92.2	(1)	(1)
Petroleum products	66.6	68.9	68.5	146.0
Metals and metal products	98.4	104.4	106.4	94.0
Iron and steel	95.2	96.9	97.1	103.0
Nonferrous metals	90.4	105.0	117.2	85.3
Agricultural implements	98.8	98.8	98.8	101.2
Automobiles	104.3	111.6	111.6	89.6
Other metal products	97.9	98.4	98.4	101.6
Building materials	91.0	97.5	97.8	102.2
Lumber	88.9	95.0	96.8	103.3
Brick	92.3	92.5	92.2	108.5
Cement	96.5	94.6	94.6	105.7
Structural steel	97.0	97.0	97.0	103.1
Paint materials	85.5	86.3	86.7	115.3
Other building materials	92.7	108.6	110.5	90.5
Chemicals and drugs	95.6	96.1	95.6	104.6
Chemicals	101.0	102.4	101.6	98.4
Drugs and pharmaceuticals	71.1	71.1	71.1	140.6
Fertilizer materials	96.5	94.7	94.7	105.6
Fertilizers	96.8	97.1	96.7	103.4
Housefurnishing goods	98.3	96.6	96.5	103.6
Furniture	97.9	95.0	95.0	105.3
Furnishings	98.6	97.6	97.4	102.7
Miscellaneous	86.8	80.4	80.0	125.0
Cattle feed	154.4	129.3	122.2	81.8
Paper and pulp	90.5	87.8	87.8	113.9
Rubber	55.0	49.6	50.6	197.6
Automobile tires	69.8	56.1	55.9	178.9
Other miscellaneous	98.3	100.3	100.2	99.8
Raw materials	97.9	98.1	98.9	101.1
Semimanufactured articles	97.8	97.2	99.1	100.9
Finished products	94.8	95.9	96.5	103.6
Nonagricultural commodities	94.0	94.3	94.9	105.4

[1] Data not yet available.

COST OF LIVING

Home Ownership and the Family Budget

ACCORDING to an economic law expounded 50 or more years ago by Professor Engel, a German economist, the percentage of the family expenditure spent for housing is practically the same regardless of the size of income. In other words, the more a family makes and spends, proportionately the more it spends on housing. In 1928 the Bureau of Labor Statistics of the Department of Labor made a survey of the income and expenditure of 506 families of employees of the Federal Government. Approximately 100 families with an income of not over $2,500 per year were covered in each of the cities of Boston, New York, Baltimore, Chicago, and New Orleans. In these families, on the average 19.3 per cent of the family expenditure was for housing. Some of the families were purchasing houses, but the most of them were renting. The rental value was obtained for each owned house and any payment above the rental value was regarded as investment, so that the figures for housing speak for rent or its equivalent. In general, the Engel law stated above was confirmed in this survey.

The sum of $4,000 will buy only a very modest home, and even then it will have to be in one of the smaller cities and off the main street, or in a remote suburb of a large city. Should a family undertake to buy a $4,000 home and pay for it in 20 years in equal annual installments there would be an average principal payment of $200 per year. Interest payment would add an average of about $150 a year, making a round-figure payment of $350 per year, principal and interest combined, to amortize the debt in 20 years. Also, there would be real-estate taxes and insurance of, say, $50 a year. If the man of the house is handy and can paint the house, replace a broken windowpane, or patch the roof, the estimate for repairs would be $30 in cash per year. This, then, will require a payment of $430 a year for 20 years, but after that the family will own the home, and housing payments, except for repairs, insurance, and taxes, will be ended.

If families renting have a housing charge of 19.3 per cent of their expenditures, then a $430 annual housing charge would call for a yearly family budget of $2,228. In other words, a family income of $2,228 warrants the purchase of a $4,000 home spread over 20 payments, which would be just as easy as to pay rent. With the same ratio existing, the following incomes warrant the purchase of a home to cost the amount set opposite such income:

Income	Cost of home	Income	Cost of home
$2,000	$3, 591	$4,000	$7, 181
$2,500	4, 488	$5,000	8, 977
$3,000	5, 386	$6,000	10, 772
$3,500	6, 284		

In connection with the above figures it should be borne in mind that families paying for a home are much more inclined to be economical and saving than families living in a rented house. They are willing to pinch on clothing, furniture, amusements, and vacation, thus permitting a larger part of the income to go toward buying the home. On the other hand, it is quite common for families starting to buy a home to buy one that is a little larger, more elaborate, and more expensive than the rented home. The heart's desire is to own a home and live better than before. Without doubt most families buying homes are paying more in proportion than the figures given above and many families renting homes are paying therefor more than 19.3 per cent of their expenditures, because 19.3 per cent is the average. The percentage varies as between cities, and as between families in the same city. A larger annual payment for 20 years or an extension of the time for paying therefor would of course finance a more expensive house.

A payment of $430 a year for 20 years on a $4,000 house, by a family having a budget of $2,228, means an aggregate payment of $8,600 during the 20 years, but instead of all of it going for rent, the family has in 20 years a house worth $4,000 less depreciation, or plus an increase in valuation because of an advance in land values.

In the largest cities the majority of families live in rented houses or apartments, few own homes or can afford to do so, and further, there are thousands of families that do not have a yearly income of $2,228. Such families can buy a house only by more than ordinary self-denial and thrift, or by buying a very cheap house.

In actual practice it is not likely that a family could get a deed to a house without an initial payment. There would have to be a contract of sale with provision for a deed and mortgage to be executed after a certain period, or what is more probable, the family would have to keep on renting and pinch and save to accumulate money for a small initial payment.

IMMIGRATION AND EMIGRATION

Statistics of Immigration for February, 1929

By J. J. Kunna, Chief Statistician United States Bureau of Immigration

A TOTAL of 27,862 aliens were admitted to the United States in February, 1929; the immigrant class, newcomers for permanent residence in this country, numbered 17,254, the remaining 10,608 being tourists or other temporary visitors. During the same month 14,512 aliens left the United States, 10,358 of whom were of the visiting class or nonemigrants and 4,154 were emigrants leaving with the intention of again making their home abroad. American citizens returning to and departing from the United States in February totaled 33,216 and 32,347, respectively. Compared with the previous month there was an increase in both the inward and the outward passenger movement. In February last 61,078 persons entered the United States and 46,859 left for foreign countries, as aginst 51,696 returning and 44,416 departing in January, 1929.

