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Bulletin No. 186

EARNINGS AND HOURS IN
PACIFIC COAST FISH CANNERIES

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UNITED STATES DEPARTMENT OF LABOR

FRANCES PERKINS, Secretary

WOMEN'S BUREAU

MARY ANDERSON, Director



EARNINGS AND HOURS IN
PACIFIC COAST FISH CANNERIES

By

ARTHUR T. SUTHERLAND



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MEMORANDUM

TO THE BOARD OF DIRECTORS

RE: [Illegible]

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Appendix C 1100

Appendix D 1150

Appendix E 1200

Appendix F 1250

Appendix G 1300

Appendix H 1350

Appendix I 1400

Appendix J 1450

Appendix K 1500

Appendix L 1550

Appendix M 1600

Appendix N 1650

Appendix O 1700

Appendix P 1750

Appendix Q 1800

Appendix R 1850

Appendix S 1900

Appendix T 1950

Appendix U 2000

Appendix V 2050

Appendix W 2100

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LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
WOMEN'S BUREAU,
Washington, June 9, 1941.

MADAM: I have the honor to transmit for publication a brief report on earnings and hours in Pacific coast fish canneries. The survey was made in connection with the Bureau's Nation-wide study of fruit and vegetable canning and preserving.

The report was written by Arthur T. Sutherland, of the editorial division.

Respectfully submitted.

MARY ANDERSON, *Director.*

Hon. FRANCES PERKINS,
Secretary of Labor.

EARNINGS AND HOURS IN PACIFIC COAST FISH CANNERIES

The Women's Bureau survey of fish-canning plants was made at the time of its Nation-wide study of the fruit and vegetable canning and preserving industries in the United States. The purpose of the study was to furnish various Federal and State agencies with factual data concerning existing conditions in order to determine whether it is necessary or feasible to develop specific wage and hour regulations and unemployment compensation rulings for the betterment of such types of employment. When planning the study the Bureau intended to visit fish canneries in all coastal areas, but the time available was so limited that it was possible to schedule plants only on the Pacific coast, the most important of the Nation's fish-canning areas.

The Pacific coast, comprising Alaska, California, Oregon, and Washington, produced more than four-fifths of the Nation's canned-fish pack in 1938, including all the salmon, nearly all the mackerel and tuna and tuna-like fishes, and over three-fourths of the sardines.¹ The United States Bureau of Fisheries reported that in 1938 only 2 of 24 plants canning mackerel and 1 of 20 canning tuna and tuna-like fishes were on the eastern coast; all others were in California, Oregon, and Washington. The canned pack of these four species of fish—that is, the Washington-Oregon salmon, the California sardine, and the total mackerel and tuna and tuna-like fish packs—accounted for two-thirds of the entire value of all canned fish produced in the United States in 1938.

SCOPE OF THE SURVEY

The field work of the broader canning survey² was begun in April 1938; the fish canneries in California were scheduled in October and November of that year, and those in Washington in December. In a supplemental survey a year later, additional information was obtained from the California canneries, but the plants in Washington were not revisited. Consequently this report is based on data obtained from Washington canneries in December 1938, and, unless otherwise noted, on data obtained from California plants in December 1939.

DATA SECURED

The information requested by the Bureau relates to production, employment, and the employees' working conditions; that is, their earnings and hours of work. In each plant scheduled, in both States,

¹ The sardine is not a species of fish, the term being applied to immature or small fish of several species. The United States production of sardines consists of canned sea herring, packed by Maine canners, and pilchards, packed by California canners.

² Application of Labor Legislation to the Fruit and Vegetable Canning and Preserving Industries. Women's Bureau Bull. No. 176, 1940.

the data on *production* are for the year 1937 and include a record of the total output of each species of fish canned, the over-all period or season during which each species was packed, the number of days on which each product was packed, and the total number of weeks in the year in which any workers were employed. In the supplemental study of the California plants cost data were copied, including the total cost of production and the total labor cost.

Records of the *number of workers employed and amount of wages paid each week in the year* are for 1937 in Washington plants and for 1939 in California plants. Though not available in all plants, such data were recorded wherever possible and have been tabulated in order to show the week-to-week variations in employment and amount of pay roll throughout the year. *Data on individual workers*—their sex and occupation, the number of weeks they worked, and their total annual earnings—were copied from records made for Social Security. Other employment information that was requested shows the source of the labor supply, the employment of the workers when not in the canning plants, and the extent of union organization.

In addition to the above-mentioned data, records of earnings and of hours worked were taken for a single pay period, in 1938 in the Washington plants and in 1939 in the California plants.

PACK COVERAGE AND STATE COVERAGE

Not all the fish canneries in the two Pacific States visited were included in the survey, but the number scheduled was sufficiently large to be representative of the fish-canning industry in these areas. Eighteen plants were scheduled in California and 5 in Washington. Of the California plants, 10 were primarily sardine canners though 4 of these produced also a tuna or small mackerel pack; all but 3 were in the Monterey and northern districts. The other firms were in the Los Angeles and San Diego districts and all canned tuna fish. All but 1 also canned sardines or mackerel or both. The Washington plants, situated in the Puget Sound district, were salmon canners; 1 of the group canned a relatively small tuna pack in addition to salmon.

In 1937, when the total United States canned fish pack was the largest since 1930, the plants reported produced 88 percent of the total tuna and tuna-like fish pack, 68 percent of the California sardine (pilchard) pack, 46 percent of the total mackerel pack, and 46 percent of the salmon pack, excluding the Alaska production. Miscellaneous products put up in the plants reported, but not shown in table I following (which gives a comparison of the pack in the plants scheduled and the pack reported by the United States Census of Manufactures), consisted of squid (1 plant), shad and shad roe (1 plant), dog food prepared with a fish base (1 plant), and tomato paste and tomato sauce (1 plant). Also 1 plant in Washington put up an experimental cod pack which was of no commercial significance and was discontinued in 1938. Many of the California tuna and sardine canners also produced fish oil and fish meal from fresh pilchards³ and from the waste resulting from the canning operations.

³ Reduction of sardines (pilchards) for oil and meal is a very important business in California, and though State regulations require that 13¼ cases be processed as food for human consumption of every ton landed, there are several floating reduction plants operating off the coast of California, outside the jurisdiction of the State. According to a report of the U. S. Tariff Commission (Report No. 121, Second Series, p. 95), of a total catch of 630 million pounds of pilchards in 1933, about 75 percent was used for reduction purposes, while most of the remainder was canned. Reduction plants proper were not included in the Bureau's survey.

TABLE I.—Amount of products canned in 1937 and amount produced in that year by plants included in Women's Bureau survey

State and product	Total pack in 1937 ¹ (standard cases)	Amount produced in 1937 by plants included in survey	
		Number of cases	Percent of total
California:			
Tuna and tuna-like fish.....	² 3,144,501	³ 2,765,081	87.9
Sardines (pilchard).....	2,812,456	1,897,746	67.5
Mackerel.....	⁴ 840,832	390,545	46.4
Washington:			
Salmon.....	⁵ 885,372	405,912	45.8

¹ U. S. Census of Manufactures, 1937, pt. I, p. 103.

² Includes 15,143 cases canned in other States.

³ Includes 2,074 cases canned in Washington.

⁴ Includes Massachusetts. According to the U. S. Bureau of Fisheries, there were 22 plants in California and 2 in Massachusetts which canned mackerel in 1938. Statistical Bulletin No. 1344, p. 3.

⁵ Includes 327,072 cases canned in Oregon.

PLANT AND EMPLOYEE COVERAGE

In most canning industries there is ordinarily a marked seasonal rise and fall in working hours because the raw materials, which arrive in greatest abundance only at the peak of the season, have day-to-day and week-to-week fluctuations, showing generally a gradual increase from the start to the peak of the season, then a decrease toward its close.

In the case of fish canning, however, there are wide differences in the degree of the fluctuations of supply and the length of the canning season, depending on the runs of the species of fish being canned and the length of the open fishing seasons stipulated in the State fishing laws. For example, salmon canners have a very short and concentrated season—the actual canning operations last only about 10 or 12 weeks—and the fluctuations are not very marked. Salmon are caught relatively close to the canneries, which are situated on the harbors and streams where the fish migrate to the spawning beds.