Over two-thirds, or 18,823, of the 27,862 aliens admitted in February were born in Europe, while 7,515 gave countries in the Western Hemisphere as their place of birth, principally Canada and Mexico; 1,223 were born in Asia; 247 in Australia, New Zealand, and the Dutch East Indies; and 54 in Africa. Of the total admitted, 10,070 came in under the immigration act of 1924 as immigrants charged to the quota, 5,353 as natives of nonquota countries, and 4,836 as returning residents. Visitors for business or pleasure numbered 3,590, and 1,847 were passing through the country on their way elsewhere. There were 1,509 aliens admitted as husbands, wives, or unmarried children of American citizens, and 657 as Government officials, students, ministers, professors, etc.

The principal races among the 17,254 immigrant aliens for February, 1929, were the German with 4,038, Mexican with 2,725, English with 1,641, Scandinavian with 1,492, Irish with 1,421, Scotch with 1,159, Italian with 1,092, French with 924, and Hebrew with 839. These nine races supplied 88.9 per cent of the newcomers for the month, which percentage is slightly above the average for the same races during the eight months ended February 28, 1929. Canada contributed about 68 per cent of the English immigrants during these eight months, also 53 per cent of the Scotch and 78 per cent of the French, while practically all (over 99 per cent) of the Mexicans came from Mexico, 82 per cent of the German from Germany, 92 per cent of the Italian from Italy, 61 per cent of the Irish from Ireland, and 87 per cent of the Scandinavian from Sweden, Norway, and Denmark. About 78 per cent of the Hebrew immigrants came from Poland.

The present-day immigrants are about equally divided as to sex, nearly 2 out of every 3 are single, and about 1 out of every 6 is a child. Of the 182,767 immigrant aliens admitted from July to February last, 91,902 were male and 90,865 female; 117,586 were single, 59,013 married,

5,711 widowed, and 457 divorced. As to the age given at time of arrival, 32,432 were under 16 years, 44,322 ranged from 16 to 21 years, 54,945 from 22 to 29 years, 24,251 from 30 to 37 years, 10,689 from 38 to 44 years, and 16,128 were 45 years of age and over.

Compared with the same period of a year ago, there was a decrease of 20 per cent in immigration over the northern land border, 43,444 immigrants coming in via the Canadian border during the eight months ended February 28, 1929, as against 54,764 in the corresponding period a year ago. Of the 43,444 entering from July to February last, 21,902 were male and 21,542 female; 27,098 were single, 14,584 married, and 1,762 widowed or divorced. Children under 16 years of age numbered 6,660, while 9,936 of the immigrants were from 16 to 21 years of age, 12,890 from 22 to 29 years, 5,811 from 30 to 37 years, 3,024 from 38 to 44 years, and 5,123 from 45 to 55 and over. The bulk of these immigrants from Canada settled in the States along the border, Michigan with 10,624 receiving the largest number, followed by New York with 7,775, while 6,673 were destined to Massachusetts, 1,853 to Maine, and 1,084 to Vermont. The State of California received 2,776 of the new arrivals and Washington 2,127. Of the wage earners entering the United States via the Canadian land border ports, 9,936, or 23 per cent, were skilled workers, 5,220 laborers, 2,016 farmers, and 3,146 servants, while 2,498 were of the professional and 1,935 of the miscellaneous classes. The number listed as having no occupation, mainly women and children, was 18,693, or 43 per cent of the total.

INWARD AND OUTWARD PASSENGER MOVEMENT FROM JULY 1, 1928, TO FEBRUARY 28, 1929

Period	Inward					Aliens debarred from entering [1]	Outward					Aliens deported after landing [2]
	Aliens admitted			United States citizens arrived	Total		Aliens departed			United States citizens departed	Total	
	Immigrant	Non-immigrant	Total				Emigrant	Non-emigrant	Total			
1928												
July	20,682	15,976	36,658	32,974	69,632	1,286	7,804	20,249	28,053	68,463	96,516	768
August	24,629	18,620	43,249	63,191	106,440	1,412	6,488	15,960	22,448	50,323	72,771	1,180
September	29,317	26,397	55,714	80,233	135,947	1,364	8,093	17,231	25,324	42,105	67,429	915
October	29,917	24,797	54,714	49,831	104,545	1,798	7,479	16,693	24,172	34,643	58,815	807
November	24,805	14,480	39,285	23,198	62,483	1,694	6,549	14,611	21,160	22,380	43,540	927
December	18,357	10,213	28,570	18,911	47,481	1,551	8,264	20,002	28,266	25,173	53,439	1,054
1929												
January	17,806	10,440	28,246	23,450	51,696	1,870	4,670	10,938	15,608	28,808	44,416	1,019
February	17,254	10,608	27,862	33,216	61,078	1,461	4,154	10,358	14,512	32,347	46,859	1,036
Total	182,767	131,531	314,298	325,004	639,302	12,436	53,501	126,042	179,543	304,242	483,785	7,706

[1] These aliens are not included among arrivals, as they were not permitted to enter the United States.
[2] These aliens are included among aliens departed, they having entered the United States, legally or illegally, and later being deported

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Survey, February 15, 1928, v. 59, pp. 613–615.
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Annalist, January 22, 1926, v. 27, pp. 149–151.
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American Labor Legislation Review, June 1928, v. 18, pp. 181–188.

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Monthly Labor Review, November 1923, v. 17, pp. 1172–1174.
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American Labor Legislation Review, December, 1920, v. 10, pp. 254–255.

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Forbes, April 1, 1929; v. 23, No. 7, pp. 35–38.

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Industry (Associated Industries of Massachusetts), August 11, 1928, v. 21, No. 24, pp. 2, 3.