Sardines, on the other hand, are caught off the California coast and their supply is more irregular, because fishing for them is restricted to moonless nights when the fishermen can locate them by their phosphorescence under a dark sky. Fluctuations of supply occur also in tuna canning, because the large proportion of the fish are caught at long distances from the canneries, from 2,000 to 3,000 miles south of the home ports, and boat arrivals are irregular. The sardine canners generally contract with a fishing corporation for their supply of fish, but the majority of the tuna canners own or control at least part of the vessels that supply them with fish. One tuna canner imported frozen tuna from Japan.

Records of employment throughout the year were not comparable in all plants, as some reported on a weekly basis while others reported figures for biweekly, semimonthly, or monthly periods. However, to give some indication of the coverage of the survey, table II shows the maximum number of wage earners in any one month in California and Washington as reported by the Census of 1937 and the number of employees who worked in the pay period taken in the survey (1938 in Washington and 1939 in California). In each case the pay period

covered was during the busy canning season, though in some plants it was not the actual peak week of employment.

The maximum employment in any month reported by the census was 7,685 (in November) in the California canneries and 1,676 (in September) in the Washington plants. The number employed in the California plants scheduled was 5,880, or 77 percent of the number given by the census, and in the Washington plants 785, or 47 percent of the census figure. All the major fish-canning areas in California were visited, but only 1 of the 3 major districts in Washington was visited; consequently the coverage of California plants was much more complete than was the case in Washington.

TABLE II.—*Number of plants and of employees in fish canning in 1937 and number included in the survey—California (1939) and Washington (1938)*

State	Total reported by Census ¹		Number included in survey		
	Plants	Employees in maximum month	Plants	Employees in pay period taken	
				Number	Percent of census figure
California.....	49	7,685	18	5,880	76.5
Washington.....	54	1,676	5	785	46.8

¹ U. S. Census of Manufactures, 1937, pt. I, pp. 89-92.

THE LENGTH OF THE CANNING SEASON AND PEAK LOADS

The length of the period during which fish-canning operations are carried on depends ordinarily on the seasonal migratory runs of the various species of fish in a specific area, when they can be caught in relatively large quantities and brought to the canneries before decomposition sets in. This is particularly true of salmon or sardine canners, who generally pack only when the runs of fish are relatively near their canneries. Tuna fish, however, keep better than most fish when properly refrigerated, so the fisherman can extend the sphere of fishing activity by following the migratory runs and consequently can supply the tuna canners with fish throughout the year. Due to the great distance from the canneries of the waters where the bulk of the tuna are caught, the landings often are sporadic, but the canners generally supplement the tuna pack by canning sardines, which are caught during the legal fishing season when the migratory runs are near the tuna canneries, and mackerel, which are caught intermittently through the year.

Competition with the fresh-fish market does not affect the length of the canning period of the industries included in the survey; in the case of the salmon canning industry, this is because of the extremely heavy concentration of fish available during the short migratory runs to the spawning beds, and in the case of the other three, the sardine, mackerel, and tuna canning industries, it is because there is no demand for fresh or frozen fish in the local areas.

Practically all fish supplied to canneries are bought by the canners direct from the fishermen, at a price agreed upon by fisherman, boat owner, and manufacturer in advance of the fishing season, and do not pass through the hands of the wholesaling trades before being processed.

Washington canneries.

There are wide fluctuations in the natural runs of the several varieties of salmon, different species moving in 2-year and 4-year cycles and at different periods of the year. Salmon runs are localized and each stream is restocked by the same race of fish without any addition to the breeding stock from the races of other streams. Because of the danger of depletion the Pacific States have at various times enacted conservation measures regulating methods or seasons of fishing for specific varieties of fish or covering specific areas or streams. In the Puget Sound area canning operations are required to end by November 20, and during the season fishing is prohibited on certain days of the week.

In 1937 the 5 salmon canneries reporting began canning from July 7 to 14, inclusive; in 2 plants the period of canning was approximately 10 weeks, in 1 about 14 weeks, and in 2 about 18 weeks. Due to the short season, canning operations were relatively steady throughout the period. In the plant with the shortest season, salmon were packed

on 64 of a possible 73 days, including Sundays; in the plant with the longest season, on 95 of a possible 130 days.

Though the 5 salmon canners did not report comparable employment and payroll trend figures, and it has not been possible to prepare a chart showing the weekly fluctuations, the figures obtained do indicate that the peak of employment generally was in August, with substantial numbers employed also in the last part of July and the first part of September. In the combined pay-roll figures of the 3 plants that reported on a semimonthly basis, the amount paid was highest in the second period in August; it was seven-tenths of the peak in the first half of September and six-tenths of the peak in the first half of August.

California canneries.

Sardine canneries are situated in two separate areas in California. In the Monterey and northern California area, where the plants put up chiefly sardines, the canning season usually runs from September through the following January; the legal sardine fishing season in this area extends from August 1 to February 15 of the following year. Of the seven plants scheduled in this area, two reported putting up relatively small mackerel packs during the sardine canning season. The number of days on which sardines were canned varied only from 93 to 110 and the average for the seven plants was 102.

In the southern California area, centering near Los Angeles and San Diego, the sardine canning season runs from November through the following March; in this area State regulations allow fishing from November 1 to March 31. However, all these canneries also can tuna or mackerel or both, in some plants sardines comprising the minor product.

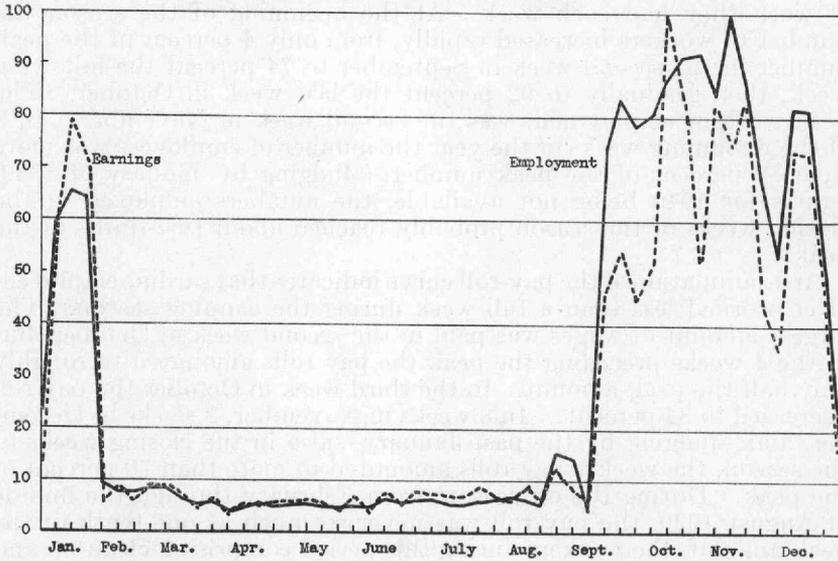
Tuna canning is the most important of the fish-canning industries in the Los Angeles-San Diego area, and in most plants tuna canning is carried on throughout the year; however, in a few instances the tuna canning season was reported to begin in April or May and run through October, November, or December. July through October is generally the busiest period. Mackerel also are available through the year, though the supply is intermittent. Mackerel were not the major pack in any of the plants scheduled.

Of the 11 plants scheduled in this area 1 canned tuna only, 1 canned tuna and sardines, 1 sardines and mackerel, and 8 canned varying amounts of tuna, sardines, and mackerel. The total number of days on which fish of any of the three species was canned, reported by 9 of the 11 plants, varied from 95 to 261 and averaged 178. Several of the plants reported the number of days on which each particular species of fish was canned; in 7 plants tuna were canned on an average of 138 days, in 4 plants the number of days mackerel were canned averaged 76, and sardines were packed on an average of 60 days in 5 plants.