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Charities and the Commons, October 3, 1908, v. 21, pp. 10–12.
"Noncontributory old-age pensions will add at once to the sum of human happiness."

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Family, February, 1927, v. 7, pp. 300–306.
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Constitutional Review, October, 1927, v. 11, pp. 39–42.
Arguments opposed to old-age pensions, based on the Pennsylvania cases.

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Social insurance, old-age pensions, and poor relief.
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Proposals for Federal Legislation

[The following bills to provide or investigate old-age pensions have been introduced in Congress, 1909 to 1929:
61st Cong.: H. R. 14494; H. R. 17505; H. R. 25456; H. Res. 57.
62d Cong.: H. R. 13114; H. Res. 376; H. J. Res. 138; H. J. Res. 283.
63d Cong.: H. R. 4352; H. R. 8827; H. R. 12108; H. R. 16543; H. J. Res. 180; H. J. Res. 223.
64th Cong.: H. R. 7555; H. R. 16508; H. R. 16512; H. R. 20002; H. R. 20351; H. R. 233; H. R. 11481; H. R. 20576; H. R. 20950 H. R. 21053; H. J. Res. 28; S. 7414.
65th Cong.: H. R. 2297; H. R. 3367; H. R. 4039; H. R. 6541; H. R. 7350; S. 395.
66th Cong. H. R. 1433; H. R. 1471; H. R. 3077; H. R. 5001; H. R. 10431; H. R. 10882; H. R. 14256; H. J. Res. 114; S. 2803.
67th Cong.: H. R. 2227; H. R. 3187; H. R. 3723; H. R. 4074; H. R. 7037.
68th Cong.: H. R. 6858; S. 2655.
69th Cong.: H. R. 10387.
70th Cong.: H. R. 6511; H. R. 11474; H. R. 13616; H. Res. 266; H. J. Res. 278.
71st Cong.: H. R. 1199; H. Res. 23.]

BERGER, VICTOR L.
[Speech in the House advocating a Federal system of old-age pensions.]
Congressional Record, August 7, 1911, v. 47, pp. 3698–3700.

—— [A pension for the veteran of the Spanish-American War and for the veteran of industry. Speech in the House.]
Congressional Record, April 5, 1926, v. 67, pp. 6932–6933.
Contains text of his bill (H. R. 10387) to provide old-age pensions.

—— Old-age pension.
Congressional Record, March 28, 1928, v. 70, pp. 5508–5509.
Remarks in favor of his bill, H. R. 11474.

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Old-age pensions. Speech in the House.
Congressional Record, June 10, 1913, v. 50, pp. 1960–1966.
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Congressional Record, June 23, 1910, v. 45, pp. 8853–8857.
Speech in the House in support of his bill providing for a commission to investigate old-age pension systems.

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Old-age pensions.
Congressional Record, May 8, 1928, v. 69, pp. 8160–8161.
Remarks on House Joint Resolution No. 278, providing for a commission to inquire into old-age dependency.

RICKETTS, EDWIN D.
[Address in the House on old-age pensions.]
Congressional Record, February 16, 1917, v. 54, pp. 3456–3458.

SHERWOOD, ISAAC R.
[Address in the House on pensions.]
Congressional Record, February 20, 1920, v. 59, pp. 3206–3207.

SIROVICH, WILLIAM I.
Old-age pensions.
Congressional Record, May 25, 1928, v. 69, pp. 9936–9941.
In support of his bill H. R. 6511, providing for an old-age security investigating commission.
Contains draft of proposed "Old-age security bill."

—— [Address to the House on old-age pensions.]
Congressional Record, December 20, 1928, v. 70, pp. 944–948.

UNITED STATES. *Congress. House. Committee on Labor.*
Old-age pensions. Hearings on H. R. 20002, providing for pensions for American citizens who have reached the age of 65 years and who are incapable of manual labor and whose incomes are less than $200 per annum, January 27, 1917. Washington, 1917. 10 pp.
Statement of Isaac R. Sherwood.

State Legislation and Discussion

[In 1929 bills providing old-age pensions were introduced into the legislatures of about 26 States. For a summary of the various old-age pension bills in 1929 legislatures *see* Bulletin of the American Association for Old Age Security for March–May, 1929.]

Alaska

[In Alaska the legislature passed a law in 1915, amended in 1923 (ch. 46), allowing a payment to needy "Alaska pioneers." In 1927, 287 aged residents were receiving pensions.]

Arizona

[An Arizona law of 1914 was declared void by the Supreme Court of the State. (State Board of Control *v.* Buckstegge (1916), 18 Ariz. 277; 158 Pac. 837).]

California

[A bill providing for old-age pensions passed both houses of the legislature in 1925, but was vetoed by the governor.]

CALIFORNIA. *Social Insurance Commission.*
Report . . . January 25, 1917. Sacramento, 1917. 339 pp.
Paul Herriott, chairman.
Progress of the movement for old-age insurance and pensions in the United States, pp. 260–263.

—— *State Department of Social Welfare.*
Old-age dependency; a study of the care given to needy aged in California. [Sacramento, 1928.] 64 pp.
By Esther De Turbeville.

—— *University. Heller Committee for Research in Social Economics.*
The dependent aged in San Francisco. Prepared . . . in collaboration with the coordination committee of the San Francisco Community Chest . . . Berkeley, Calif., 1928. 127 pp. (University of California publications in economics. v. 5, No. 1.)
Discusses the extent of the problem, causes, personal aspects, costs of relief and (Appendix A, pp. 113–118) the probable costs of a State pension.
Summary in American Labor Legislation Review, June, 1928, pp. 169–170.

Colorado

[A law approved March 19, 1927, permits counties to establish systems of old-age pensions. (Acts of 1927, ch. 143).]

Connecticut

CONNECTICUT. *Commission of Public Welfare.*
Report. Hartford, 1919. 136 pp.
William Brosmith, chairman.
Old-age pensions were considered inadvisable for Connecticut (p. 17).
A bill introduced in the legislature in 1925 was rejected in committee.

CONNECTICUT LABOR URGES STATE AID FOR AGED. SOCIALISTS JOIN IN BATTLE. MANUFACTURERS PLEAD FOR DELAY AND INVESTIGATION.
New Leader, March 16, 1929, p. 2, col. 4.

Illinois

SODERSTROM BILL PASSES HOUSE. OLD-AGE PENSION PROPOSAL MAKES SUBSTANTIAL PROGRESS.
Weekly News Letter (Illinois State Federation of Labor), Mar. 23, 1929, v. 14, No. 1, p. 1.

Indiana

INDIANA. *Committee on Old-Age Pensions.*
The report of the committee appointed to investigate the question of old-age pensions. [Indianapolis, 1925.] [14] pp.
Frank E. Hering, chairman.
Recommends the enactment of an old-age pension law. Bill introduced in 1925 passed one house of the legislature.

Kentucky

[A law was passed in 1926 allowing counties to provide pensions for aged needy persons (Acts of 1926, ch. 187).]

KENTUCKY ADOPTS OLD-AGE PENSIONS.
American Labor Legislation Review, June, 1926, v. 16, p. 131.

PASSAGE OF OLD-AGE PENSION ACT IN KENTUCKY.
Monthly Labor Review, October, 1926, v. 23, p. 738.

Maine

MAINE. *Commission on Old Age.*
Report on old-age dependency. [Augusta, 1929.]
Submitted to the Legislature January 3, 1929.

Maryland

[By an act of 1927 (ch. 538) counties are authorized to establish old-age pension systems.]

Massachusetts

[A law establishing a "public bequest commission and a public bequest fund" was passed June 12, 1928. (Acts of 1928, ch. 383.) Abstract in Monthly Labor Review, August, 1928, v. 27, p. 290.]

MASSACHUSETTS. *Bureau of Statistics of Labor.*
Thirty-sixth annual report [for 1905]. Boston, 1906.

Part III (pp. 109–150) is a study of the estimated cost of old-age pensions in Massachusetts. Continued in its Labor Bulletin No. 37, September, 1905, pp. 187–208.

—— *Commission on Old-age Pensions, Annuities, and Insurance.*
Preliminary report of the commission, January, 1909. Boston, 1909. 58 pp. (General court. House Doc. No. 10.)

—— —— Report of the Commission, January, 1910. Boston, 1910. 409 pp. (General court. House Doc. No. 1400.)

Magnus W. Alexander, chairman.
PARTIAL CONTENTS.—Statistical study of aged poor in Massachusetts; Descriptive account of existing systems; Proposed plans; The general question; Cost of various pension schemes as applied in Massachusetts; General conclusions concerning noncontributory pensions, compulsory insurance, and universal schemes; Conclusions and recommendations.
Summary and comment under title "Old-age pensions by employers only" in Survey, February 5, 1910, v. 23, pp. 596, 597.

—— *Commission on Pensions* (1914).
Report of the Commission on Pensions, March 16, 1914. Boston, 1914. 345 pp. (General Court. House Doc. 2450.)

James E. McConnell, chairman.
Deals chiefly with pensions for public employees. The problem of general old-age pensions is discussed in Chapter V (pp. 171–177).

—— *Bureau of Statistics.*
Report of a special inquiry relative to aged and dependent persons in Massachusetts, 1915. Boston, 1916. 167 pp.

Appendixes: A. Bills relative to old-age pensions introduced in the Massachusetts Legislature in 1916. B. Specimen forms of inquiry. C. Bibliography—Old-age pensions. D. Table showing expectation of life after 65 years of age. E. Descriptive account of national old-age pension systems.

—— *Commission to Compile Information and Data for the Use of the Constitutional Convention.*
A summary of existing laws on old-age pension systems and a bibliography. Boston, 1917. 20 pp. (Bulletin No. 5.)

—— *Governor* (Samuel W. McCall).
[Recommendations for old-age pension legislation in addresses to the legislature.]
Monthly Labor Review, February, 1917, v. 4, pp. 206–208; February, 1918, v. 6, pp. 441–443.

—— *Special Commission on Social Insurance.*
Report, February, 1917. Boston, 1917. 311 pp. (General court. H. Doc. No. 1850.)

Frank S. Farnsworth, chairman.
"Reports on old-age pensions," pp. 49–106. A majority of the commission recommended a system of noncontributory old-age pensions.
Reprinted in part in Selected Articles on Old Age Pensions, compiled by L. T. Beman, 1927, pp. 165–199.
Reviewed in Monthly Labor Review, March, 1917, v. 4, p. 428.

—— *Commission on Pensions* (1925).
Report on old-age pensions . . . Boston, 1925. 280 pp. (General court. S. Doc. No. 5.)

Frank H. Hardison, chairman.
PARTIAL CONTENTS.—I. Summary of investigations and recommendations. II. The aged population of Massachusetts. III. Financial aspects of the problem. Appendixes: D. Old-age pensions in other States; F. Previous investigations of old-age pensions in Massachusetts and other States; H. Supplementary statistical tables showing financial condition of 17,420 persons, 65 years of age and over, not dependent on organized charity.
Bill introduced in the legislature in 1925 failed to pass.
Conclusions and recommendations reprinted in Industry (Associated Industries of Massachusetts), November 21 and 28, 1925, v. 16, Nos. 12 and 13; also in American Labor Legislation Review, December, 1925, v. 15, p. 358, and in Monthly Labor Review, March, 1926, v. 22, pp. 679–681. Summary by Arthur Richmond Marsh in Economic World, November 21, 1925, v. 30, p. 740.

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The findings of the Massachusetts Commission on Old-age Pensions.
American Statistical Association Publications, March, 1910, v. 12, pp. 1–27.

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The work of the Massachusetts Commission on Old-age Pensions.
American Statistical Association Publications, March, 1909, v. 11, pp. 417–430.

BOSTON CHAMBER OF COMMERCE. *Special Committee on Social Insurance.*
Noncontributory old-age pensions and health insurance. [Boston, 1917.] 15 pp.
Everett Morss, chairman.
Opposed to noncontributory pensions. Summary in Monthly Labor Review, May 1917, v. 4, pp. 759–761.