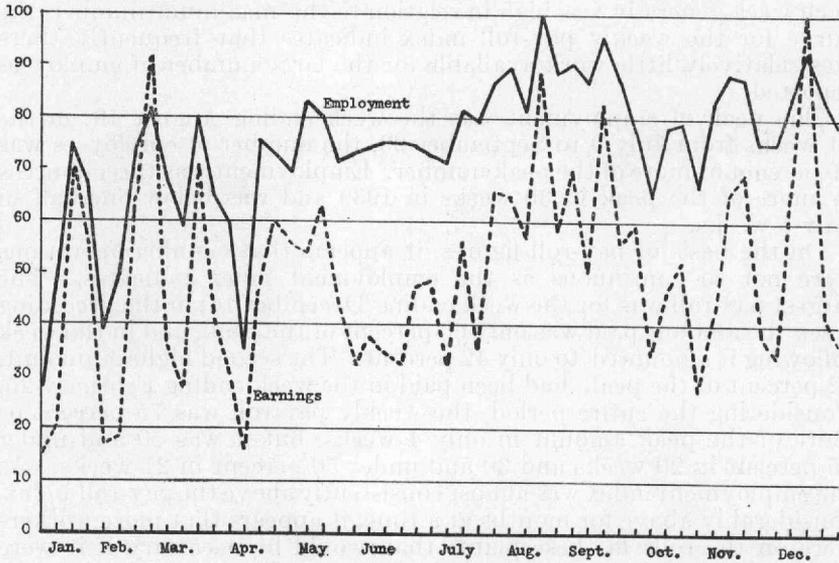
Weekly pay-roll data were available in 13 plants and these data show the fluctuations in employment and amount of wages paid in 1939. Five plants, tabulated together, were primarily sardine canneries, though 3 canned relatively small packs of tuna or mackerel in the sardine canning season. The remaining 8 plants also are tabulated as a group, as they canned 2 or more species of fish at various times through the year. Chart I (A and B) shows the weekly changes graphically; the dotted line represents the amount of the pay roll, with 100 equal to the largest amount paid in any week, and the unbroken

Chart 1.—Fluctuation of Employment and Amount Paid to Fish Cannery Workers Each Week in 1939 in California
 [Maximum week = 100]

A.—CANNERIES PACKING SARDINES



B.—CANNERIES PACKING TWO OR MORE SPECIES OF FISH



line represents the number of workers employed each week, with 100 equal to maximum employment.

As previously noted, the sardine canning season runs about 5 months in the late fall and winter, but even during this relatively short season there were important changes in the number of workers and the amount of work they had each week. At the beginning of the season the number of workers increased rapidly, from only 4 percent of the peak number in the second week in September to 74 percent the following week, then gradually to 92 percent the last week in October. The peak week of employment was the second week in November. In 3 of the remaining weeks of the year the number of employees was more than 80 percent of the peak number. Judging by January of 1939, figures for 1940 being not available, the numbers employed in the closing weeks of the season probably reached about two-thirds of the peak.

An examination of the pay-roll curve indicates that sardine employees often worked less than a full week during the canning season. The largest amount of wages was paid in the second week of October, but in the 4 weeks preceding the peak the pay rolls amounted to roughly only half the peak amount. In the third week in October the pay roll decreased to 84 percent. In 3 weeks in November, 2 weeks in December, and—judging by the past January—also in the closing weeks of the season, the weekly pay rolls amounted to more than 70 percent of the peak. During the off season, from February through the middle of August 1939, the pay roll was never so much as one-tenth of the peak amount, the workers during this period comprising clean-up and warehouse crews and the maintenance workers.

The eight firms processing two or more species of fish operated throughout the year, and though the number of workers employed each week generally was high in relation to the maximum number, the curve for the weekly pay-roll index indicates that frequently there was relatively little work available for the large number of employees reported.

The peak of employment was the week ending August 19; in the 11 weeks from July 9 to September 23, the number of employees was 80 percent or more of the peak number. Employment was three-fourths or more of the peak in 30 weeks in 1939 and was below one-half in only 5 weeks.

On the basis of pay-roll figures, it appears that canning operations were not so continuous as the employment index indicates. The largest pay roll was for the week ending December 16; in the preceding week the amount paid was only 66 percent of the peak, and in the week following it amounted to only 42 percent. The second highest amount, 92 percent of the peak, had been paid in the week ending February 25. Considering the entire period, the weekly pay roll was 75 percent or more of the peak amount in only 4 weeks, but it was 50 and under 75 percent in 20 weeks and 30 and under 50 percent in 21 weeks. As the employment index was almost consistently above the pay-roll index, considerably above for months at a time, it appears that more workers were on the rolls in these plants than would be necessary if it were possible to employ them full time. However, this condition probably must continue as long as the canner's supply of fish is affected by the irregularity of the tuna vessel arrivals and the sporadic catches of mackerel.

CHARACTER OF WORK AND SEX OF WORKERS

The major fish-canning operations are similar for the different species of fish, but minor processes vary according to species. Generally the fish, when unloaded, are cleaned of dirt and grime and sorted according to species and to whether or not suitable for canning. They are then dressed by removal of head, fins, and viscera. Some species are precooked before dressing, but others are dressed first, then cooked before or after being put in cans. Small fish may be packed in the cans without further cutting, but the larger species are cut into segments. Seasoning and other substances, oil, sauce, and so forth, are added and the cans are sealed and passed to the cooking retorts for sterilization. After being cooked the cans are cooled and taken to the warehouse.

The Pacific coast canneries generally are large and well-equipped plants geared for mass production. The production lines, usually several in a plant, are so arranged that the fish can be carried through the various processes with a minimum of hand labor. Some operations may be performed by either hand or machine, depending on the species of fish.

Salmon canning.

The salmon are washed and cleaned of dirt and grime after being unloaded from the boats and are then sorted according to variety, color, and fat content. Heads, tails, and fins are removed by a machine that also opens and cleans the inside and removes the thick mucous covering from the skin. After another washing they are cut into segments according to the size of the cans, and with the proper amount of seasoning are put into the cans by a filling machine. Odd-sized cans or special packs are filled by hand. Women inspect, trim, and weigh the cans and see that the contents are properly adjusted. The cans are then capped and sealed and put into steam pressure retorts where the fish are cooked until the bones are soft. From the retorts the cans are cooled and put in the warehouse for the labeling and shipping or are stored for later shipment.

Sardine canning.

The sardine canning industry is one of the most widespread of all fish-canning industries; however, sardine canning in California is distinctive in that the sardines are packed in tomato sauce or mustard, whereas in other canning areas practically all sardines are put up in olive oil or cottonseed oil. When washed and cleaned of dirt and other foreign matter, the sardines are eviscerated and cooked. After being allowed to cool they are sorted and passed to cutters, who behead them, removing, if necessary, enough of the body so that it will fit into the tins. Tomato sauce or mustard is added, and the cans are capped, sealed, and cooked in retorts until thoroughly sterilized. They are then cooled and taken to the warehouse.

Mackerel canning.

Mackerel caught off California ordinarily are very lean fish and contain little oil or fat. Because of this they are undesirable for salting, and as there is little demand for fresh fish in this area, most of them are canned. When the fish are landed they are cleaned and washed, the head, fins, and viscera are removed, and they are immersed in brine until the blood is extracted. The fish are again washed and are packed in the cans with the required seasoning. The cans are then capped and sealed and put in the cooking retorts.

Tuna canning.

When tuna are unloaded they are sorted according to variety and are washed free of dirt and slime. They are then opened and cleaned and the large fish are cut crosswise in two or three segments to facilitate the processing. They are precooked and cooled and then are skinned and beheaded. The light meat, the only part of the fish used for food in the United States, is separated from the dark meat and bones and other inedible parts, and then cut into sections the size of the cans. These sections are sorted, graded, and put into the cans by women. After the addition of oil and salt, the cans are capped, sealed, and recooked in pressure retorts. The dark meat and other waste are converted into meal and oil.

Sex of workers.