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The statistical survey of the Massachusetts commission investigating the question of old-age pensions.
(*In* Casualty Actuarial Society. Proceedings, v. XII, pt. 1. 1925, No. 25, pp. 97–116.)

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Proposed measures for improving the care of the aged in Massachusetts.
(*In* National Conference of Social Work. Proceedings, 1926, pp. 562–564.)

EAVES, LUCILE.
The "aged citizens" of Massachusetts.
Survey, February 15, 1926, v. 55, pp. 554–556.
Review and summary of the report on old-age pensions, by the Massachusetts Commission on Pensions, November, 1925.

—— Aged clients of Boston social agencies, by a group of investigators and social workers. Boston, Women's Educational and Industrial Union, 1925. 152 pp. (Cooperative social research Report No. III.)
The need for pensions for the aged discussed by social workers of Boston, pp. 125–140. Summary in Survey, June 15, 1925, v. 54, pp. 342, 343.

OLD-AGE PENSIONS POLL A STRONG VOTE [IN SIX MASSACHUSETTS TOWNS].
Survey, November 27, 1915, v. 35, p. 197.

Minnesota

[A law establishing a county-State pension system was passed in March, 1929.]

MINNESOTA. *Legislature. Senate. Interim Committee on Old-Age Pensions.*
Report of the interim committee . . . [St. Paul? 1929.] 14 pp.
George Nordlin, chairman.

Missouri

MISSOURI. *Constitutional Convention,* 1922–23.
The record of the proceedings of the Missouri Constitutional Convention, year 1922, on the proposed amendment providing for old-age pensions. Issued by Joseph B. Shannon, a member thereof, October 15, 1924. [Kansas City, 1924.] 56 pp.

Montana

[The Montana law providing for old-age pensions was passed in 1923 (Acts of 1923, ch. 72).]

ASSOCIATED INDUSTRIES OF MONTANA.
Memorandum and compilation in re results of operation of Montana old-age pension law. [n. p., 1925.] 8 l (mimeographed).
"Distributed by the National Industrial Council, New York."
Regards administrative operation as a failure. Summary in Manufacturers News, November 21, 1925, p. 10. Supplementary data and observations in Industry (Associated Industries of Massachusetts), May 29, 1926.

FLIGELMAN, BELLE.
If you grow old in Montana.
Survey, May 15, 1923, v. 50, pp. 239, 240.
Gives the provisions of the law.

FRATERNAL ORDER OF EAGLES.
[1st]—5th year under old-age pensions in Montana. 1923–1927. 5 leaflets.
Contain reports of the old-age pension commissions of the several counties of Montana to the State auditor. Reprinted from the Eagle magazine.

—— The fifth year under old-age pensions in Montana—points toward the early doom of the poorhouse.
Congressional record, January 16, 1929, v. 70, p. 1854 (current file, appendix).
Statement presented by Mr. Dill.

Nevada

[The first law passed in 1923 (ch. 70) was repealed and a new law adopted in 1925 (ch. 121).]

NEVADA. *Old-age Pension Commission.*
Biennial report of the superintendent of old-age pensions, 1923–24. Carson City, 1925. 23 pp.

Maurice J. Sullivan, superintendent.
Summary of conclusions as to the need of old-age pension legislation, American Labor Legislation Review, September, 1925, v. 15, pp. 265–266; Monthly Labor Review, April, 1925, v. 20, p. 892.

New Jersey

NEW JERSEY. *Commission on Old age, Insurance, and Pensions.*
Report on health insurance. Rahway [1917]. 20 pp.

The commission believed that health protection should precede any provision for old age.
[A report of a pension commission recommending old-age pensions was presented to the Assembly in January, 1929.]

New York

NEW YORK. *Legislature. Joint Legislative Welfare Committee.*
Reports, 1927–29.

ANTIN, BENJAMIN.
Old-age pensions now a State issue. A commission is sought to survey the problem in New York and propose legislation.
New York Times, March 3, 1929, sec. 8, p. 22, col. 1–5.

ROOSEVELT STARTS OLD-AGE AID STUDY. GOVERNOR SAYS ADMINISTRATIVE AND LEGISLATIVE PHASES WILL BE UNITED IN GENERAL CONFERENCE.
New York Times, January 21, 1929, p. 2, col. 6.

[A bill providing for a commission of experts for the study of old-age security and old-age pensions was passed in April, 1929.]

Ohio

OHIO. *Health and Old-age Insurance Commission.*
Health, health insurance, old-age pensions. Report, recommendations, dissenting opinions. Columbus, 1919. 448 pp.

W. A. Julian, chairman.
PARTIAL CONTENTS.—Pt. III. Old age and old-age pensions: The old-age problem; The old man in industry, analysis of census data, by John O'Grady; Present status of the aged; Old-age assurance; The cost of old-age pensions; Minority report on old-age pensions, by M. B. Hammond.
A bill based on the commission's recommendations was referred to the voters in 1923 and rejected.
Reviewed by William Leslie in Proceedings of the Casualty Actuarial and Statistical Society of America, November 21, 1919, pp 123–125.

—— —— Summary of findings, recommendations, and dissenting opinions. Columbus, 1919. 23 pp.

LAPP, JOHN A.
Health and old-age insurance in Ohio.
American Labor Legislation Review, March, 1919, v. 9, pp. 47–58.
By the director of investigations of the Health and Old-age Insurance Commission.

LIPMAN, WILLIAM H.
A survey of the conditions of the dependent aged in the State of Ohio. Kansas City, Mo., Fraternal Order of Eagles, 1926. 24 pp.

Oregon

COMMUNITY BUILDER, Vol. 1, Nos. 1–7. Salem, Oreg., 1928–29.
Devoted to the movement for old-age pensions in Oregon.

DAVIS, FRANK E., *Comp.*
Shall Oregon have an old-age pension law? . . . Portland, Oreg., Old-age Pension League, 1927. 54 pp.

Pennsylvania

[The Pennsylvania old-age assistance act passed in 1923 (No. 141) was declared unconstitutional by the Supreme Court of the State, February 2, 1925. (Busser et al. *v.* Snyder, State treasurer et al., 128 Atl. 80. Abstract in Monthly Labor Review, May, 1925 ,v. 20, pp. 1155, 1156.)]

PENNSYLVANIA. *Old-age Pensions Commission.*
Report, March, 1919. Harrisburg, Pa., 1919. 294 pp.
James H. Maurer, chairman; Abraham Epstein, director of research.
PARTIAL CONTENTS.—The problem of the aged in Pennsylvania; Extent and nature of existing pension systems in Pennsylvania; The problem of old-age pensions; Old-age pension systems of foreign countries.
Reviewed by William Leslie in Proceedings of the Casualty Actuarial Society of America, November 21, 1919, p. 122.

—— —— Report, February, 1921. Harrisburg, 1921. 6 pp.

—— —— Primer on old-age pensions and aged dependency in Pennsylvania. Prepared by Abraham Epstein. Harrisburg [1921?]. 12 pp.

—— *Governor* (Pinchot).
Old-age assistance in Pennsylvania: Righting the neglects of yesterday. American Labor Legislation Review, December, 1924, v. 14, pp. 288–291.
Excerpts from address before the State Conference on Old-age Assistance at Harrisburg, November 13, 1924.

—— *Commission on Old-age Assistance.*
Report, January, 1925. Harrisburg [1925]. 112 pp.
James H. Maurer, chairman.
Summary in Monthly Labor Review, July, 1925, v. 21, pp. 157, 158.

—— *Old-age Pensions Commission* (1926–1927).
Report of the Pennsylvania commission on old-age pensions. January, 1927. Harrisburg, Pa. [1927]. 253 pp.
James H. Maurer, chairman.
CONTENTS.—Summary: The old-age pension movement in Pennsylvania. What the industrial and business leaders of Pennsylvania prefer in old-age pension legislation. The possibilities of a contributory pension system in Pennsylvania. The old-age pension movement in the United States. Pension systems abroad.

PENNSYLVANIA STATE CONFERENCE ON OLD-AGE ASSISTANCE, *Harrisburg*, 1924.
[Summary of addresses before the conference by J. F. Collier, Mrs. W. B. Gray, Mrs. Janet Workman, John B. Andrews, I. M. Rubinow, Dr. Ellen C. Potter, and others.]
(*In* Pennsylvania Commission on Old-age Assistance. Report, January, 1925. pp. 83–98.)
Short summary of proceedings and excerpts of addresses of Governor Pinchot, James H. Maurer, and Mrs. Workman in American Labor Legislation Review, December, 1924, v. 14, pp. 284–304.

BRUÈRE, ROBERT W.
Unconstitutional and void.
Survey, October 15, 1924, v. 43, pp. 69–70.
Comment on the verdict of the Court of Common Pleas of Dauphin County declaring the law unconstitutional.

FOR PENNSYLVANIA PATRIARCHS.
Survey, July 15, 1923, v. 50, pp. 448–449.
Comment on the provisions of the law.

MAURER, JAMES H.
Old folks aren't news in Pennsylvania.
Survey, December 15, 1924, v. 53, pp. 368–369.

PENNSYLVANIA STATE CHAMBER OF COMMERCE. *Research Bureau.*
Special report on old-age pensions, 1919. Philadelphia. [1919] 64 pp.
Discusses special problems of an old-age pension program and compulsory old-age insurance versus noncontributory pensions.

PENNSYLVANIA TO PENSION THE AGED.
Literary Digest, May 26, 1923, v. 77, p. 16.

OPPOSITION PROPAGANDA AT WORK AGAINST OLD-AGE PENSIONS.
American Labor Legislation Review, December, 1926, v. 16, pp. 285–287.

Utah

[A law establishing a county system of old-age pensions was passed in March, 1929.]

Virginia

VIRGINIA. *General Assembly. Committee on Old-age Assistance.*
Report of the legislative committee on old-age assistance. [Richmond? 1926.] 13 pp. (S. Doc. No. 2.)
Signed by Alfred C. Smith, Harry R. Houston, Edward R. Fuller.
Reviewed in American Labor Legislation Review, March, 1926, v. 16, p. 102; Monthly Labor Review, May, 1926, v. 22, p. 1033.

Washington

[An old-age pension bill passed by the Washington Legislature January 5, 1926, was vetoed by Governor Hartley.]

Wisconsin

[The old-age pension law of Wisconsin was passed May 13, 1925 (ch. 121).]

WISCONSIN. *Industrial Commission.*
Report on old-age relief. [Madison? 1915.] 76 pp.
C. H. Crownhart, chairman.
Summary in Monthly Labor Review, March, 1916, v. 2, pp. 286–290.

—— *State board of control.*
Eighteenth biennial report, 1924–1926. 1 v.
The section on "Old-age pensions," p. 89, gives the results of operation of the old-age pension law in the five counties which had adopted that system of relief up to June 30, 1926.
Summary in American Labor Legislation Review, September, 1926, v. 16, p. 245.

DALE, MARGARET J.
A survey of the poor relief in Wisconsin with special emphasis on the old-age pension bill. [Madison] University of Wisconsin, 1928. 35 leaves. (mimeographed.)
Comparative survey of cost and results of poor relief and old-age pensions in Wisconsin. Conclusions support the "theory that the method of old-age pensions is a more economical, humane and scientific way of handling the aged poor."

LIPMAN, WILLIAM H.
An estimate of the probable cost of old-age pensions in Wisconsin under the Gary bill as compared to the cost under the present system of indoor and outdoor relief of poor. Madison, Wisconsin, 1923.

OLD-AGE PENSION SYSTEMS.
Congressional Record, Jan. 5, 1929, v. 70 (current file), pp. 1198–1200.
Statement on the operation of the Wisconsin old-age pension act by the county judge of La Crosse, Wis.

WHY GOVERNOR BLAINE SIGNED THE OLD-AGE PENSION BILL. Extract from remarks, May 12, 1925.
American Labor Legislation Review, September, 1925, v.15, p. 264.