In each type of cannery visited the large majority of employees were women; they were employed as inspectors, trimmers, hand packers, slimers, and often as labelers in the salmon plants; as cutters, cleaners, and packers in the sardine plants; and as cleaners, sorters, and packers in the tuna plants.

Men were employed largely as keymen; that is, as foremen, butchers, cooks or retort men, as sealing-machine operators, receivers, empty-can-room workers, and general laborers in the canning and warehouse departments. Practically all reduction department workers and the maintenance and custodial workers were men.

As shown in table III following, women comprised the majority of the work force on tuna (68 percent), on salmon (56 percent), and in plants canning two or more kinds of fish (52 percent). In the plants canning sardines, however, the manufacture of meal and oil from fresh fish and the waste from canning operations, usually performed by men, is relatively more important than in other fish canneries; consequently, men outnumber women in these plants, comprising 53 percent of the total force.

The number of pay rolls copied exceeds the number of plants visited, as some plants canning more than one species of fish made available separate pay rolls for the various species.

TABLE III.—Occupations of men and women in the pay-roll week recorded, by product canned—California 1939 and Washington 1938

Occupation and sex	California						Washington— Salmon	
	Sardines		Tuna		Two or more species		Number	Percent
	Number	Percent	Number	Percent	Number	Percent		
Number of plants (23).....	8		9		5		5	
Total employees.....	2,956	100.0	3,119	100.0	992	100.0	785	100.0
Men.....	1,562	52.8	985	31.6	477	48.1	349	44.5
Women.....	1,394	47.2	2,134	68.4	515	51.9	436	55.5
Keymen.....	80	2.7	115	3.7	47	4.7	9	1.1
Men.....	61		104		42		8	
Women.....	19		11		5		1	
Preparers.....	531	18.0	798	25.6	192	19.4	125	15.9
Men.....	225		16		56			
Women.....	306		782		136		125	
Canning workers ¹	2,115	71.5	2,038	65.3	613	61.8	581	74.0
Men.....	1,050		697		239		288	
Women.....	1,065		1,341		374		293	
Warehouse workers.....	153	5.2	118	3.8	99	10.0	69	8.8
Men.....	153		118		99		52	
Women.....							17	
Maintenance and custodial workers—Men.....	63	2.1	47	1.5	41	4.1	(²)	
Other ³	14	.5	3	.1			1	.1
Men.....	10		3				1	
Women.....	4							

¹ Includes general factory workers, empty-can-room workers, reduction department workers, and can-line workers.

² Not obtained.

³ Includes office and outside truckers

NUMBERS EMPLOYED DURING AND AFTER THE CANNING SEASON

As previously noted, some of the fish canning industries are extremely seasonal, with fish being packed only a small part of the year. During the slack or off season, naturally the work force becomes relatively insignificant as compared to the number of employees at work in the busy season. This is particularly true of the salmon and sardine industries, where the canning season lasts less than half the year. The work force employed in the off season ordinarily consists of the warehouse crew, who label and ship the pack put up during the canning season; the maintenance workers, who repair and overhaul the machinery, equipment, and buildings; and the custodial workers. In fact, in some of the salmon and sardine canneries the only employees working in part of the off season are the custodial men. In the canneries packing tuna, alone or with other species, canning is done throughout the year, so it is to be expected that substantial numbers of workers would be employed on a year-round basis.

Only 3 salmon canneries furnished data sufficiently complete to indicate the change in number of employees at various times in the year. The off season in the salmon canning industry in the Puget Sound area usually lasts from October through the following June. In the pay period of minimum employment in these months the 3 plants averaged 5 workers, whereas in the period of lowest employment in the actual canning season the average was 69 workers and at the time of maximum employment it was 159.

In the sardine industry, where the off season runs from February through August, 5 plants reporting had averages of 8 workers in the week of minimum employment, 38 workers in the week of lowest employment in the active canning season, and 218 workers in the week of maximum employment. The lowest average number of employees in any week in the 8 plants canning 2 or more species of fish amounted to 99, in contrast to 358 workers in the period of maximum employment.

Expressed differently, in salmon canning the maximum number of employees in any pay period was about 32 times the number in the minimum period, in sardines the maximum was about 27 times the minimum, but in the plants that canned 2 or more species of fish the average in the maximum week was only about $3\frac{1}{2}$ times the average in the minimum week.

INDIVIDUAL WORKER'S AMOUNT OF EMPLOYMENT

The foregoing analysis of employment has indicated the canner's demand for workers through the year, but it does not show the amount of work available to the individual workers employed at any time in the period covered.

Because of the nature of the canning industry, with irregular short-time fluctuations and seasonal changes, relatively few workers are able to secure steady employment over an extended period. As the amount of work available is the most important consideration to the individual, to indicate the employment opportunities offered by canneries it is necessary to know how many weeks of work each individual secured during the year. Accordingly, in each cannery where data were available (19 of the plants visited) a record was taken of the number of weeks worked by each individual on the pay roll in 1937.

The records copied did not show the duplication of workers resulting from the transfer of some employees from one cannery to another in the canning season. In the salmon and sardine canneries, where there is a short and concentrated packing season, it is not probable that employees worked in more than one fish cannery, though in a few cases it was reported that some had worked also in vegetable or fruit canneries.

An analysis of the 1937 records shows that there was an abundance of labor available to the canners in that year, as the 21 canneries reporting employed a total of 11,185 workers, or an average per cannery of 533 persons. In contrast, the 23 canneries reporting for a current period employed an average of 290 workers in the 1-week pay period recorded.

As shown in table IV the large majority of workers had very little employment during the year. In salmon canneries nearly one-fifth (18 percent) of the workers were employed for less than 4 weeks, more than one-fourth (27 percent) worked 4 and under 8 weeks, and a similar proportion (28 percent) worked 8 and under 12 weeks. Thus almost three-fourths of the salmon cannery workers had employment for less than 12 weeks, and only one-eighth had work for as long as 20 weeks.

Employees on sardines fared even worse. Though the same proportion as in salmon (73 percent) worked less than 12 weeks, 36 percent had work for less than 4 weeks. Though a large proportion, 31 percent, of the employees in plants packing tuna or two or more species of fish also had less than 4 weeks of work, as many as 17 percent worked 40 weeks or more and 21 percent worked 20 and under 40 weeks. Only in this last group of canneries did any considerable number of employees work for half the year or more.

TABLE IV.—Number of weeks worked by men and by women in 1937, by product canned

State and product	Number of employees	Employees with weeks worked reported															Weeks worked not reported (percent of total employees)	
		Number	Percent who worked—															
			Under 4 weeks	4, under 8 weeks	8, under 12 weeks	12, under 16 weeks	16, under 20 weeks	20, under 24 weeks	24, under 28 weeks	28, under 32 weeks	32, under 36 weeks	36, under 40 weeks	40, under 44 weeks	44, under 48 weeks	48, under 52 weeks	52 weeks		
California (16 plants): Sardines—total	2,780	2,117	36.4	23.3	12.8	9.4	7.3	3.8	1.8	1.5	0.6	0.2	0.7	0.5	0.9	0.8	23.8	
Men	1,593	1,136	35.7	23.8	12.4	8.2	5.7	3.3	2.6	2.1	.6	.4	1.2	.9	1.7	1.5	28.7	
Women	1,187	981	37.2	22.8	13.4	10.7	9.1	4.4	1.0	.8	.5		.1				17.4	
Tuna and two or more species—total	7,387	6,597	30.5	14.3	7.7	5.7	4.3	4.1	4.2	3.9	5.2	3.4	2.7	4.4	6.4	3.2	10.7	
Men	3,063	2,609	34.0	15.2	7.9	6.0	3.6	3.5	2.7	2.4	2.4	1.9	2.8	3.6	7.8	6.3	12.9	
Women	4,324	3,928	28.1	13.7	7.6	5.6	4.7	4.5	5.2	4.9	7.1	4.3	2.6	5.0	5.5	1.1	9.2	
Washington (5 plants): Salmon—total	1,018	1,018	18.4	27.3	27.8	10.1	4.9	4.0	4.5	.9	.4	.7	.2	.2	.2	.4		
Men	529	529	21.0	29.3	25.5	8.7	3.8	4.3	2.6	1.3	.6	1.3	.4	.4		.8		
Women	489	489	15.5	25.2	30.3	11.7	6.1	3.7	6.5	.4	.2				.4			

SOURCE OF SEASONAL LABOR SUPPLY

In seasonal canning industries the supply of labor is one of the major problems, due to the widely varying need for workers at different times of the year. As previously shown, there was an abundance of labor in the fish canning areas visited, but it is interesting to know something of the people who are available for such intermittent work; that is, to know if they depend entirely on cannery work for their living, or have supplemental work in other industries, and whether they are local residents or migrants who move about following seasonal work throughout the year. Because of the limited time available it was not possible to interview individual workers, so each employer was requested to give such information concerning his employees.

Generally the workers were local people who had work in other kinds of canneries or other local industries when not employed in fish canneries; or they were members of the fishermen's families or housewives of local families who usually were not employed during the off-season in canning. In California the migratory workers, some of whom were the so-called "dust bowl refugees," comprised an important part of the seasonal work force.

Washington canneries.

Men.—As the fish canneries visited were in places that were important lumber ports in addition to supporting extensive fisheries, the majority of the seasonal men employed in four of the canneries were reported to have work in the lumbering industry at other times of the year. One of these firms employed a few workers from another town where the plant had been located in the previous year; and the other three firms employed relatively small groups of local casual workers. In the remaining firm the seasonal work force consisted of local industrial workers who had employment in lime kilns at other times, and of a few Japanese who each season came from out of town and were furnished board and room by the firm in addition to wages.

Women.—Nearly all the women employed during the canning season were housewives or daughters of local families or of the fishermen's families. Only a small proportion of these workers were reported to have other kinds of work, such as store or restaurant jobs or domestic service. A small proportion of the women were from nearby farms, and one firm reported that some of the women were employed in vegetable canneries during the pea canning season.

California canneries.

There was wide variation in the composition of the work force in the different canneries in California, particularly so in regard to those in the northern area in contrast to those in the southern area, and to a less degree among canneries in the same general area.

Northern area.—The largest proportion of men employees in the sardine canneries were industrial workers from local factories or from vegetable and fruit canneries; the proportion varied from 35 to 60 percent in the 7 firms visited in this area and was 50 percent or more in 4 of the plants. However, local casual workers and migrants comprised substantial proportions of the seasonal force; the former varied from 10 to 40 percent of the total in the 7 plants, being 30 percent or more in 3 plants, while the migratory workers comprised 10 to 55 percent, being 30 percent or more in 4 plants.

Large numbers of the women, one-half or more in 6 plants, were housewives or other members of local industrial workers' or fishermen's families and probably had no other employment. All the firms employed some women migratory workers. The proportion these comprised of the seasonal force was only 20 percent or less in 3 firms, but was from 30 to 50 percent in 4 firms. Relatively few women were industrial workers from factories or other canneries or local casual workers.

Southern area.—The canneries in this area, many of which operated throughout the year, gave relatively steady employment to a large proportion of their employees; in fact, 5 canners reported that their work force was drawn from local people who were entirely dependent on fish cannery work or on fishing. In 2 of these the employees were Japanese. In contrast, there was 1 plant where 75 percent of both men and women and another where 50 percent of the men were migratory workers "just like the 'Grapes of Wrath' describes"; the remainder of the men were local casual or cannery workers and the women were housewives and local casual workers.

In the other 4 canneries in the southern area 75 percent of the men and from 40 to 75 percent of the women were reported to be "steady cannery workers." The other men in all 4 plants and the women in 2 were migrants or local casual workers, but most of the remaining women workers in the 2 other plants were housewives or daughters of local workers, particularly of fishermen.

HOURS WORKED AND EARNINGS

The employment data relating to the single pay period in the active canning season when one or more of the principal species of fish were being packed were copied from the firms' pay rolls by the Bureau's field investigators. They consisted of records of sex and occupation, earnings received, and hours worked, for each individual employed in the week.

Pay-roll records were quite complete in fish canneries; the week's earnings were reported for all workers, though hours worked were not available for a small group of piece workers, a negligible proportion of the total group. Women outnumbered men in the two-or-more-fish, the salmon, and the tuna canneries, comprising from 52 to 68 percent of the work force. In the sardine plants, however, where reduction departments were of more importance, more than half (53 percent) of the workers were men.

METHODS OF PAY

Among the conditions that affect earnings and hours of fish cannery workers are methods of pay, State wage and hour regulations, and wage provisions of union agreements.

Both machine and hand operations are found in fish canning, and generally when the speed of an operation can be adjusted or set to a machine the worker is paid a straight time rate. When an operation is performed by hand and depends on the speed of the individual worker, a piece rate—a specific amount for each unit of the product—is paid in order to induce the worker to produce the maximum output possible. Consequently, the proportion of workers paid time rates or piece rates depends largely on the degree of mechanization utilized in the canning process.

The practice of paying piece rates varied greatly in the firms visited. Some paid piece rates for a particular operation, while others paid time rates for the same operation but paid piece rates for a different one, and a few canners paid all workers straight time rates regardless of occupation. Generally the handwork operations paid for by piece rates were hand packing and hand labeling in the Washington plants, and cutting, cleaning, sorting, or hand packing in the California plants. Machine operators, seamer men, retort men or cookers, keymen, and the warehouse workers, except some hand labelers in Washington plants, were largely men and were all paid on a time-rate basis. Considering all workers combined for each type of cannery, only from 1 to 11 percent of the men but from 20 to 47 percent of the women were piece workers.

STATE REGULATION OF WAGES AND HOURS

Both California and Washington have minimum-wage orders that cover women employed in fish canneries. In California the Industrial

Welfare Commission has set a rate of 33½ cents an hour for experienced workers and 28 cents for inexperienced workers. The learning period for inexperienced workers is 3 weeks for those learning fancy packing and 1 week for all others. A basic workweek of 8 hours a day and 48 a week was established, though fish cannery workers (other than labelers and office workers) are permitted to work longer provided they are paid extra for the overtime, the rates being 1¼ times the minimum for over 8 and up to 12 hours and double the minimum for more than 12 hours.

Workers in Washington fish canneries are exempt from the hour law that provides for an 8-hour day in most other industries. However, they do come within the scope of the 1937 wage order of the Industrial Welfare Committee. This order provides for a minimum wage of 37½ cents an hour in the canning industries.

UNION-AGREEMENT WAGE PROVISIONS

Fish cannery workers in both California and Washington were quite generally members of union organizations. Only two canners, both in California, reported that all or part of their factory workers were not union members. In Washington the lowest basic rates contained in the union agreements in 1938 were 40 cents an hour for women and 55 cents an hour for men. Higher basic rates, ranging up to 80 cents, were set for specific occupations.

In all but one of the California plants reporting, the minimum hourly rates in the union agreements were 55 cents for women and 60 cents for men. In the one exception minimum rates were stated to be 52½ cents for women and 57½ cents for men. From these figures it is readily seen that union minimum rates are materially higher than the rates established by the State minimum-wage orders.

HOURS WORKED

Hour records were complete in all the canneries visited and were recorded for all the workers for whom the week's earnings were reported except a very small number of piece workers, about 1 percent of the total in California plants and 4 percent in the Washington plants. The details in regard to hours worked are given in table V, which shows the distribution of employees' hours by product canned. It is apparent from the tabulation that undertime was prevalent. In each case more than half the employees had less than 40 hours of work in the week. Much larger proportions of women than of men worked a short week, due to the fact that keymen, maintenance and custodial workers, and warehouse crews, comprised almost entirely of men, are the steadier employees in the cannery and have work on slack days as well as when fish are being processed.

Washington canneries, 1938 season.

The great majority of the salmon cannery employees, 72 percent of the total, had less than 40 hours of work; in fact, as many as 36 percent worked less than 20 hours. The next largest concentration occurred at over 48 and under 56 hours, 11 percent of the total having a workweek of this length. Nineteen employees, only one a woman, worked 60 and under 80 hours, none so long as 80. Sixty-eight percent of the men and 74 percent of the women worked less than 40 hours; 35 and 37 percent, respectively, worked less than 20 hours.