Wyoming

[A law establishing old-age pensions on a county basis was passed in February, 1929. An earlier law passed in 1927 was vetoed by the governor.]

GLORIOUS VICTORY IN WYOMING; the "equality" State passes a mandatory O. A. P. law—the first in the United States.
Eagle Magazine (Fraternal Order of Eagles), April, 1929, v. 17, No. 4, pp. 5–6.

PUBLICATIONS RELATING TO LABOR

Official—United States

COLORADO.—Industrial Commission. *Tenth report, for the biennium December 1, 1926, to November 30, 1928. Denver, 1928. 68 pp.*

Data relating to workmen's compensation are given in this issue. The report also contains a section on labor disputes in which are discussed the working conditions of the coal mines in the State.

MASSACHUSETTS.—Special Commission on the Necessaries of Life. *Report . . . Boston, January, 1929. 138 pp.; charts. (House No. 1074.)*

MISSOURI.—Workmen's Compensation Commission. *First annual report, for the period from January 9, 1927, through December 31, 1927. Jefferson City, [1928]. 219 pp.*

Data from this report are given in this issue.

WYOMING.—Workmen's Compensation Department. *Thirteenth report, January 1 to December 31, 1928; third report, Coal Mine Catastrophe Insurance Premium Fund, 1928; sixth report, Wyoming Peace Officers' Indemnity Fund, 1928. Cheyenne, 1929. 149 pp.*

The report of the workmen's compensation department is reviewed in this issue.

UNITED STATES.—Congress. Senate. Committee on education and labor. *Unemployment in the United States. Hearings pursuant to S. Res. 219, a resolution providing for an analysis and appraisal of reports on unemployment and systems for prevention and relief thereof, together with Senate report No. 2072. Washington, 1929. 517 pp.*

The text of the committee's report is published in this issue.

—— —— —— Committee on Interstate Commerce. *Bituminous coal commission. Hearings on S. 4490, a bill to regulate interstate and foreign commerce in bituminous coal, provide for consolidations, mergers, and cooperative marketing; regulate the fuel supply of interstate carriers; require the licensing of corporations producing and shipping coal in interstate commerce; and to create a bituminous coal commission, and for other purposes, December 14, 1928, to January 23, 1929. Washington, 1929. 352 pp.*

—— Department of Agriculture. *Technical bulletin No. 105: A short method of calculating energy, protein, calcium, phosphorus, and iron in the diet, by Edith Hawley, Bureau of Home Economics. Washington, January, 1929. 20 pp., charts.*

—— Department of Commerce. Bureau of Mines. *Bulletin 292: Metal-mine accidents in the United States, during the calendar year 1926, by William W. Adams. Washington, 1928. 119 pp.*

Data from this report appear in this issue.

—— —— —— *Bulletin 293: Coal-mine fatalities in the United States, 1927, by William W. Adams. Washington, 1928. 120 pp.*

Data from this report appear in this issue.

—— Department of Labor. Bureau of Labor Statistics. *Bulletin No. 474: Productivity of labor in merchant blast furnaces. Washington, 1929. 145 pp.*

The more important points brought out in this study were summarized in the Labor Review for December, 1928 (pp. 1–10).

—— —— —— *Bulletin No. 476: Union scales of wages and hours of labor, 1927–1928. (Supplement to Bulletin No. 457.) Washington, 1929. 169 pp.*

This bulletin aims to cover wages and hours of labor in union trades and occupations not shown in the bureau's previous union wage scales bulletins, which have included only those trades which are found chiefly in the larger cities and which readily lend themselves to a fixed form of tabulation.

UNITED STATES.—Department of Labor. Bureau of Labor Statistics. *Bulletin No. 477; Public service retirement systems—United States, Canada, and Europe. Washington, 1929. 223 pp.*

The details of various phases of this study were printed in the Review from time to time as the study progressed.

—— —— Children's Bureau. *Chart No. 15: State laws and local ordinances regulating the street work of children. A tabular summary of regulations in effect in the United States, by Ella Arvilla Merritt. Washington, 1929. 29 pp.*

Summarized in this issue.

—— —— —— *Publication No. 162: Public aid to mothers with dependent children, by Emma O. Lundberg. Washington, 1928. 24 pp.; maps.*

A brief summary of the progress of the movement to aid mothers with dependent children, and of the conditions under which the aid is given in different States, with the amount permitted, and the method of administration in each.

—— —— —— *Publication No. 188: Child workers on city streets, by Nettie P. McGill. Washington, 1928. 74 pp., illus.*

A condensed summary of Publication No. 183, Children in street work; discussed in the Review for September, 1928 (p. 60).

Official—Foreign Countries

FRANCE.—Ministère du Travail, de l'Hygiène, de l'Assistance et de la Prévoyance Sociales. Conseil Supérieur du Travail. *Trente et unième session, November, 1927. Paris, 1928. 231 pp.*

Proceedings of the thirty-first session of the Superior Labor Council. The subjects discussed included the prohibition of the night work of women and children in commerce and in certain employments in transportation, and the medical care of employees who receive board and lodging from their employer.

GREAT BRITAIN.—Industrial Court. *Awards 1355 to 1406, January 1, 1928, to December 31, 1928. Vol. X. London, 1929. 231 pp.*

INTERNATIONAL LABOR OFFICE.—*International Labor Conference, eleventh session, Geneva, 1928. 2 vols.*

The first volume contains the proceedings of the conference and the second, the director's report. A brief account of the conference was given in the September, 1928, issue of the Labor Review (p. 103).

—— *Studies and reports, series A (industrial relations), No. 31: Freedom of association. Vol. IV—Italy, Spain, Portugal, Greece, Serb-Croat-Slovene Kingdom, Bulgaria, Rumania. Geneva, 1928. 405 pp.*

Unofficial

BROWN, ROY M. *Public poor relief in North Carolina. Chapel Hill, University of North Carolina Press, 1928. 184 pp., illus.*

A careful study of the poor relief system of the State, introduced by a sketch of its development from the earliest days of North Carolina. For the most part, relief is still administered through the local almshouse or county home, and the description of these institutions shows the familiar features of wasteful and ineffective management, lack of classification of inmates, unhealthful and depressing surroundings, neglect and carelessness, which studies of the kind have revealed in other States. There are some encouraging exceptions, in which trained and intelligent superintendents have lowered costs, introduced improvements, provided excellent care, and brought conditions to a state which, compared with the general level, may fairly be considered ideal. The study includes a discussion of methods for improving the general situation, and a brief bibliography on the subject.