This irregularity or actual lack of work in the 1938 season is due in some degree to the peculiar features of the natural runs of the major varieties of salmon canned in the Puget Sound area, the "sockeye" and "pink" salmon. The sockeye salmon moves in 4-year cycles with the "big year" run occurring the year after leap year (the last in 1937) and the small run the following year (1938). The pink salmon moves in 2-year cycles, the maximum runs occurring in the odd-numbered years and the minimum runs in the even years. With the small runs of both varieties occurring in the same year, 1938, it is to be expected that smaller amounts would be caught, consequently less raw material would be available to the canneries.

California canneries, 1939 season.

There was less undertime in the sardine canneries than in those canning other species of fish, but even in these plants more than half of all employees had less than 40 hours of work. Only 41 percent of the men but 67 percent of the women had such hours. A large proportion of the men, 32 percent, worked longer than 56 hours; 4 percent, over 80 hours. Almost one-tenth of the women worked 60 and under 80 hours.

A short workweek prevailed in the tuna canneries, as 72 percent of the entire group of employees, 53 percent of the men but 81 percent of the women, worked less than 40 hours. As many as 40 percent of the women worked less than 20 hours. Fifteen percent of the men and 10 percent of the women exceeded 56 hours of work.

About four-fifths of the women in the plants canning two or more species worked less than 40 hours; over two-fifths, less than 20 hours. Less than 1 percent of the entire group of women worked as long as 48 hours. Fewer than one-half of the men, 46 percent, worked less than 40 hours, but an important group, nearly one-fifth, worked 48 and including 56 hours, and one-sixth worked longer than 56 hours.

The short-time weeks in the California plants apparently are due to fluctuations and sporadic landings of raw fish, as the 1939 canned pack, based on the number of cases, was shown to be relatively large by the Fishery Market News reports issued by the United States Bureau of Fisheries.

TABLE V.—Hours worked by men and by women in the pay-roll week recorded, by product canned—California 1939 and Washington 1938

State and product	Number of plants	Number of employees	Employees with hours worked reported													
			Number	Percent who worked during the week—												
				Under 20 hours	20, under 30 hours	30, under 40 hours	40 hours	Over 40, under 44 hours	44 hours	Over 44, under 48 hours	48 hours	Over 48, under 56 hours	56 hours	Over 56, under 60 hours	60, under 80 hours	80 hours and over
California:																
Sardines—total	8	2,956	2,927	10.5	20.1	22.2	1.0	7.7	0.2	6.4	0.8	8.3	0.4	4.1	16.2	2.0
Men		1,562	1,540	9.9	11.9	18.8	.6	6.2	.4	5.8	1.4	11.9	.8	5.8	22.5	3.9
Women		1,394	1,387	11.2	29.3	26.0	1.4	9.4		6.9	.1	4.3	.1	2.2	9.2	
Tuna—total	9	3,119	3,101	33.2	21.1	17.9	.3	3.7	.4	3.3	1.3	6.8	.3	1.9	5.6	4.4
Men		985	968	18.6	14.0	19.9	.9	7.3	.9	8.3	4.0	10.9	.2	4.1	6.4	4.3
Women		2,134	2,133	39.8	24.2	16.9	.1	2.1	.1	1.0	.1	5.0	.3	.8	5.2	4.4
Two or more species—total	5	992	989	26.4	12.4	24.4	1.1	12.4	.4	5.7	.5	8.1	.5	1.8	4.8	1.5
Men		477	474	9.5	11.8	24.7	1.5	8.0	.6	8.6	1.1	16.7		1.1	3.8	9.5
Women		515	515	41.9	13.0	24.1	.8	16.5	.2	2.9		.2			.4	3.2
Washington:																
Salmon—total	5	785	753	35.9	21.4	14.2	.1	7.6	.1	4.6	.4	11.0	.1	2.0	2.5	
Men		349	340	35.0	16.2	16.8	.3	4.1	.3	5.3	.6	11.5	.3	4.4	5.3	
Women		436	413	36.6	25.7	12.1		10.4		4.1	.2	10.7			.2	

HOURLY EARNINGS

Hourly earnings were computed for all employees for whom hours worked were reported, and it is interesting to note, as given in table VI, that in California relatively few workers, and the majority of them learners, were paid less than the minimum rates contained in the union agreements, and that average hourly earnings were higher than such minimum rates.

In each type of cannery men had higher average earnings than women, the difference ranging from 4.8 cents an hour in tuna canneries to 11.8 cents in salmon canneries. Except for maintenance and custodial workers in sardine canneries, keymen had the best hourly earnings in each type of cannery. The average earnings of other occupational groups varied considerably in the different types of plant. Warehouse men ranked second in salmon canneries, maintenance workers in those canning tuna and two or more species, and keymen in sardine canneries. Preparers ranked third in the sardine plants and those canning two or more species, cannery workers in salmon plants, and warehouse workers in tuna canneries.

Washington canneries.

Women employed in salmon canneries averaged 46.9 cents an hour in 1938. The largest group, 27 percent of the total, earned 42½ cents an hour, and only 8 percent earned less than 42 cents; none earned less than 37½ cents, the minimum rate set by the State Industrial Welfare Committee. As many as one-third of the women earned 50 cents or more.

The average earnings of the men were 58.7 cents and the lowest hourly earnings of any man were 50 cents. One-half of the total group earned 55 and under 60 cents and nearly three-tenths (28 percent) earned more than this.

California canneries.

Earnings in the various California canneries were quite comparable; men's average hourly earnings were 63.1 cents in the tuna plants, 63.5 cents in sardine canneries, and 64.1 cents in those canning two or more species. The average hourly earnings of women varied only from 57.3 to 58.3 cents in the three cannery classes. In each of the three the majority of both men and women had hourly earnings corresponding to the minimum rates provided for in union agreements, and substantial proportions had higher earnings.

From 51 percent of the women in plants canning two or more species to 61 percent in sardine canneries and 72 percent in tuna canneries had earnings of 55 cents an hour, and only 8, 15, and 3 percent, respectively, received less than 55 cents. The proportions with earnings of more than 60 cents varied from 14 to 16 percent.

The heavy concentration of men's hourly earnings was at 60 cents; such an amount was earned by 52, 55, and 70 percent, respectively, of the men canning two or more species, sardines, and tuna. Only one-tenth or less of the men had earnings below 60 cents, and one-seventh to nearly one-fourth earned 70 cents and over.

Almost all the workers who were paid less than the rates specified in union agreements were learners, though in one plant a small group of women employed in preparing tomatoes were paid 45 cents an hour. This is 10 cents less than the minimum in the union agreement for fish cannery women, but is higher than union rates agreed upon for vegetable cannery women.

TABLE VI.—Hourly earnings of men and of women in the pay-roll week recorded, by product canned—California 1939 and Washington 1938

Hourly earnings	California									Washington		
	Sardines			Tuna			Two or more species			Salmon		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Number of plants.....	8			9			5			5		
Number of employees.....	2,956	1,562	1,394	3,119	985	2,134	992	477	515	785	349	436
Employees with hours worked reported.....	2,927	1,540	1,387	3,101	968	2,133	989	474	515	753	340	413
Average earnings (mean)—cents.....	60.6	63.5	57.3	59.8	63.1	58.3	61.0	64.1	58.2	52.2	58.7	46.9
Percent of employees with earnings specified												
Under 42 cents.....										4.5		8.2
42 cents.....										14.9		27.1
43, under 45 cents.....										4.0		7.3
45 cents.....										5.6		10.2
46, under 50 cents.....	10.6	0.6	0.6	11.9	0.2	2.6	11.6	0.6	2.5	7.7		14.0
50 cents.....	.1		.1	.7	2.2		6.2	8.6	3.9	17.0	18.2	16.0
51, under 55 cents.....	7.0	.3	14.6	.4	.3	.4	.9		1.7	3.8	4.1	3.6
55 cents.....	29.5	.8	61.3	49.8	.2	72.3	26.7	.6	50.7	17.3	32.6	4.6
56, under 60 cents.....	5.0	7.5	2.2	2.7	.1	3.9	3.7	.6	6.6	9.0	17.1	2.4
60 cents.....	32.1	54.7	6.9	25.2	70.1	4.9	34.6	52.3	18.3	2.0	3.8	.5
61, under 65 cents.....	6.0	8.9	2.7	2.7	3.1	2.5	4.0	4.4	3.7	7.0	13.2	1.9
65 cents.....	2.7	3.8	1.6	3.5	7.7	1.5	5.0	8.0	2.1	1.2	1.8	.7
66, under 70 cents.....	3.1	4.1	1.9	2.4	2.0	2.5	2.5	.4	4.5	1.0	1.2	1.0
70 cents and over.....	13.9	19.4	7.9	10.7	14.0	9.2	14.8	24.3	6.0	4.9	7.9	2.4

¹ Under 50 cents.

WEEK'S EARNINGS

Due to the extremely large proportions of employees who worked overtime in the week recorded it might be expected that many would have low earnings. It is important to show week's earnings, as they give some indication of what one may expect to receive in the busy canning season.

As previously noted, from 21 to 51 percent of the men and from 41 to 64 percent of the women had less than 30 hours of work, definitely not a full workweek.

Considering all employees regardless of time worked, average week's earnings of women amounted to \$13.05 in salmon canneries, \$15.15 in those canning two or more species, \$16.85 in tuna canneries, and \$20.55 in sardine canneries; men's average week's earnings were respectively \$19.10, \$27.25, \$25.80, and \$30.85 in the four types of cannery.

However, significant numbers of workers were paid relatively small amounts. The proportion of women who received less than \$10 varied from 10 percent in sardine canneries to 32 percent in tuna canneries and 39 percent in salmon canneries. From 8 percent of the men in sardine plants and those putting up two or more species, to 28 percent in salmon canneries, had such low earnings.

TABLE VII.—*Week's earnings of men and of women in the pay-roll week recorded, by product canned—California 1939 and Washington 1938*

Week's earnings	California									Washington		
	Sardines			Tuna			Two or more species			Salmon		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Number of plants.....	8			9			5			5		
Number of employees with week's earnings reported.....	2,941	1,547	1,394	3,115	981	2,134	975	460	515	785	349	436
Average earnings (mean).....	\$25.95	\$30.85	\$20.55	\$19.65	\$25.80	\$16.85	\$20.85	\$27.25	\$15.15	\$15.75	\$19.10	\$13.05
	Percent of employees with earnings specified											
Under \$5.....	3.1	2.5	3.8	12.6	6.1	15.6	4.0	3.3	4.7	16.3	9.5	21.8
\$5, under \$10.....	5.5	5.4	5.7	14.3	9.4	16.6	19.4	4.6	32.6	18.1	18.9	17.4
\$10, under \$15.....	13.3	6.7	20.6	17.2	9.2	20.9	8.9	6.5	11.1	19.1	15.8	21.8
\$15, under \$20.....	16.5	11.5	22.0	18.6	10.6	22.3	16.8	12.6	20.6	16.8	15.8	17.7
\$20, under \$25.....	16.6	13.1	20.4	10.0	16.3	7.0	23.5	21.7	25.0	12.2	11.2	13.1
\$25, under \$30.....	11.4	11.4	11.3	6.4	14.3	2.7	9.5	16.5	3.3	7.0	10.0	4.6
\$30, under \$35.....	8.5	11.5	5.2	6.7	12.8	3.9	6.4	12.8	.6	4.7	8.9	1.4
\$35, under \$40.....	8.9	10.9	6.7	3.2	6.1	1.8	3.9	6.7	1.4	2.8	4.0	1.8
\$40, under \$45.....	6.0	8.5	3.2	3.2	5.0	2.3	3.0	5.4	.8	1.7	3.2	.5
\$45, under \$50.....	4.3	7.2	1.0	3.1	2.7	3.3	1.9	4.1		.6	1.4	
\$50, under \$55.....	2.1	4.0		2.8	2.9	2.8	1.0	2.2				
\$55 and over.....	3.8	7.2	.1	2.0	4.7	.8	1.6	3.5		.6	1.4	

ANNUAL EARNINGS OF INDIVIDUAL WORKERS

A record of the year's earnings in 1937 was obtained for a total of 11,185 employees, and for 87 percent of these the number of weeks worked in the year was reported. Of the total with earnings reported, 54 percent were women and 46 percent were men. The year's earnings were extremely low in salmon and sardine canneries, due to the short season for canning these species of fish, but even in the tuna plants and those putting up two or more species there were relatively few workers who earned the equivalent of \$50 a month.

Men.

The proportion of men who had total earnings of \$600 or more varied from only 6 percent of the group in salmon plants and 8 percent in the sardine plants to 20 percent in the tuna canneries and those packing two or more species. In comparison, 56 percent in sardine canneries, 48 percent in salmon canneries, and 52 percent in tuna canneries and those putting up more than one kind of fish had earnings of less than \$100.

A correlation of earnings and weeks worked shows that average earnings of the large group who worked less than 4 weeks varied from \$13 to \$18; of those who worked 4 and under 8 weeks, from \$62.50 to \$74; and of those who worked 8 and under 12 weeks, from \$120.50 to \$167.50. Only 15 men in salmon canneries worked so long as 36 weeks, and they averaged \$891.50. In sardine canneries and in those canning tuna and 2 or more varieties combined, men who worked 48 and under 52 weeks averaged respectively \$1,181.50 and \$1,144.50; those who worked 52 weeks averaged \$1,319.50 and \$1,427.50, respectively.

Women.

Year's earnings of women were considerably lower than those of men. Less than one-half of 1 percent of those in sardine and salmon plants, but 17 percent in tuna plants and those canning two or more species had earnings as high as \$400. In fact, only 6 percent, 20 percent, and 36 percent, respectively, in the three classes earned as much as \$200 in the year.

The average year's earnings of the large groups who worked under 4 weeks varied from \$9 to \$12, and for those who worked 4 and under 8 weeks the range was from \$36 to \$51.50. Only a few women in sardine and salmon canneries worked as many as 24 weeks in the year, and these groups averaged \$251 and \$214.50. In tuna canneries and those putting up two or more varieties substantial proportions of the women worked throughout the year; the group who worked 48 and under 52 weeks averaged \$744 and those who worked 52 weeks averaged \$872.50. The details in regard to the year's earnings are given in table VIII (A and B) following.

TABLE VIII.—Year's earnings of men and of women in 1937, by weeks worked and by product canned