BRUÈRE, HENRY, AND PUGH, GRACE. *Profitable personnel practice. New York, Harper & Brothers, 1929. 454 pp.*

This work contains descriptions and a discussion of the outstanding personnel practices of industrial and commercial concerns in the United States. It is intended to serve as a practical reference book on the subject.

CIVIL SERVICE ASSEMBLY OF THE UNITED STATES AND CANADA. *Technical bulletin No. 1: Classification and compensation plans, their development, adoption, and administration. Washington, Mills Building, 1928. 24 pp.*

A report adopted by the assembly at its annual meeting in September, 1928.

GLÜCK, ELSIE. *John Mitchell, miner: Labor's bargain with the gilded age. New York, John Day Co., 1929. 270 pp.*

This biography of John Mitchell, former president of the United Mine Workers of America, is based largely on first-hand research, including interviews with men who were associated with him in his work.

HERRING, HARRIET L. *Welfare work in mill villages: The story of extra-mill activities in North Carolina. Chapel Hill, University of North Carolina Press, 1929. 406 pp.*

This work, which is based on a first-hand study of the cotton-mill villages of North Carolina, not only gives details concerning the personnel work of the companies but also traces the reasons for the particular type of development found in the South and gives the opinions of various individuals which represent the different points of view toward welfare work and welfare theory.

LOBSENZ, JOHANNA. *The older woman in industry. New York, Charles Scribner's Sons, 1929. 281 pp.*

LYND, ROBERT S. and HELEN M. *Middletown: A study in contemporary American culture. New York, Harcourt, Brace & Co., 1929. 550 pp.*

An intensive sociological study of a city of 35,000 population, called Middletown to prevent identification. Deals with the manner in which the people get a living, marriage and homebuilding, schools, the use of leisure, religious beliefs, and community activities.

MAY, HERBERT L., and PETGEN, DOROTHY. *Leisure and its use—some international observations. New York, A. S. Barnes & Co., 1928. 268 pp.*

A study of leisure time activities in the principal countries of Europe made under the auspices of the Playground and Recreation Association of America.

METROPOLITAN LIFE INSURANCE CO. Policyholders Service Bureau. *The use of research in employment stabilization: A report on applying research to steady personnel. New York [1929?]. 32 pp.; charts.*

Reviewed in this issue.

MOREL, EUGÈNE. *La production et les huit heures. Paris, Éditions de la Confédération Générale du Travail. [No date.] 326 pp.*

This work contains a collection of statements by industrial and labor leaders in France as well as by economists, politicians, and other representative persons on the effects of the eight-hour day upon production and upon the economic life of the country.

NATIONAL CHILD LABOR COMMITTEE. *Child workers in Oklahoma: A study of children employed in Enid, Oklahoma City, and Lawton, by Charles E. Gibbons and Chester T. Stansbury. New York, 215 Fourth Avenue, 1929. 35 pp.*

Reviewed in this issue.

—— *Child workers in two Connecticut towns, by Claude E. Robinson. New York, 215 Fourth Avenue, 1929. 44 pp.*

The study, which was carried on during the summer and fall of 1927 and the early part of 1928, deals with the towns of New Britain and Norwich, and included 897 cases of out-of-school children. The investigators found a persistent effort to enforce the child labor laws, and but few violations. Very few children leave

school before the fourteenth birthday, only one boy was found gainfully employed below the legal age, and the school grade requirements were closely observed. However, 21 violations of the nightwork regulations and 46 violations of the work certificate provisions were found among the children studied. The two chief reasons given by the children for leaving school were economic need and dislike for school. The typical weekly wage earned by the children was around $10, $11, and $12, the boys earning slightly more than the girls.

NATIONAL INDUSTRIAL CONFERENCE BOARD (INC.). *Industrial relations programs in small plants. New York, 247 Park Avenue, 1929. 60 pp.*

This study covers the extent, approximate cost, and the type of administration of the personnel work which is being carried on in small establishments, showing the special problems which the small plant—that is the plant with less than 250 employees—has to meet.

NATIONAL SAFETY COUNCIL. *Transactions of the seventeenth annual safety congress, New York City, October 1 to 5, 1928. Chicago, 108 East Ohio Street, 1929. 3 vols.*

A brief note on this meeting, including a list of the officers chosen for the ensuing year, was published in the Labor Review for November, 1928 (pp. 57, 58).

RAYNER, ROBERT M. *The story of trade-unionism. London, Longmans, Green & Co., 1929. 278 pp.*

A study of trade-unionism in Great Britain, written from the standpoint of a disinterested student, dealing especially with developments since the formation of the Labor Party, and more particularly with those rising from war conditions and following the conclusion of hostilities. A brief account of foreign trade-union movements is included, designed to show their influence upon the British line of development.

SOCIAL SCIENCE ABSTRACTS. *Vol. 1, No. 1, March, 1929. New York City, 611 Fayerweather Hall, Columbia University. 122 pp.*

This first number of Social Science Abstracts, published under the auspices of the Social Science Research Council by Social Science Abstracts (Inc.), inaugurates a new service reviewing world literature. This issue is divided into two parts. Division I covers methodological materials, including historical, miscellaneous, statistical, and theoretical and philosophical methods, also teaching and research; Division II covers systematic materials, including human geography, cultural anthropology, history, economics, political science, and sociology. The subject matter of the literature reviewed under economics includes prices, labor and wages, and cooperation.

WORLD PEACE FOUNDATION. *Industry, governments, and labor. Record of the International Labor Organization, 1919–1928. Boston, 40 Mt. Vernon Street, 1928. 231 pp. (World Peace Foundation pamphlets, Vol. XI, Nos. 4–5.)*