A.—MEN

Year's earnings	Total men employees	Men with weeks worked reported	Men who worked in the year—													
			Under 4 weeks	4, under 8 weeks	8, under 12 weeks	12, under 16 weeks	16, under 20 weeks	20, under 24 weeks	24, under 28 weeks	28, under 32 weeks	32, under 36 weeks	36, under 40 weeks	40, under 44 weeks	44, under 48 weeks	48, under 52 weeks	52 weeks
California—Sardines																
Number.....	1, 593	1, 136	405	270	141	93	65	37	29	24	7	5	14	10	19	17
Percent.....	100.0	35.7	23.8	12.4	8.2	5.7	3.3	2.6	2.1	0.6	0.4	1.2	0.9	1.7	1.5	
Average earnings (mean).....	\$189.00	\$168.00	\$18.00	\$70.50	\$139.50	\$196.50	\$260.00	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Under \$25.....	419	320	293	23	1	3										
\$25, under \$50.....	213	153	89	56	5	1	1	1								
\$50, under \$100.....	262	210	22	153	31	1	2	1								
\$100, under \$200.....	294	196	1	36	89	53	11	3								
\$200, under \$400.....	216	140		2	14	32	48	26	12	5			1			
\$400, under \$600.....	59	40			1	2	3	5	9	11	3	1	3	1		1
\$600, under \$800.....	40	24				1			7	5	3	2	5		1	
\$800, under \$1,000.....	30	18						1			1	1	5	6	4	
\$1,000 and over.....	60	35								1		1	3	14		16
California—Tuna and two or more species																
Number.....	3, 063	2, 669	907	406	212	159	96	93	71	63	64	52	74	95	208	169
Percent.....	100.0	34.0	15.2	7.9	6.0	3.6	3.5	2.7	2.4	2.4	1.9	2.8	3.6	7.8	6.3	
Average earnings (mean).....	\$314.50	\$332.00	\$13.00	\$62.50	\$120.50	\$187.00	\$245.50	\$311.00	\$380.00	\$463.00	\$549.50	\$611.00	\$761.50	\$874.50	\$1, 144.50	\$1, 427.50
Under \$25.....	941	830	768	55	6	1										
\$25, under \$50.....	337	283	125	138	18	2										
\$50, under \$100.....	325	273	13	164	67	23	4	2								
\$100, under \$200.....	346	282	1	43	95	75	34	19	8	5	2					
\$200, under \$400.....	315	263		5	26	52	50	52	40	21	10	6	1			
\$400, under \$600.....	190	161				5	6	17	13	25	33	23	20	13	4	2
\$600, under \$800.....	166	152				1	1	2	9	8	19	17	27	30	31	7
\$800, under \$1,000.....	138	133					1	1	1	2		3	15	36	52	22
\$1,000 and over.....	305	292		1						2		3	11	16	121	138

Washington—Salmon

Number.....	529	529	111	155	135	46	20	23	14	7	3	7	2	2		4
Percent.....	100.0	100.0	21.0	29.3	25.5	8.7	3.8	4.3	2.6	1.3	0.6	1.3	0.4	0.4		0.8
Average earnings (mean).....	\$182.00	\$182.00	\$15.00	\$74.00	\$167.50	\$279.00	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)		(1)
Under \$25.....	128	128	95	29	4											
\$25, under \$50.....	49	49	10	32	7											
\$50, under \$100.....	75	75	5	54	16											
\$100, under \$200.....	119	119		37	71	9	1	1								
\$200, under \$400.....	93	93	1	2	36	31	12	8	3							
\$400, under \$600.....	33	33		1	1	6	6	13	2	2			1	1		
\$600 and over.....	32	32					1	1	9	5	3	6	1	2		4

¹ Not computed; base too small. For the small groups working 20 or more weeks in sardine canneries, average earnings ranged from \$324 for the group with the least employment to just over \$1,300 for that with the most. For the small groups working 16 or more weeks in salmon canneries, average earnings ranged from \$352 for the group with the least employment to almost \$1,200 for that with the most.

TABLE VIII.—Year's earnings of men and of women in 1937, by weeks worked and by product canned—Continued

B.—WOMEN

Year's earnings	Total women employees	Women with weeks worked reported	Women who worked in the year—													52 weeks
			Under 4 weeks	4, under 8 weeks	8, under 12 weeks	12, under 16 weeks	16, under 20 weeks	20, under 24 weeks	24, under 28 weeks	28, under 32 weeks	32, under 36 weeks	36, under 40 weeks	40, under 44 weeks	44, under 48 weeks	48, under 52 weeks	
California—Sardines																
Number.....	1, 187	981	365	224	131	105	89	43	10	8	5	1				
Percent.....	100.0	37.2	22.8	13.4	10.7	9.1	4.4	1.0	0.8	0.5	0.1					
Average earnings (mean).....	\$71.00	\$74.00	\$12.00	\$51.50	\$88.00	\$141.50	\$181.50	\$193.50	(1)	(1)	(1)	(1)				
Under \$25.....	472	368	325	34	9											
\$25, under \$50.....	137	127	37	73	15		2									
\$50, under \$100.....	219	183	3	111	55	12		2								
\$100, under \$200.....	284	232		6	52	84	58	24	3	2	3					
\$200, under \$400.....	74	70				9	58	16	7	6	2			1		
\$400, under \$600.....	1	1						1	7							
California—Tuna and two or more species																
Number.....	4, 324	3, 928	1, 105	538	298	219	185	178	205	193	278	170	104	198	215	42
Percent.....	100.0	28.1	13.7	7.6	5.6	4.7	4.5	5.2	4.9	7.1	4.3	2.6	5.0	5.5	1.1	
Average earnings (mean).....	\$194.00	\$204.50	\$9.00	\$36.00	\$72.00	\$119.00	\$171.00	\$224.00	\$278.50	\$315.50	\$378.50	\$405.50	\$514.50	\$574.00	\$744.00	\$872.50
Under \$25.....	1, 389	1, 240	1, 026	197	16	1										
\$25, under \$50.....	482	404	78	221	88	14	2	1								
\$50, under \$100.....	399	346	1	113	132	67	23	8	2							
\$100, under \$200.....	507	446		7	61	124	110	62	47	23	10	1				1
\$200, under \$400.....	810	761			1	13	50	103	139	141	151	79	32	36	16	
\$400, under \$600.....	406	401						4	14	28	112	84	41	70	38	10
\$600, under \$800.....	202	202							3	1	5	5	26	79	79	4
\$800, under \$1,000.....	84	84										1	3	11	56	13
\$1,000 and over.....	45	44											2	2	26	14

LABOR COSTS

In the foregoing the amounts paid to individual employees have been shown, but what does the labor bill mean to the canner in relation to his total cost of production? In the supplemental survey in California in 1939, data on costs of production were requested from each canner, and wherever total costs and labor costs were available from firm records without making original computations, these records were copied for the years 1937, 1938, and 1939. Such data were available for 1 or more of the years in 12 plants, and though some cannery costs may vary from year to year or even over relatively short periods, these records may be regarded as indicative of the relation of labor costs to total costs.

The proportion labor costs were of total costs varied from 13.6 percent to 23.1 percent in five sardine canneries in 1937, and from 13.2 percent to 20.3 percent in six plants in 1938. Cost data for 1939 were not available in the sardine canneries at the time of the study.

In six plants canning tuna or two or more species, labor costs varied only from 11.3 percent to 15.5 percent of the total costs in 1937, from 11 percent to 14.6 percent in 1938, and in four of the plants from 10.2 percent to 14.9 percent in 1939.

That labor costs are relatively low in fish canning, as shown by these figures, is substantiated by a United States Tariff Commission report on tuna fish which makes the statement that "the largest single item in the cost of canned tuna is the price paid for raw fish, and this is also the most variable item. The next largest item is that for other materials, the greater part of which consists of the cost of tin cans. The cost of labor in canning and packing is a relatively small item * * *"⁴

TUNA CANNING IN HAWAII

Japanese fishermen in their sampans set out to sea from Honolulu and Hilo in search of tuna for the canneries in these two cities. The canning of tuna in these plants in Hawaii is a relatively new enterprise and in 1939 the two canneries were under one management. Both cannery operatives and fishermen are chiefly of Japanese extraction. The canneries are modern, well-equipped plants and similar to the best canneries on the mainland in their methods and conditions of processing. In 1938 their total pack, of less than 200,000 cases, consisted of the darker varieties of tuna. Albacore were not canned.

The cannery workers were paid on an hourly basis and rates were decidedly lower than on the mainland. In Honolulu the basic rate for men was 35 cents an hour and for women 20 cents an hour for trimmers, 22 cents for packers, 25 cents for slicing-machine operators, 22 to 30 cents for processors, 25 and 30 cents for warehouse girls, and 30 and 35 cents for foreladies. In Hilo the basic rate for men was 20 cents, for women 18 cents.

Tuna is canned throughout the year. It is fairly heavy from April 15 through November, but the greater part of the product is processed from the middle of June to the end of September. At other periods the cannery operations are spasmodic and employment is very irregular. A sampan or two of tuna at the wharf starts up the cannery for a few hours, and when the load is processed the cannery closes operations until another sampan comes in.

⁴ U. S. Tariff Commission. Report to the United States Senate on Tuna Fish. Report No. 109, second series, 1936. p. 13.

